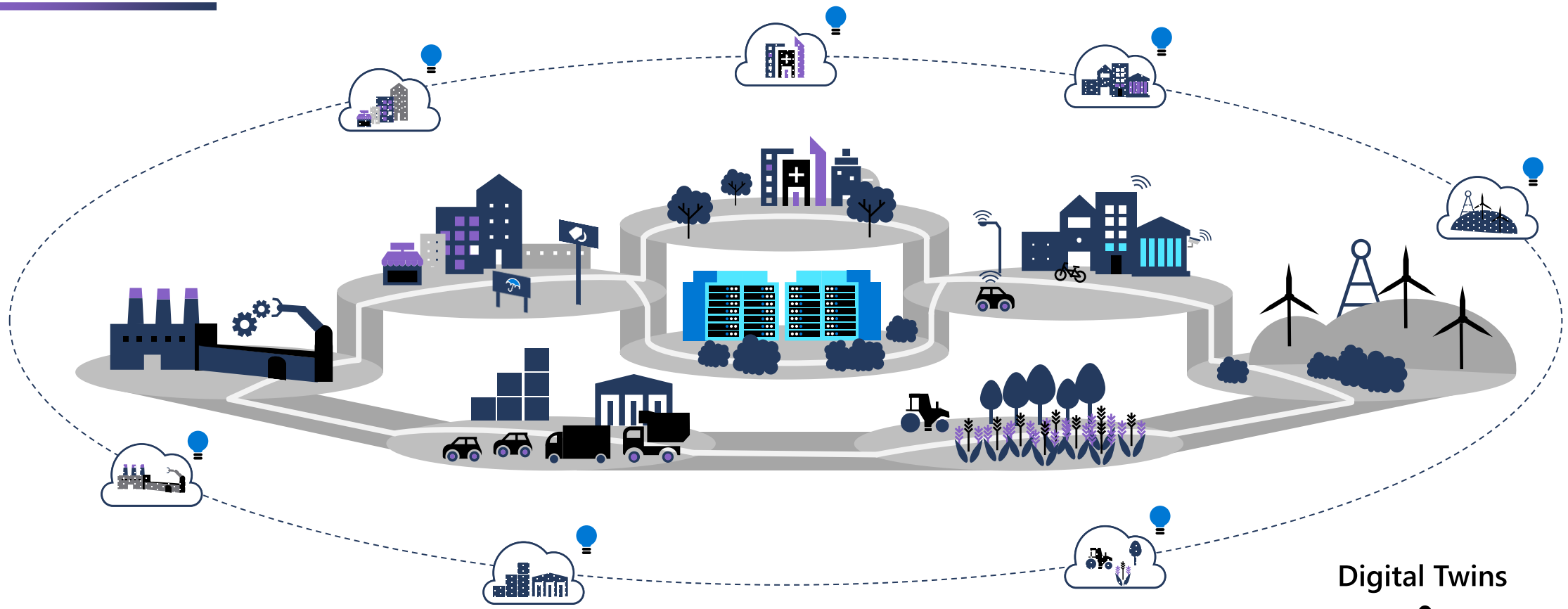
Cloud Solution with IoT Central

Creating your complete solution with IoT and extensibility points

Agenda

- Cloud Discussion
- IoT Central Workshop

IoT Solution Progression



Cloud
Globally available, unlimited compute resources

IoT
Harnessing signals from sensors and devices, managed centrally by the cloud

Edge
Intelligence offloaded from the cloud to IoT devices

AI
Breakthrough intelligence capabilities, in the cloud and on the edge

Digital Twins
Create living replicas of any physical environment, track the past and predict the future

Azure IoT Product Portfolio

Azure Security Center for IoT

IoT Priority Verticals


Manufacturing


Automotive


Spaces


Energy


Agriculture


Retail


Oli & Gas

IoT Solutions


Azure IoT Central (SaaS)


Reference Architecture & Accelerators (PaaS)


Dynamics Connected Field Service (SaaS)

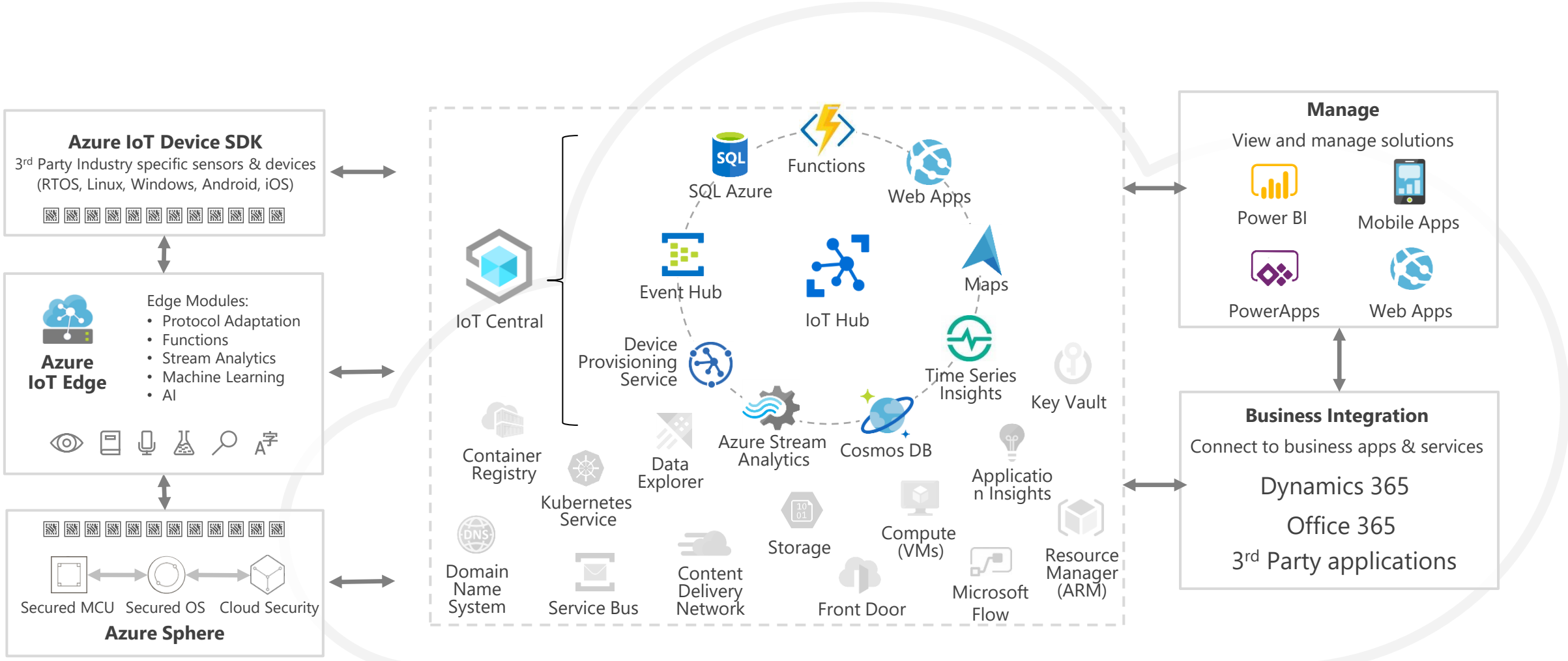
Azure Services for IoT

- Azure IoT Hub
- Azure IoT Hub Device Provisioning Service
- Azure Digital Twins
- Azure Time Series Insights
- Azure Maps
- Azure Stream Analytics
- Azure Cosmos DB
- Azure AI
- Azure Cognitive Services
- Azure ML
- Azure Logic Apps
- Azure Active Directory
- Azure Monitor
- Azure DevOps
- Power BI
- Azure Data Share
- Azure Spatial Anchors

IoT & Edge Device Support

- Azure Sphere
- Azure IoT Device SDK
- Azure IoT Edge
- Azure Data Box Edge
- Windows IoT
- Azure Certified for IoT—Device Catalog
- Azure Stream Analytics
- Azure Storage
- Azure ML
- Azure SQL
- Azure Functions
- Azure Cognitive Services

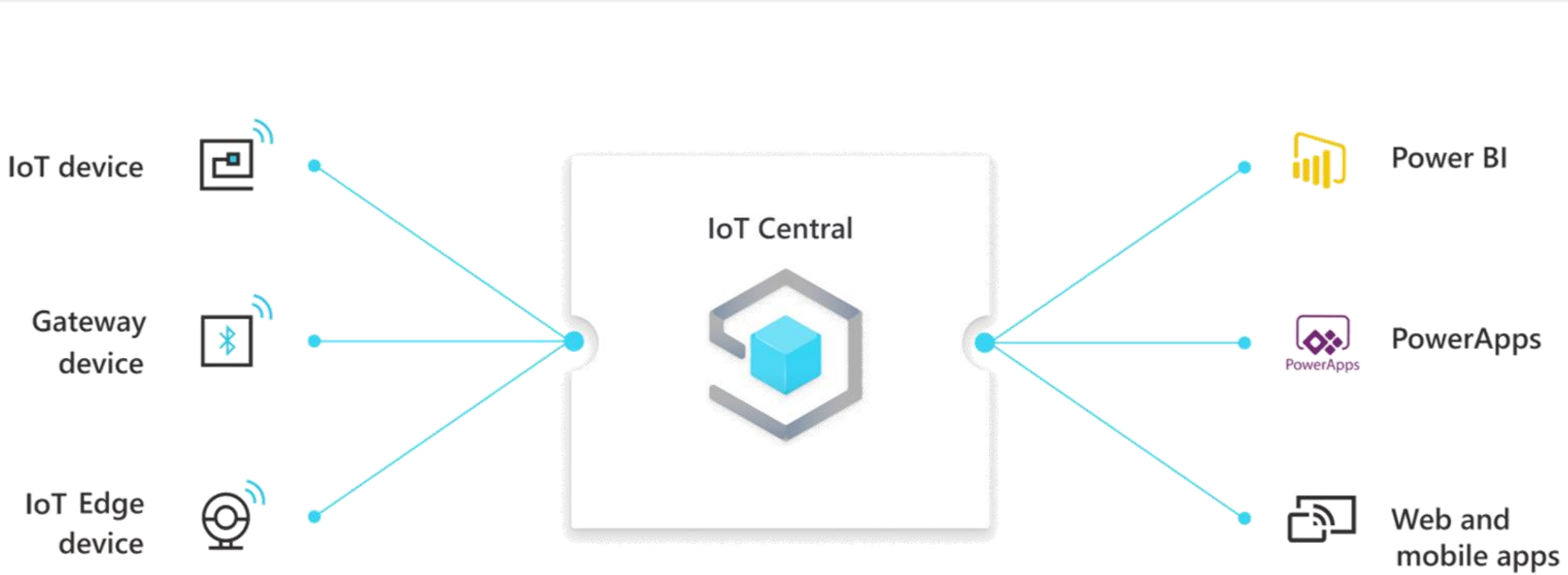
Your options for building IoT solutions



Azure Security Center for IoT

- Integrated view for CISO & SecOps personas to review enterprise security posture, including IoT solutions.
- Holistic view of IoT solution security posture for DevOps and IoT solution managers to review and manage day to day security status

IoT Central


IoT device
Gateway device
IoT Edge device
IoT Central
Power BI
PowerApps
PowerApps
Web and mobile apps

Common Architectures

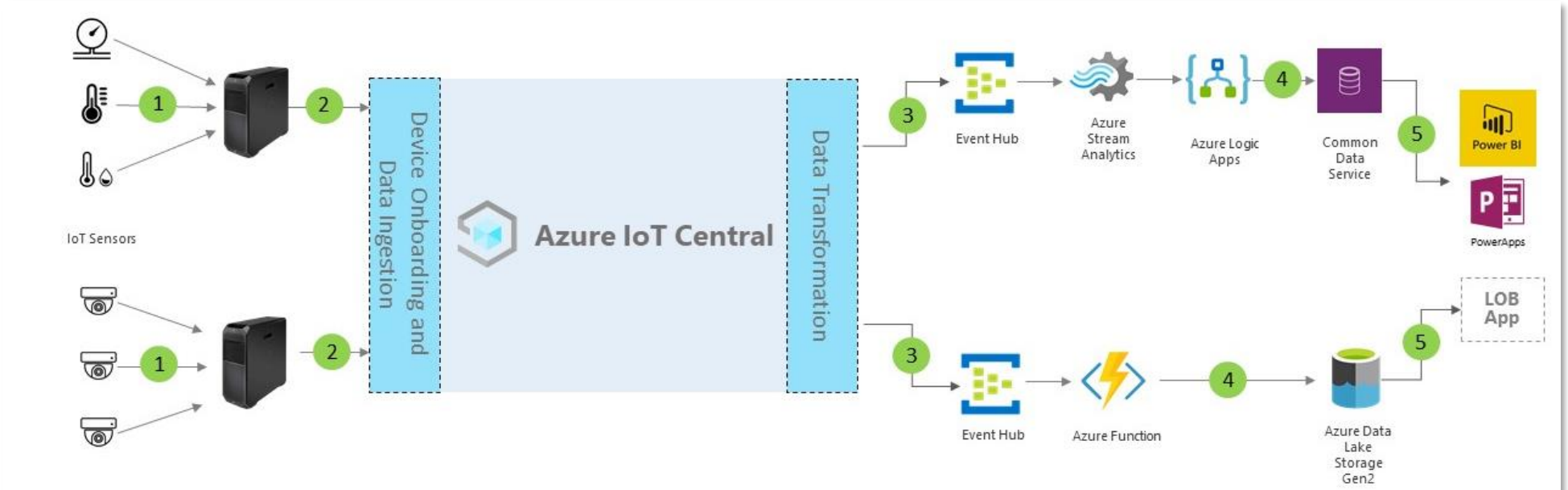
Telemetry from devices or sensors is sent to a gateway device or directly to IoT Central

Data is sent, aggregated and analyzed in IoT Central

Data is routed to other Azure services for manipulation – storage, reformatting, integration to business workflows and applications, etc.

Azure services like ASA or Azure Functions can be used to reformat data streams and send them to storage accounts

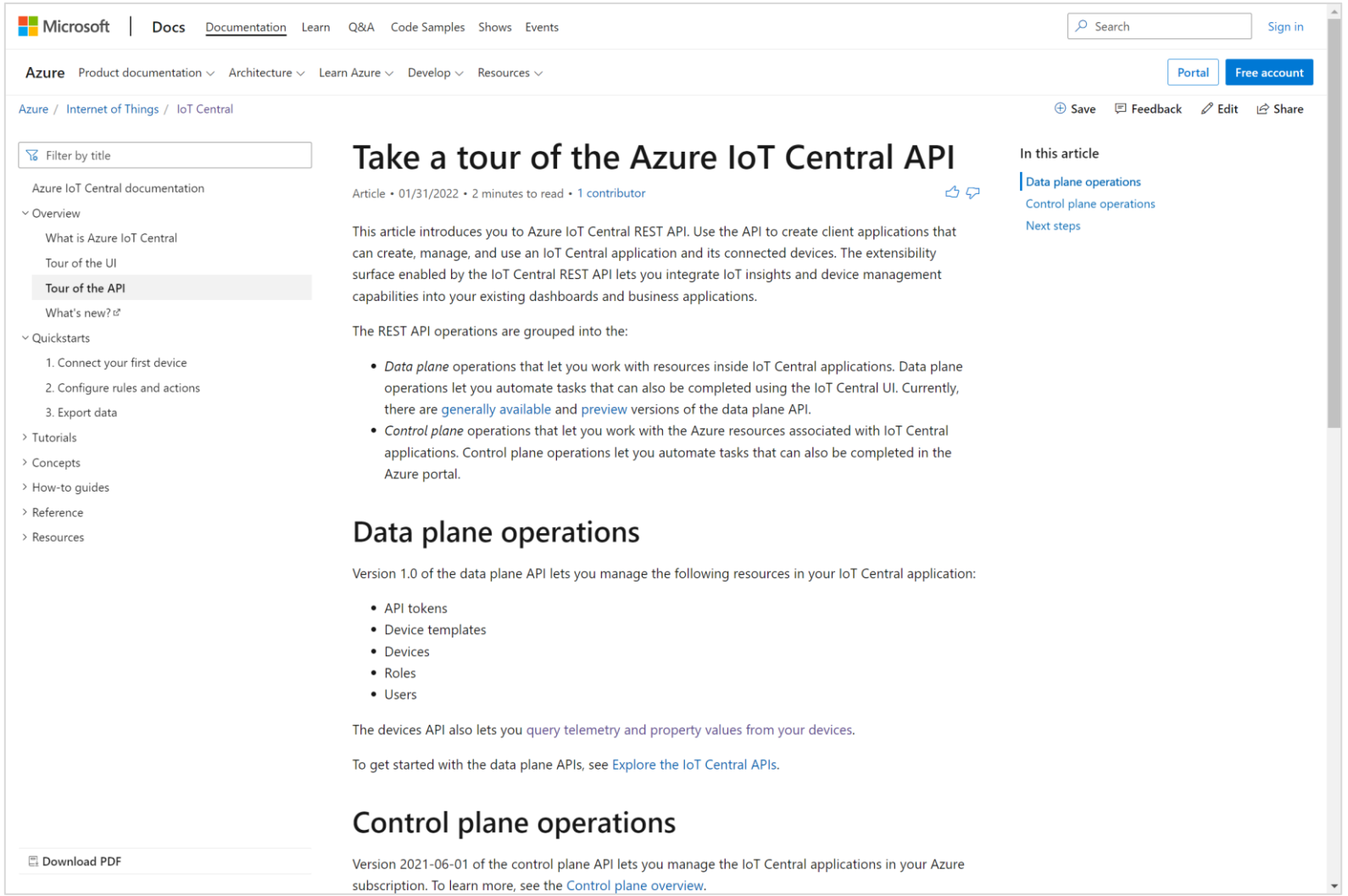
Logic apps can be used to power business applications



1. Set of IoT sensors sending telemetry data to a gateway device
2. Gateway devices sending telemetry and aggregated insights to IoT Central
3. Data is routed to the desired Azure service for manipulation
4. Azure services like ASA or Azure Functions can be leveraged to reformat data streams and send to the desired storage accounts
5. End user business applications can read from the storage accounts and power various business workflows

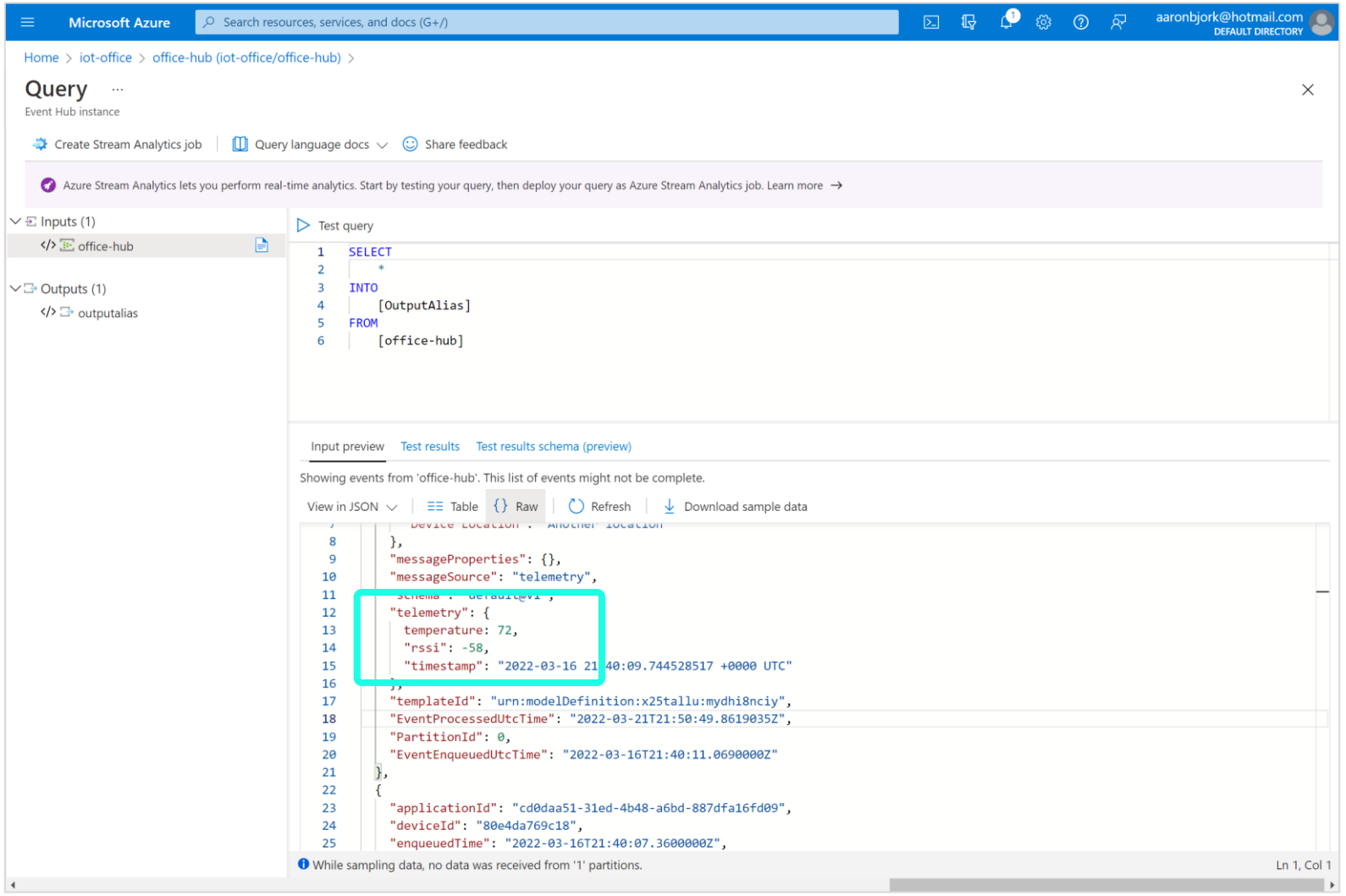
REST API

- Interact with devices programmatically using the IoT Central REST API
- Query up to 30 days of IoT data and telemetry



Data Export

- Continually export data from IoT Central for use in “downstream” applications
- Enrich the exported data with key-value pair meta data
- Export to Blob storage, Service Bus, Event Hubs, Azure Data Explorer, Azure Synapse, or a custom Webhook endpoint
- Support for multiple export destinations per application



Explore IoT Central Yourself!

Configure dashboard

Set a rule on device telemetry

Run a Job

Data Explorer

Configure dashboard

- Create and manage Azure IoT Central dashboards | Microsoft Docs
- Update links to point to Slim's doc: Azure IoT Central B-U585I-IOT02A Notification Setup (st.com)

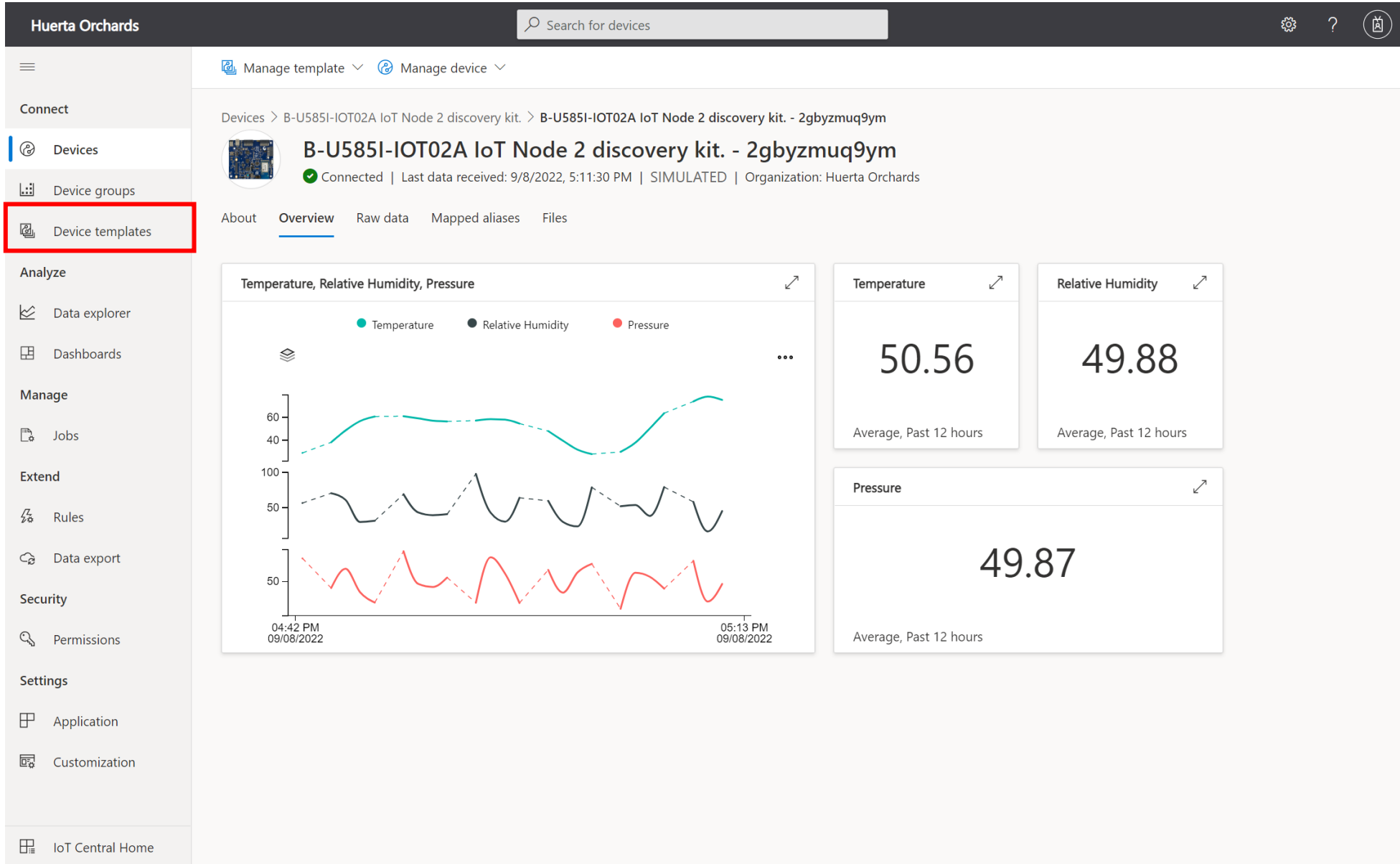
Goals

Add a tile showing last 100 values of temperature

Configure device dashboard

Goals

- Add a tile for last 100 temperature values



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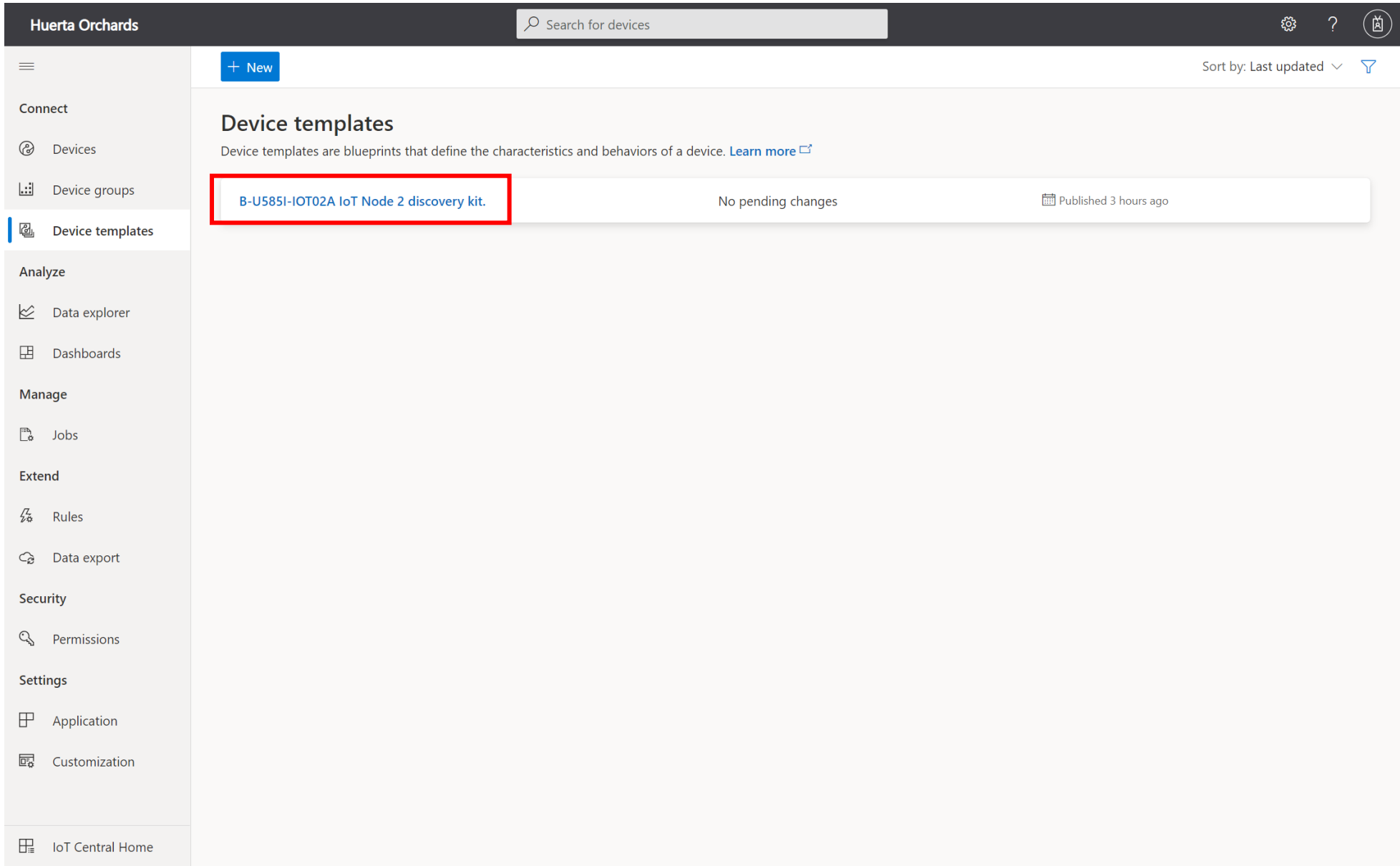

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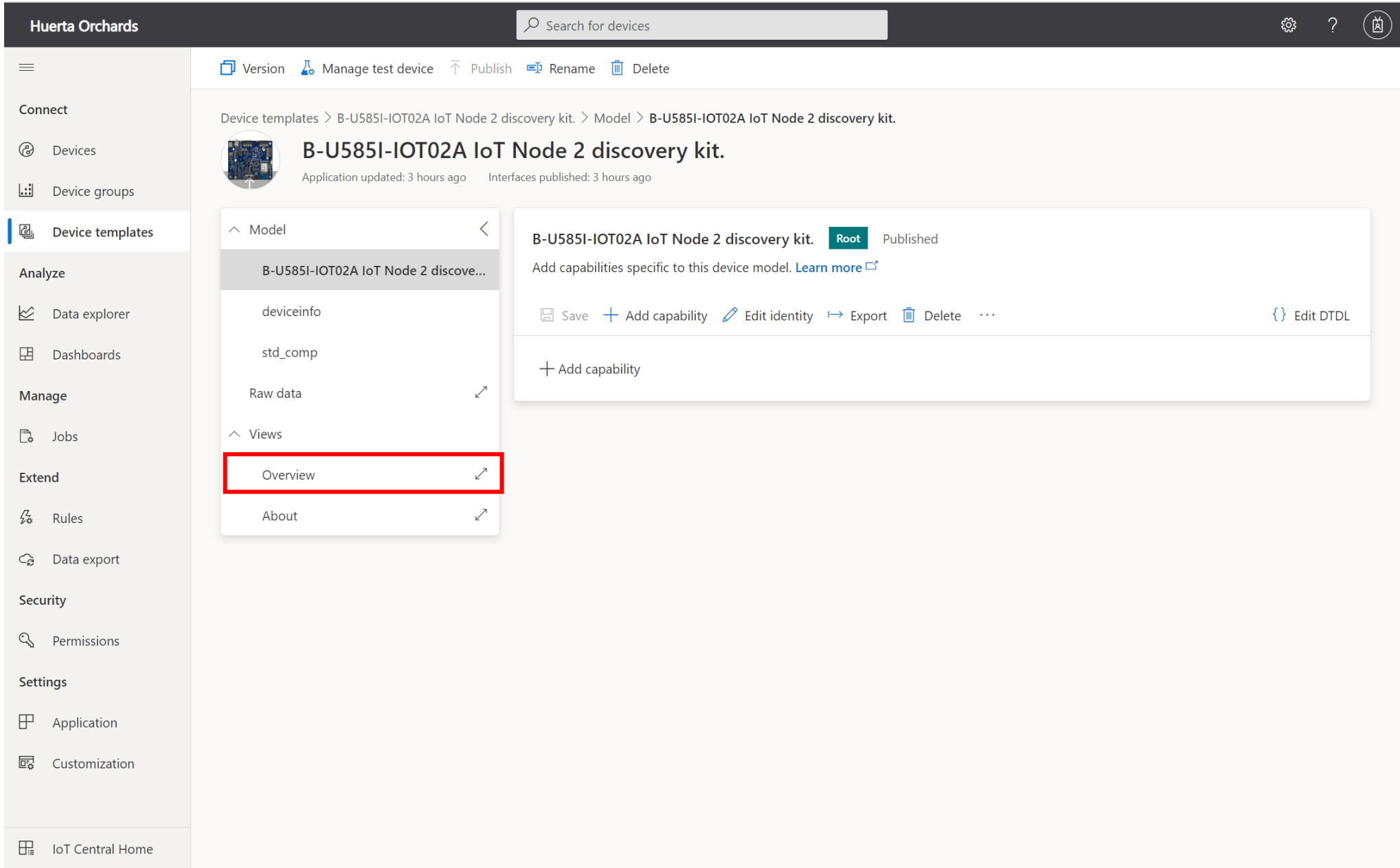

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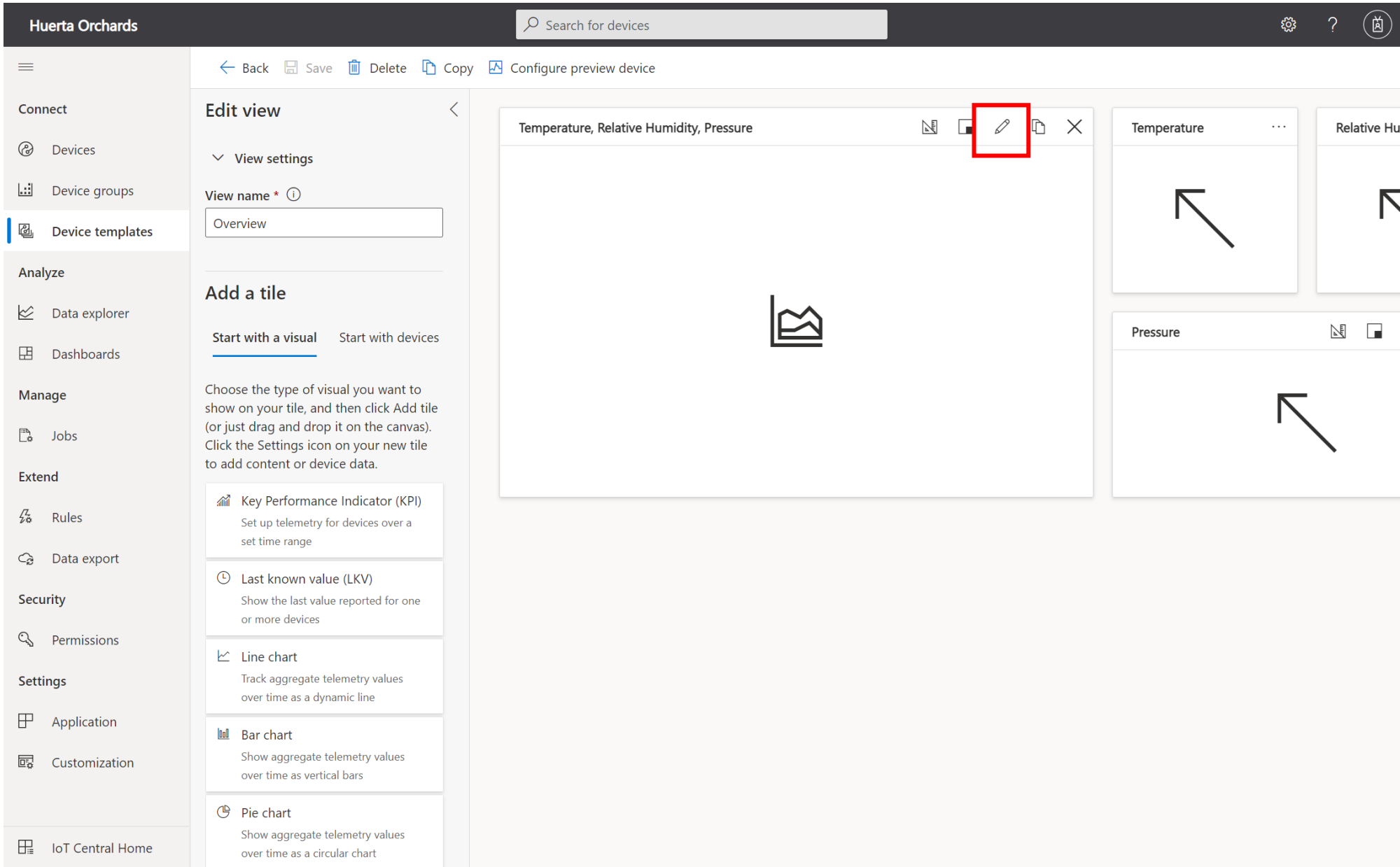

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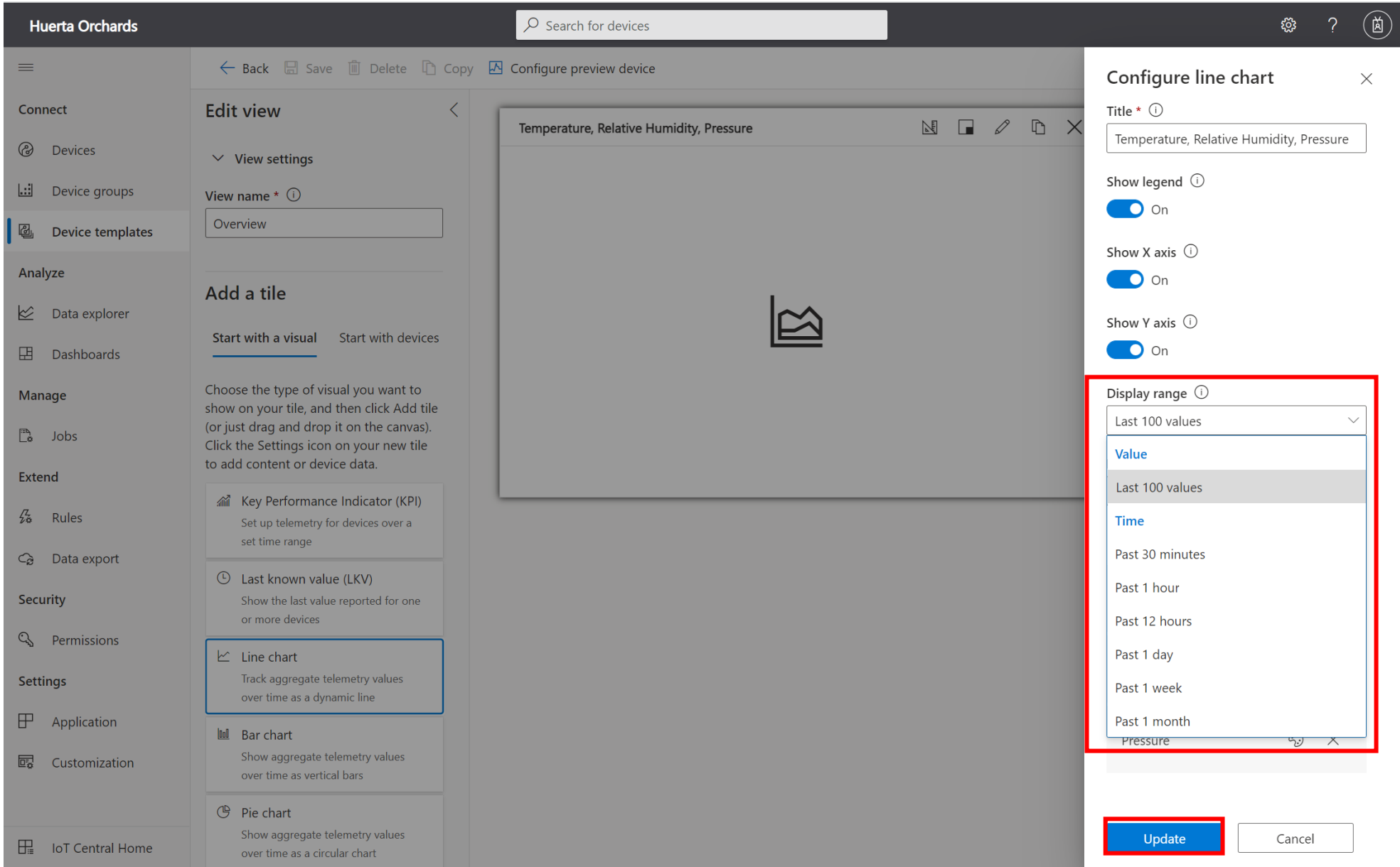

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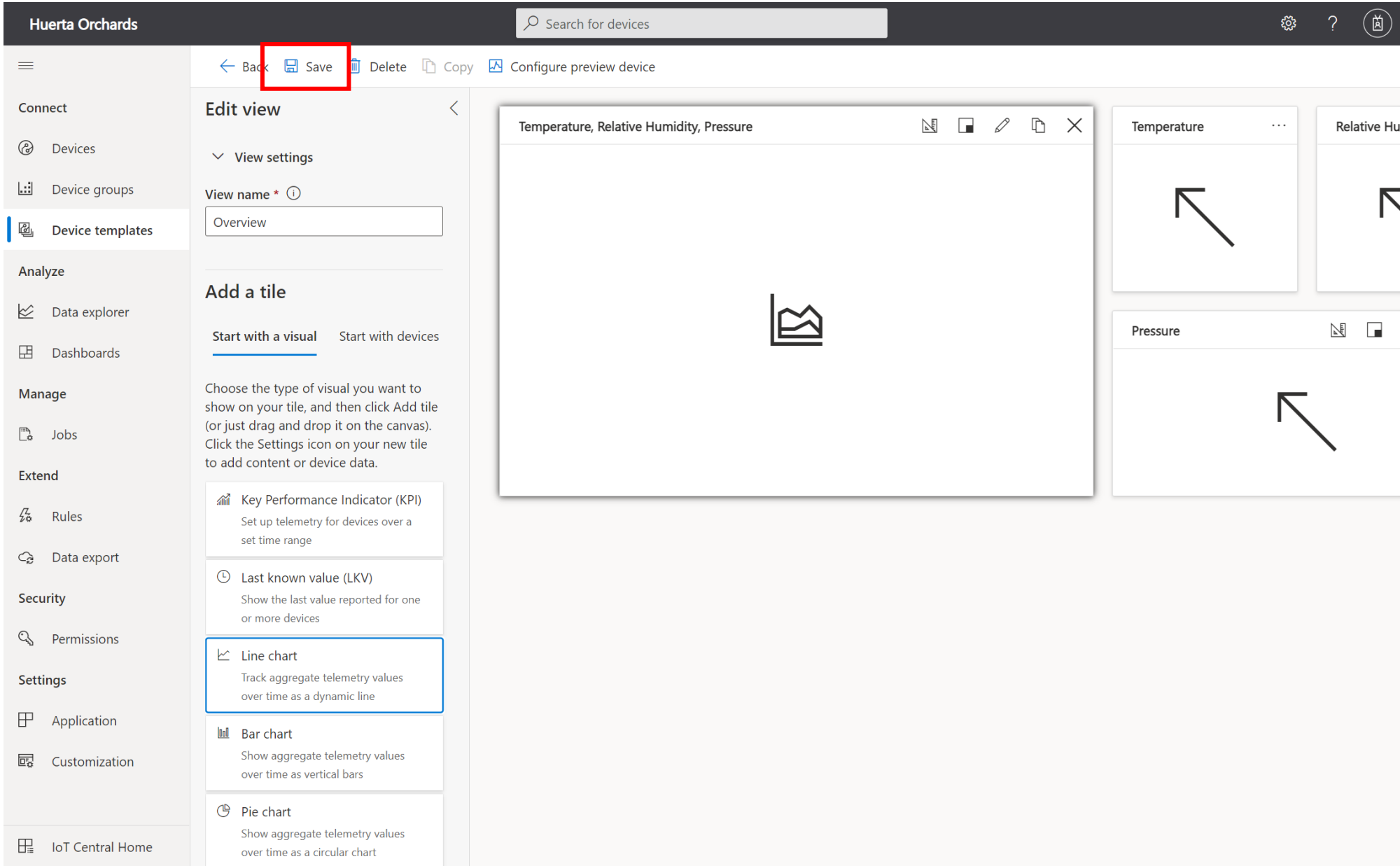

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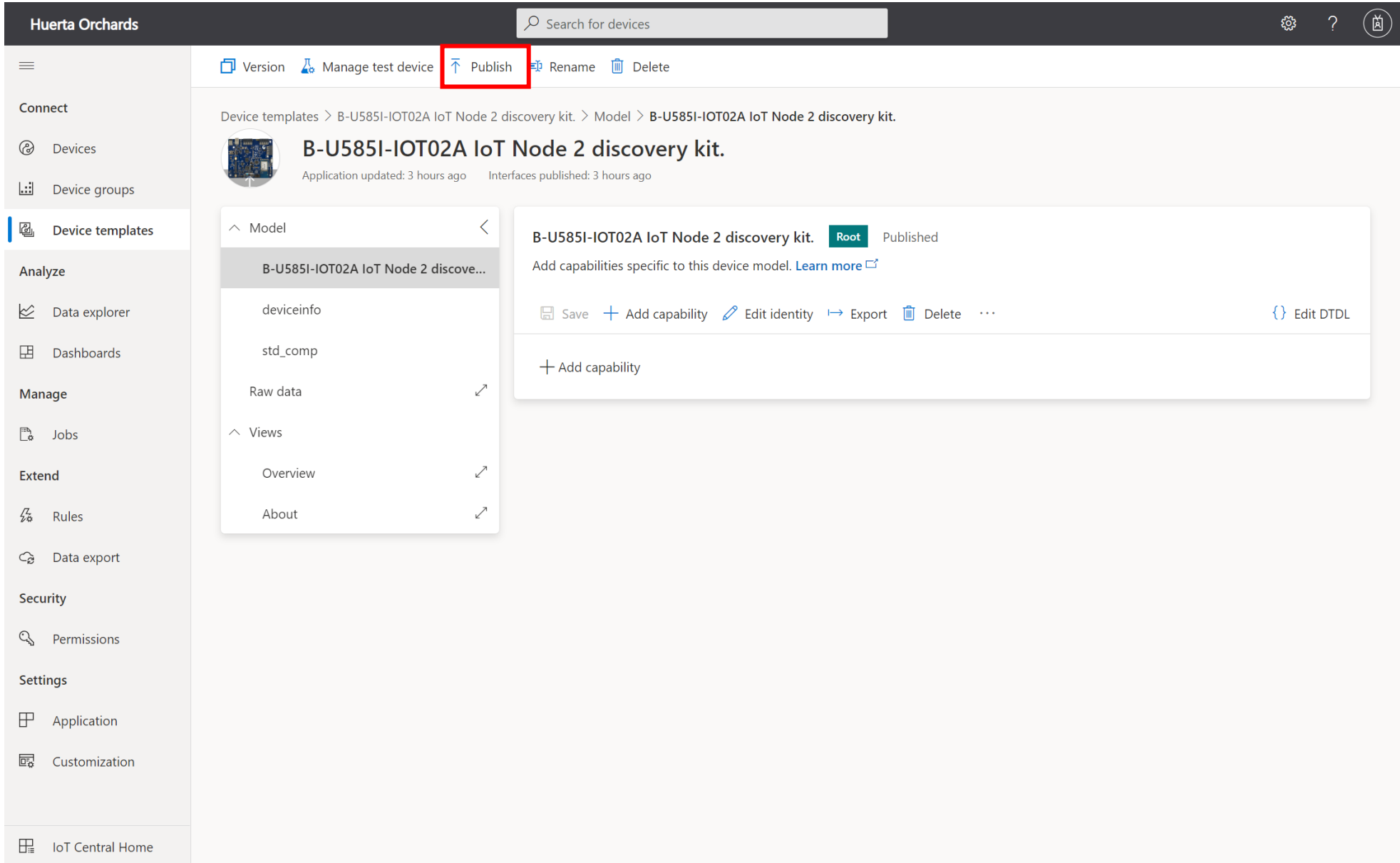

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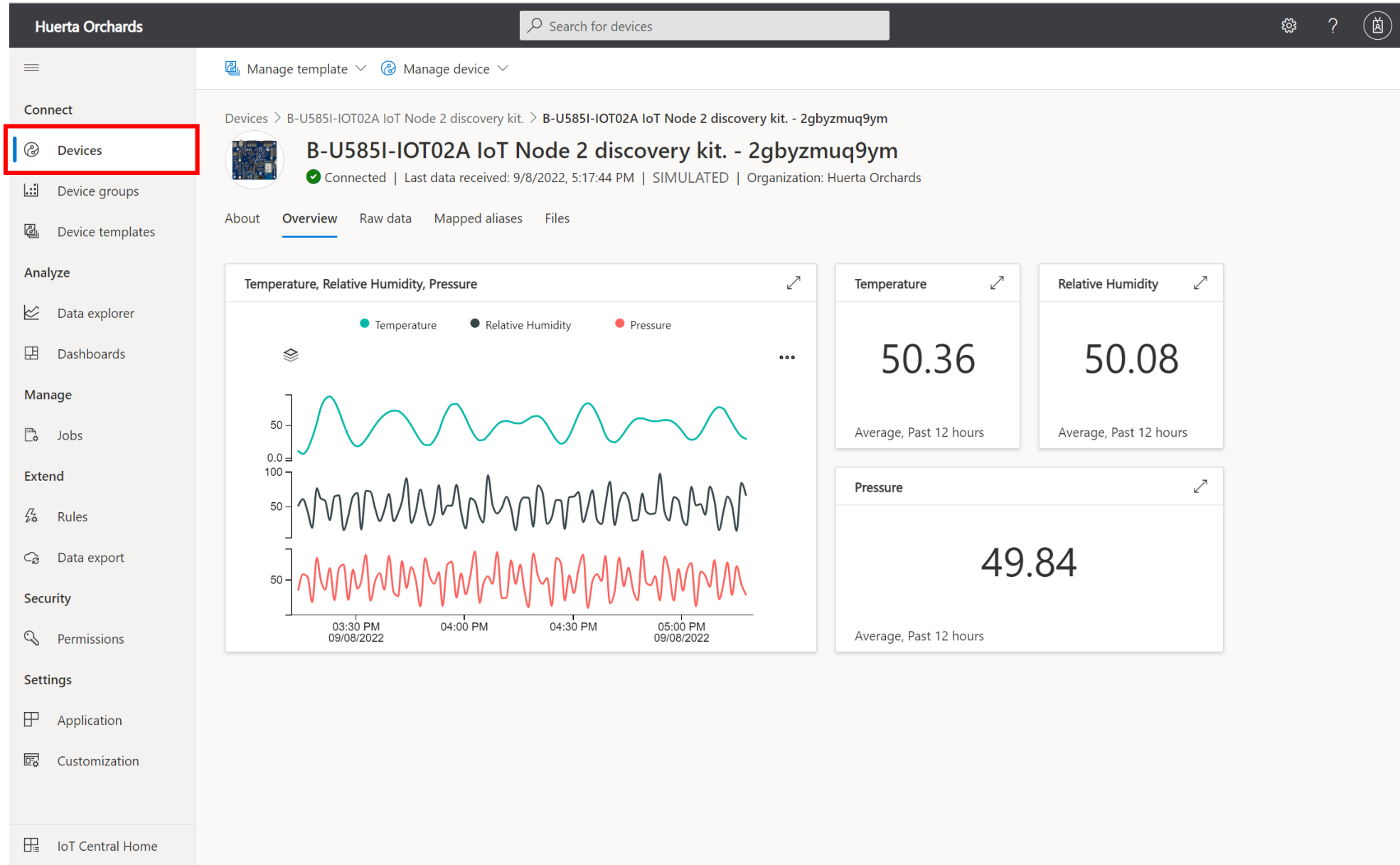


Dashboards

- A dashboard is a helpful way to look at what the sensors on a device are sending.
- A good way to monitor device health
- Can also be configured at a device type level

Set a Rule

[Tutorial - Create and manage rules in your Azure IoT Central application | Microsoft Docs]

Link to ST Doc

Time check

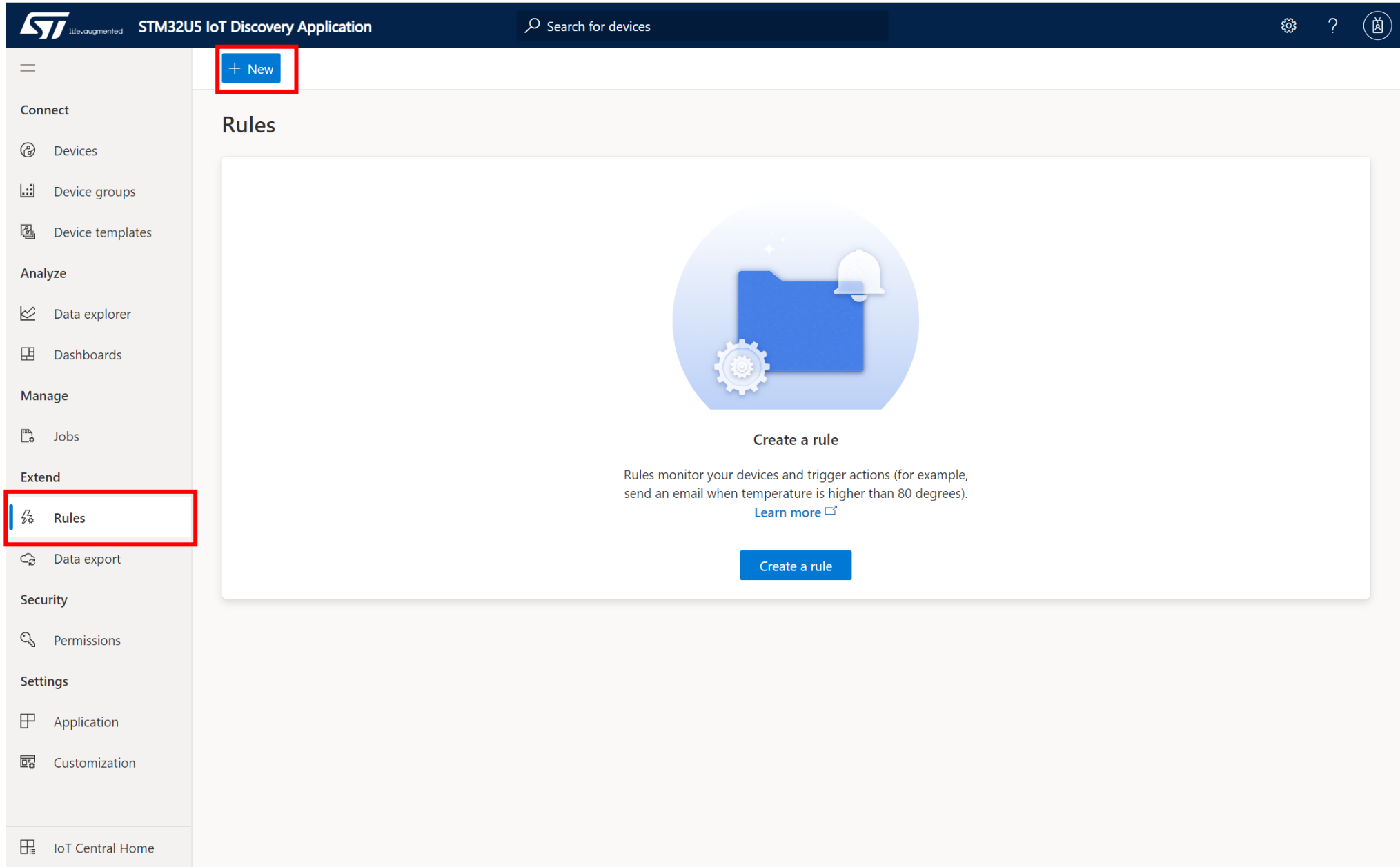
Goal

A rule that fires when the temperature is above 70 degrees Fahrenheit or below 32 degrees Fahrenheit

Set a Rule

Goal

A rule that fires when the temperature is above 70 degrees Fahrenheit



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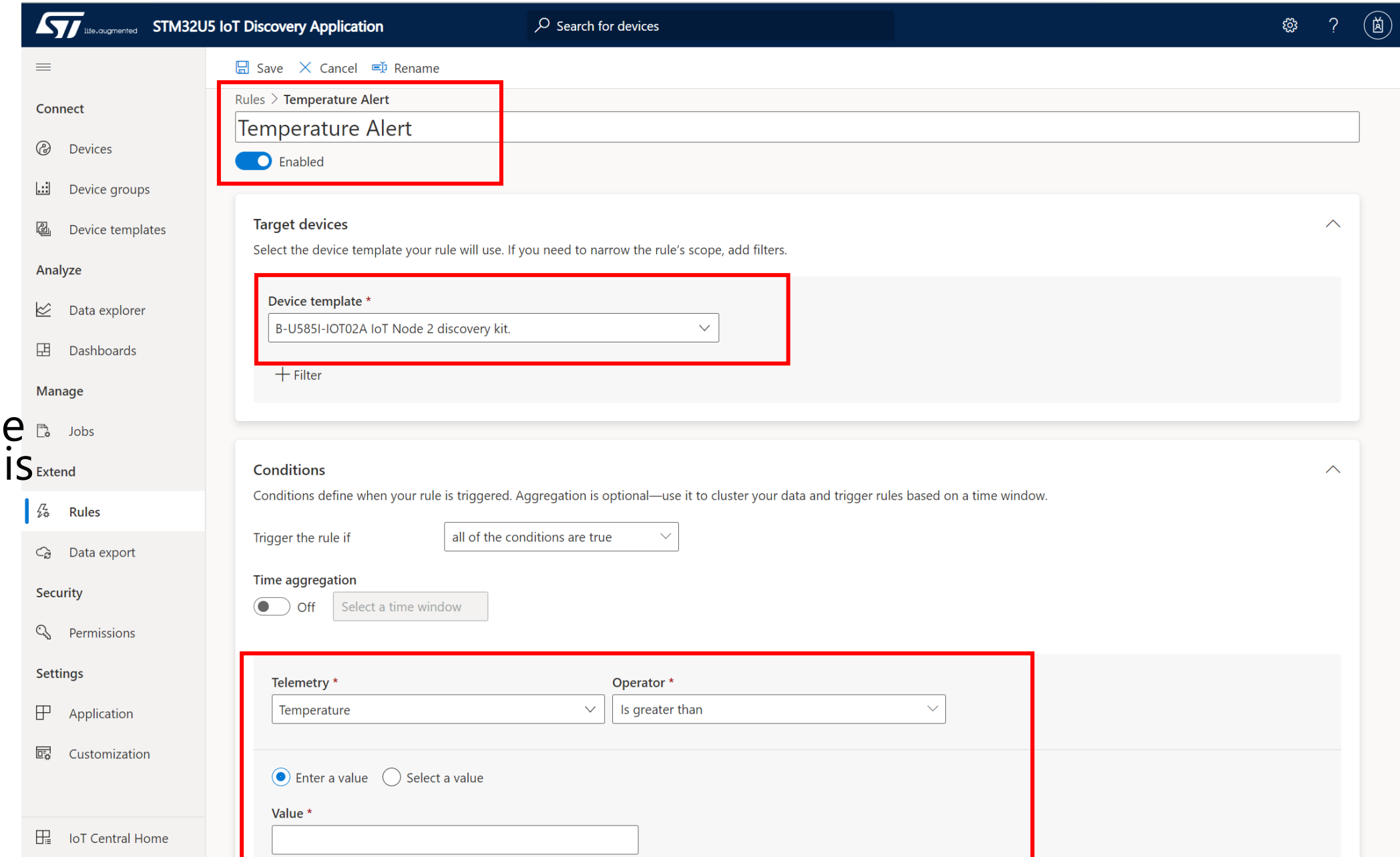

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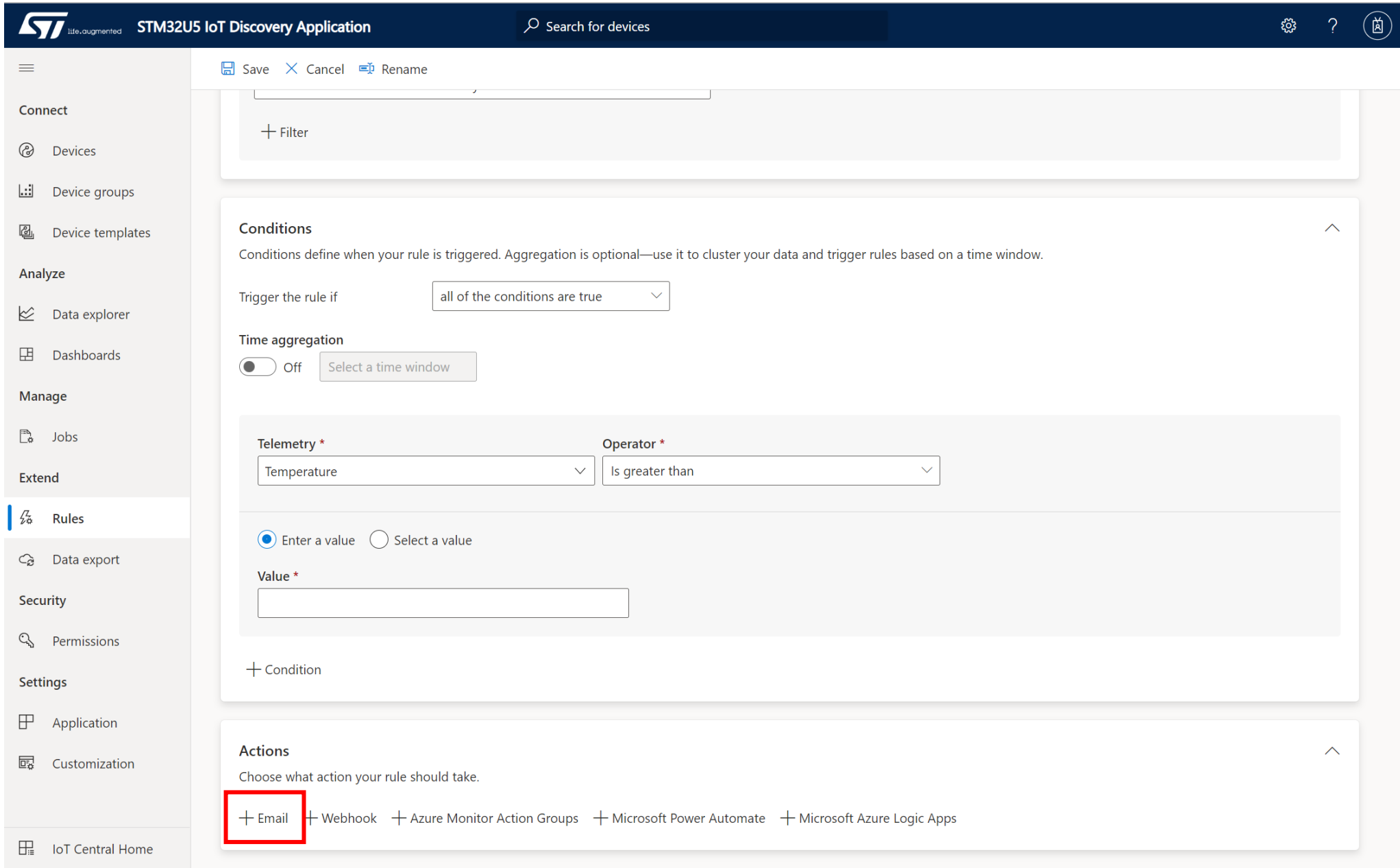

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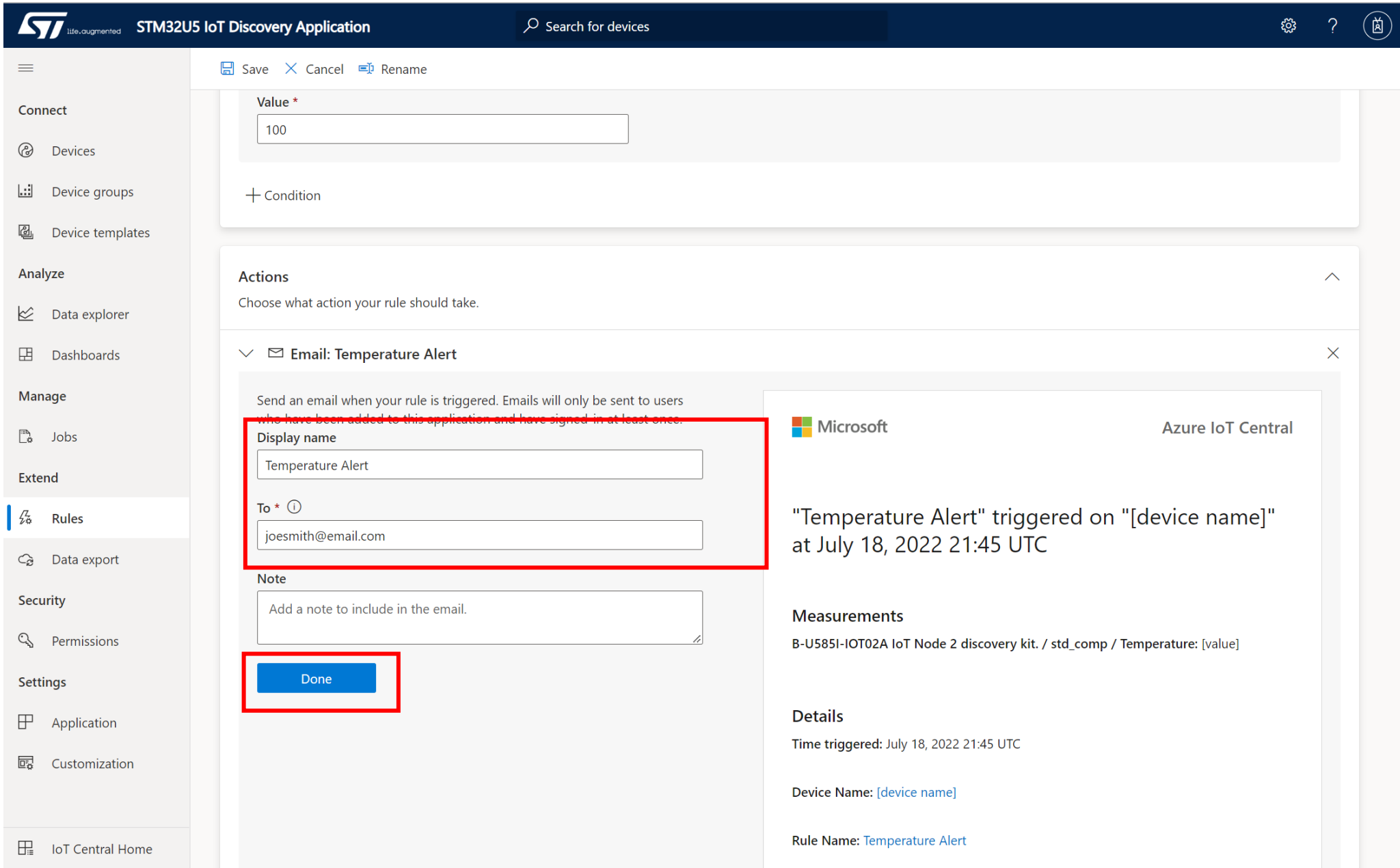

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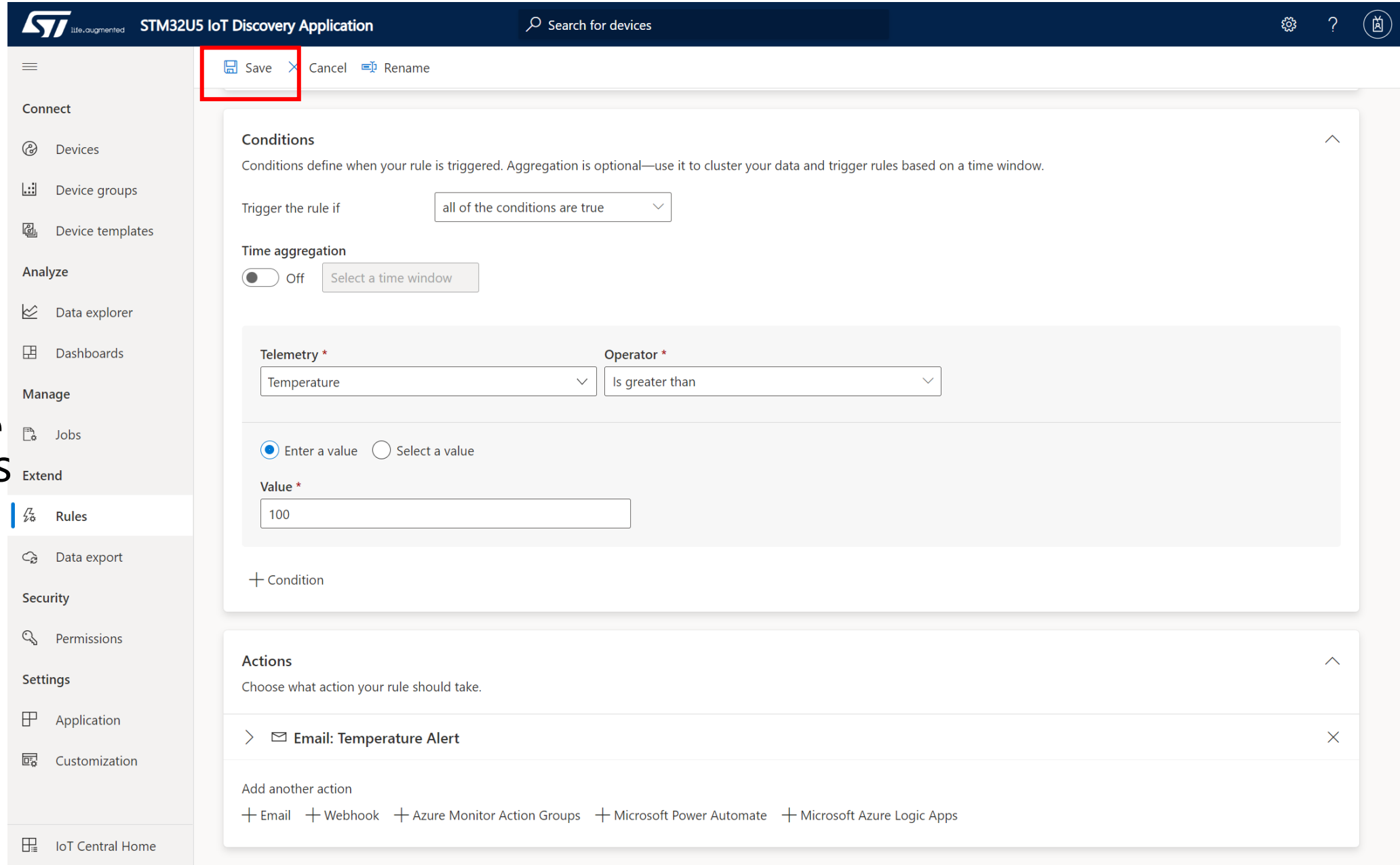


Rules

- Rules can alert when a device is sending data that is out of the ordinary
- The conditions can be configured to your specified parameters
- Can be applied at the device type level

Run a Job

- Create and run jobs in your Azure IoT Central application | Microsoft Docs

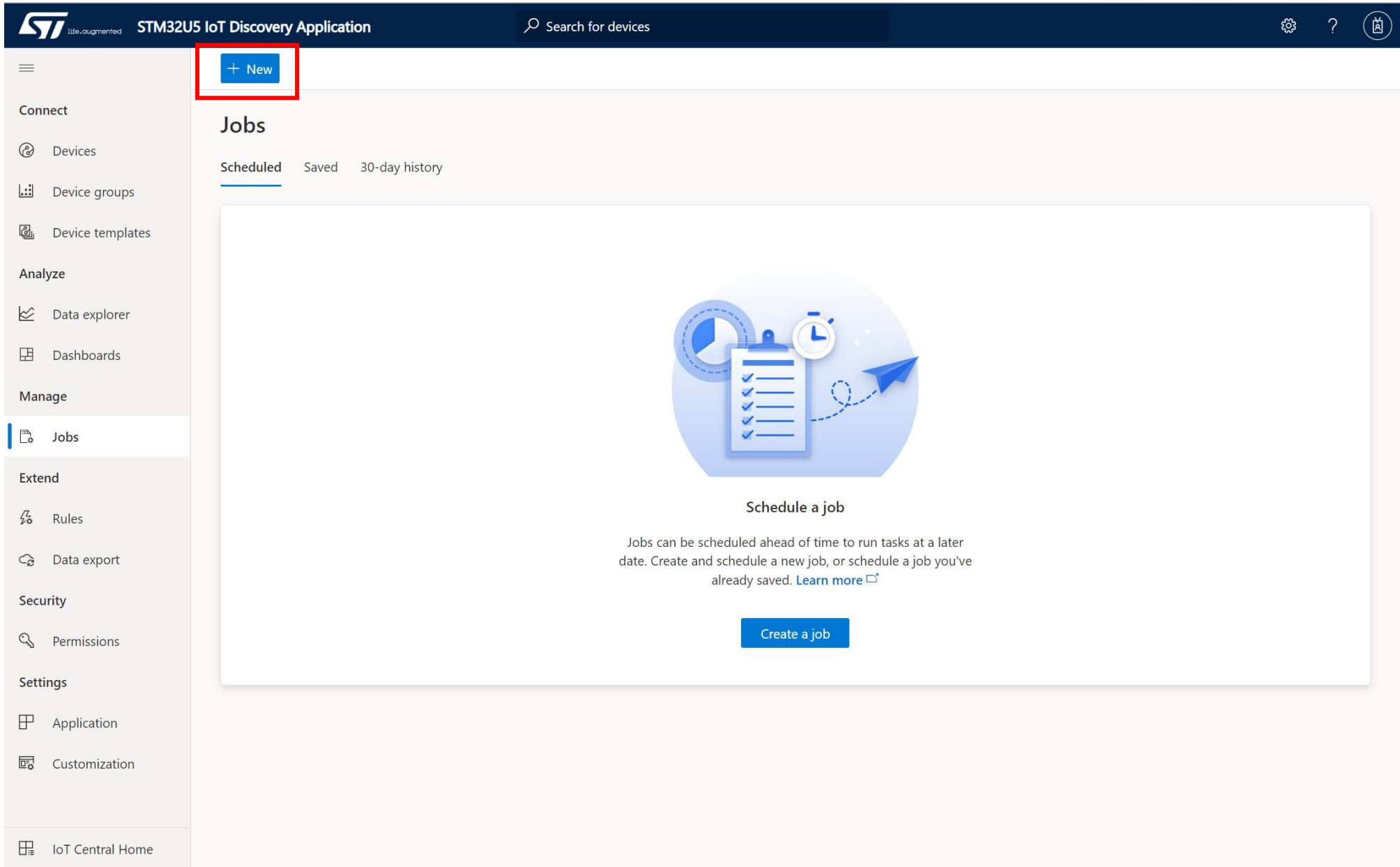
Goal

Schedule a job on the device to restart

Run a Job

Goal

Schedule a job on the device to restart



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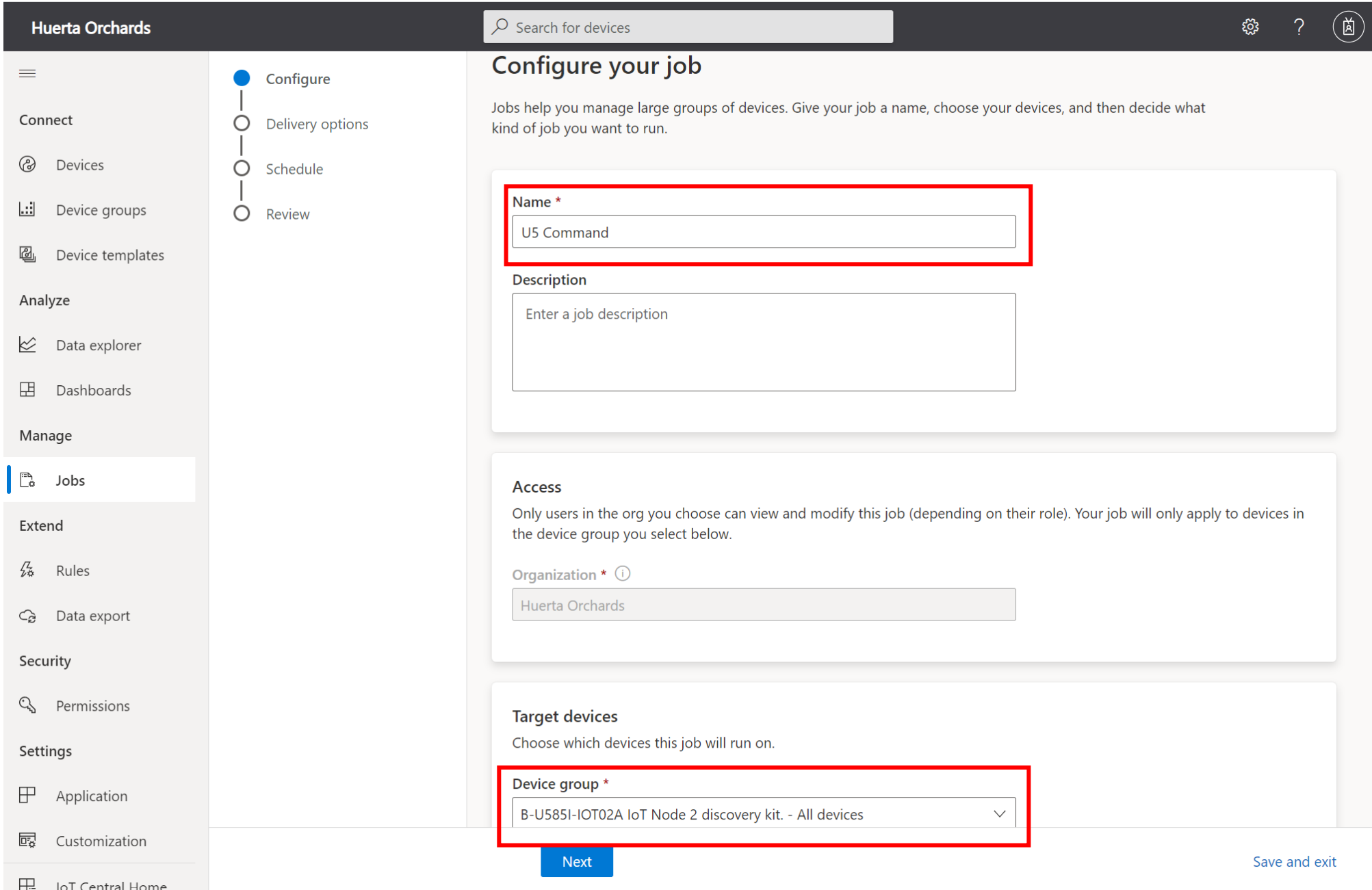

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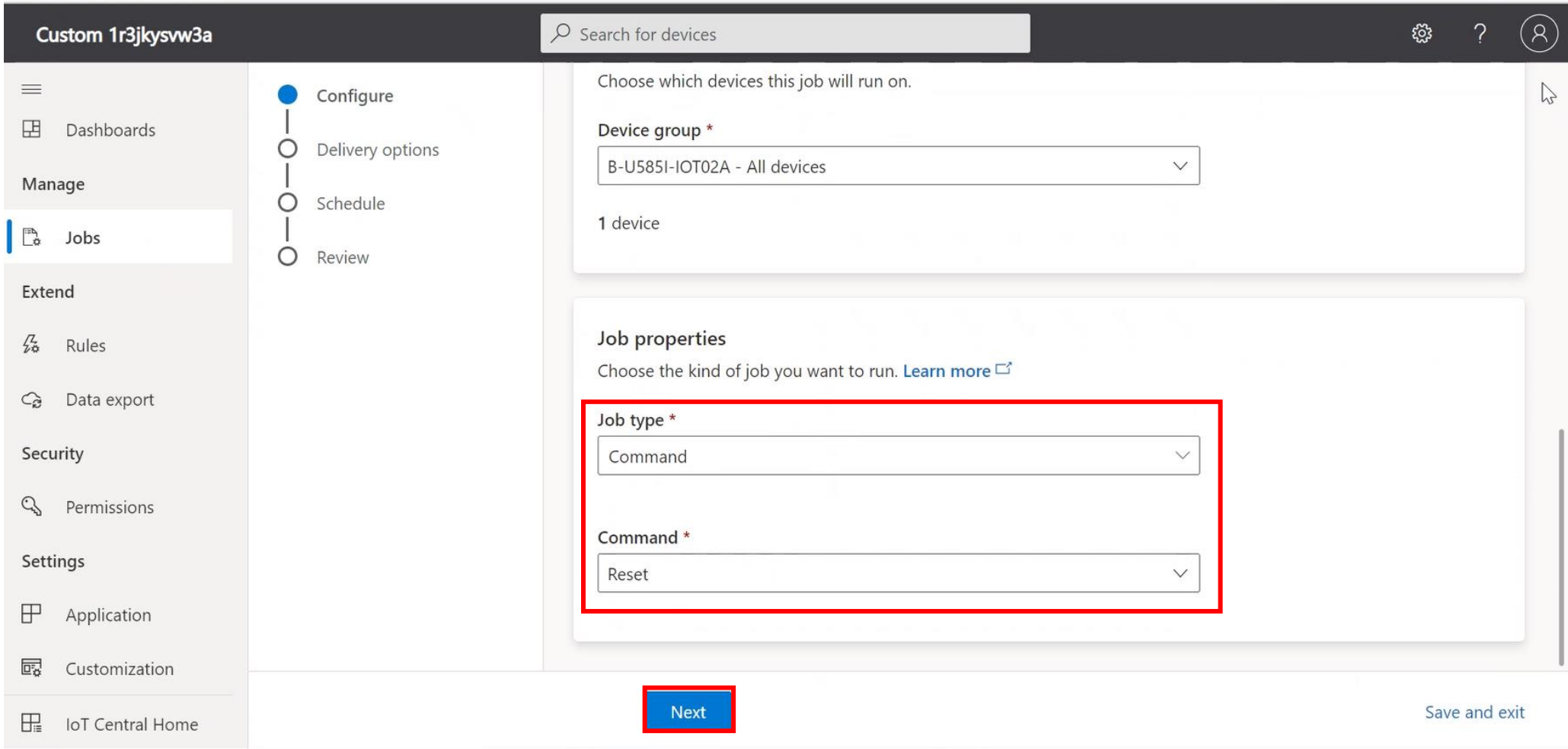

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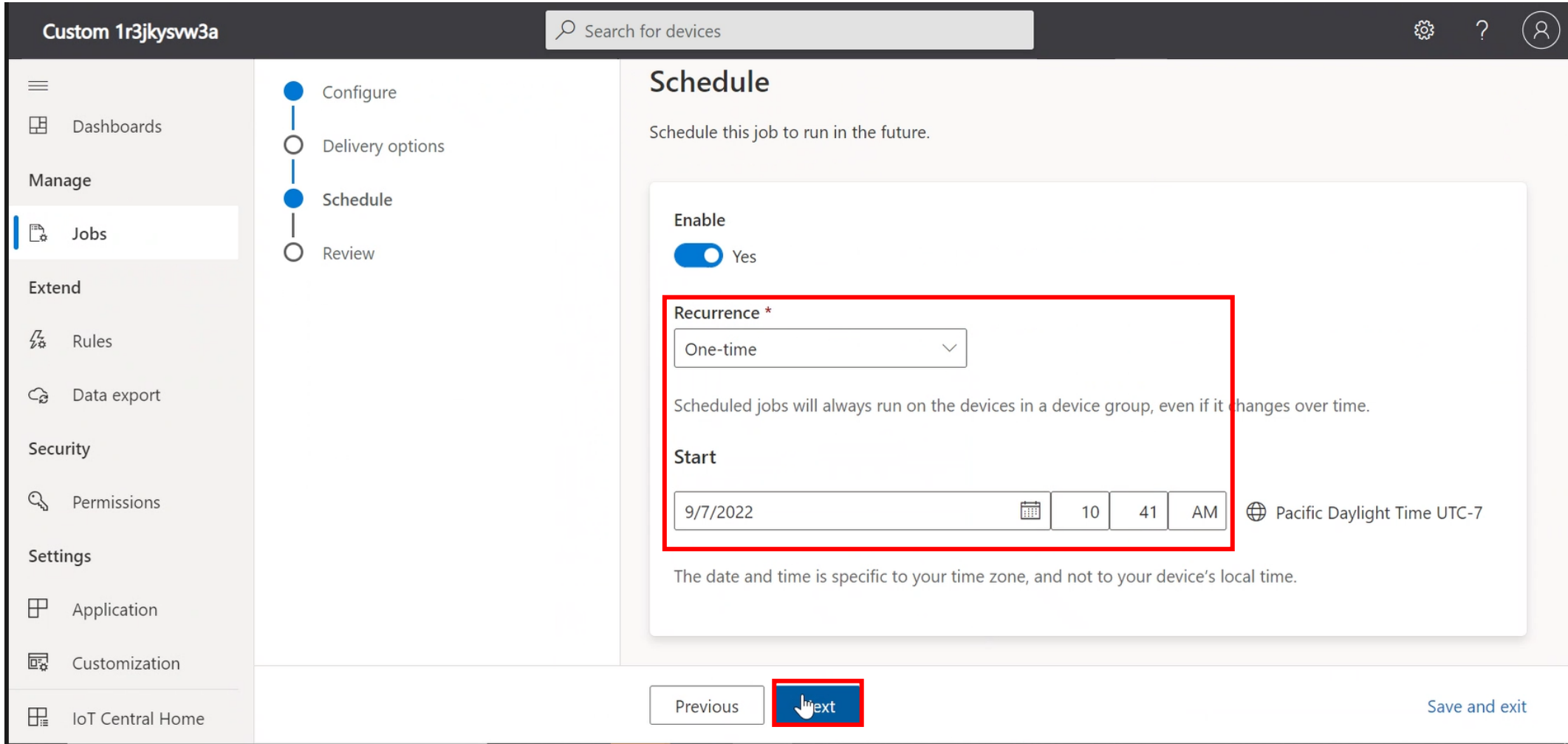

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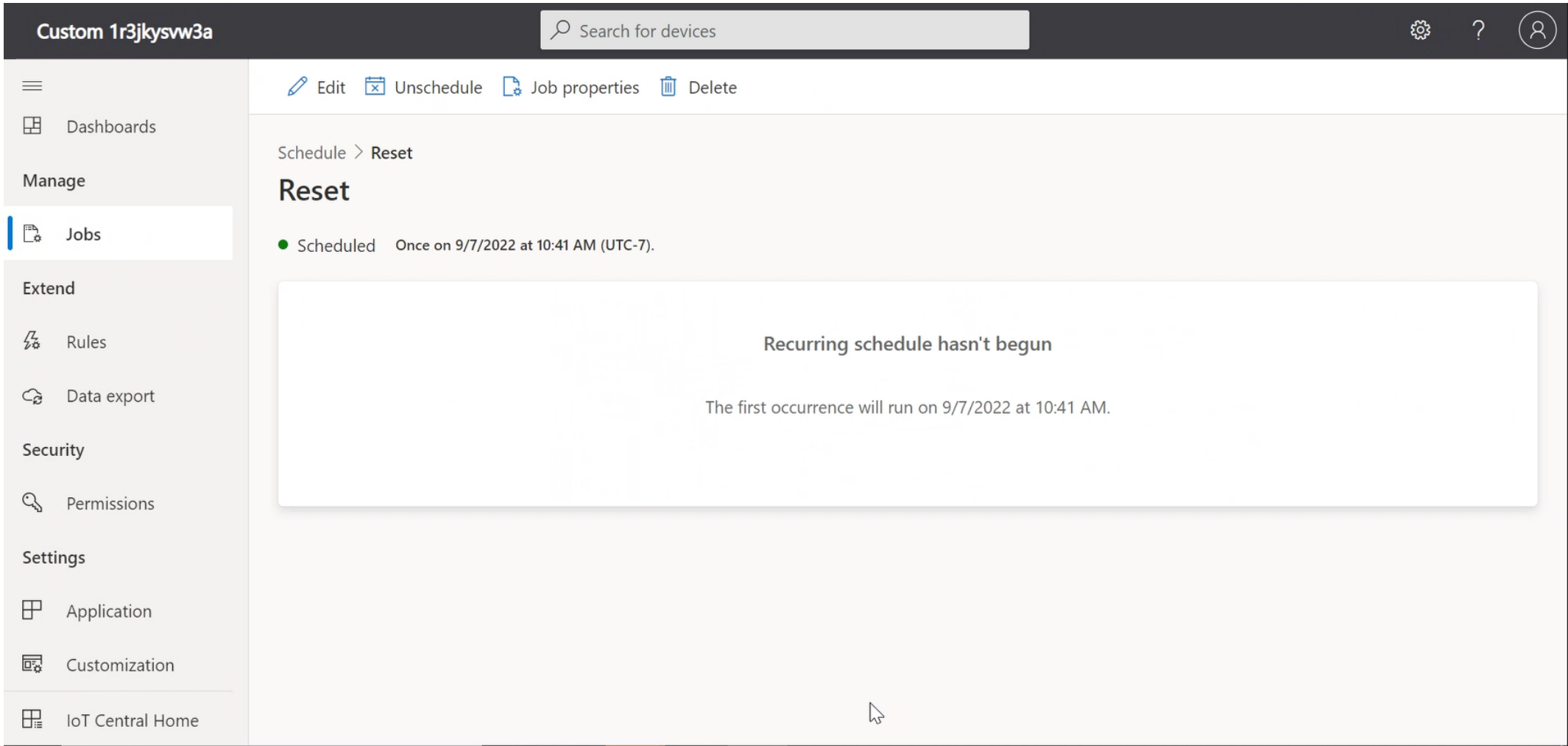

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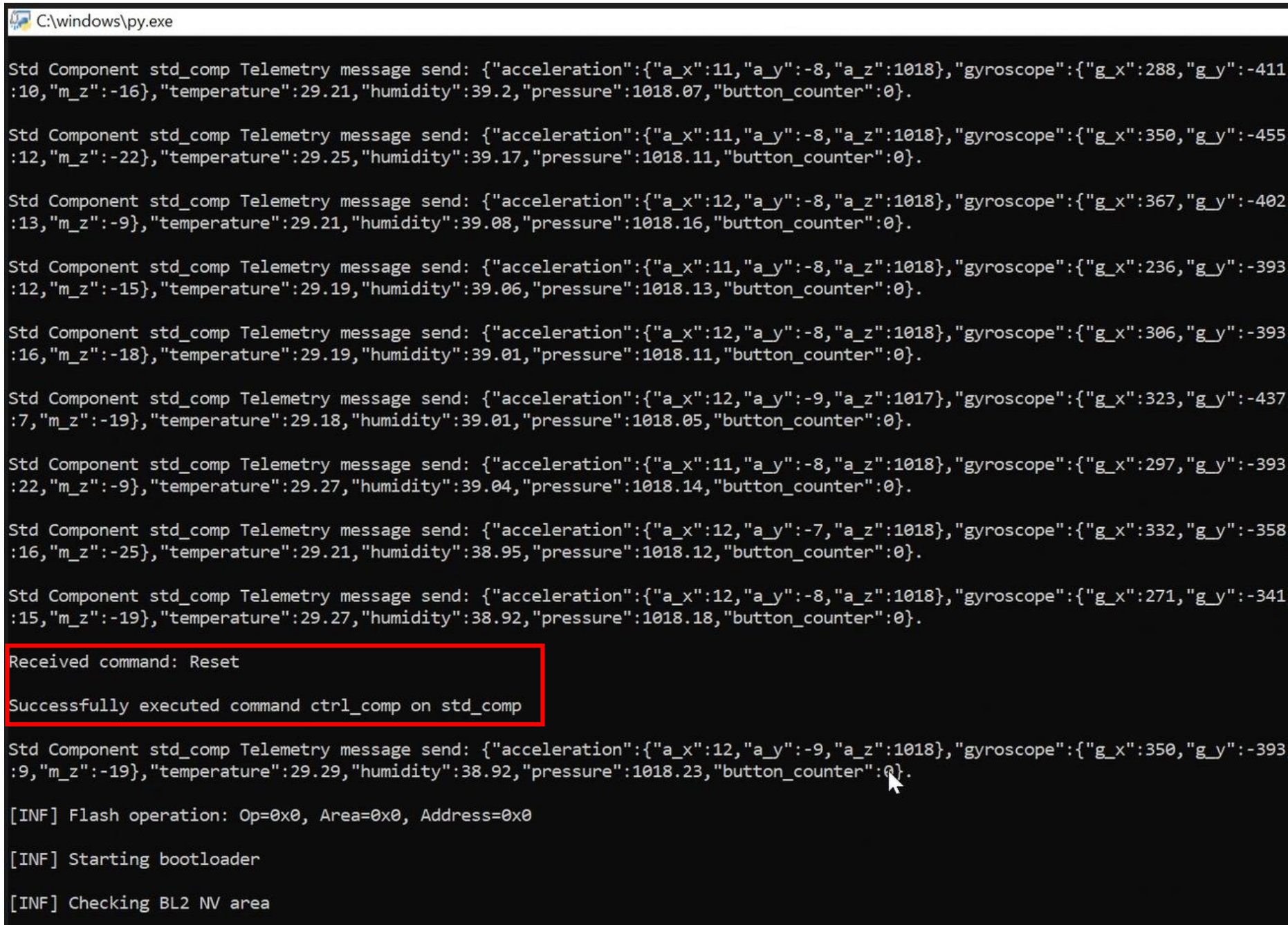

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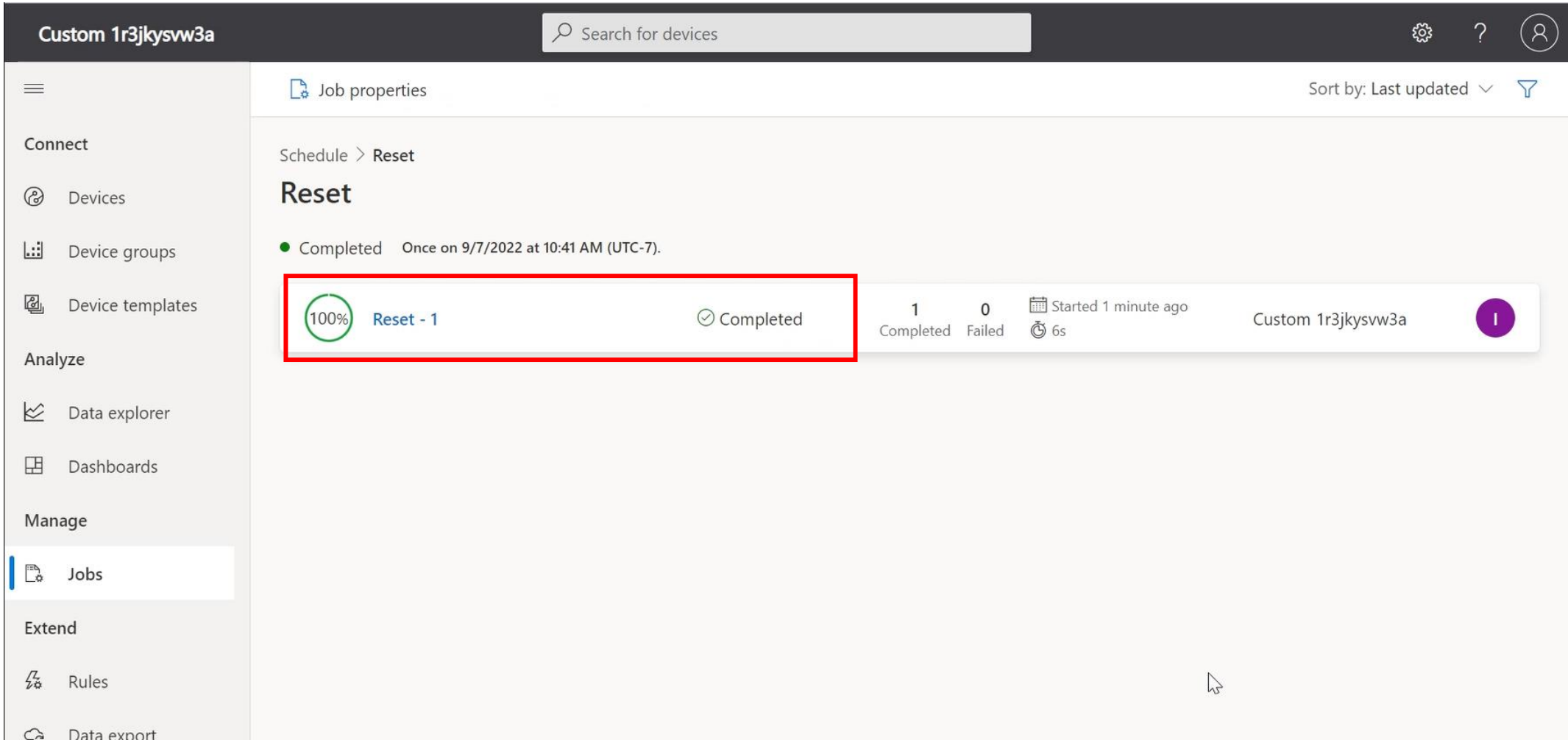

Jobs

- Concept of Jobs

Data Explorer

- Analyze device data in your Azure IoT Central application | Microsoft Docs

Goal

Save a query that shows the maximum temperature in 5 min buckets over the last 30 min

Data Explorer

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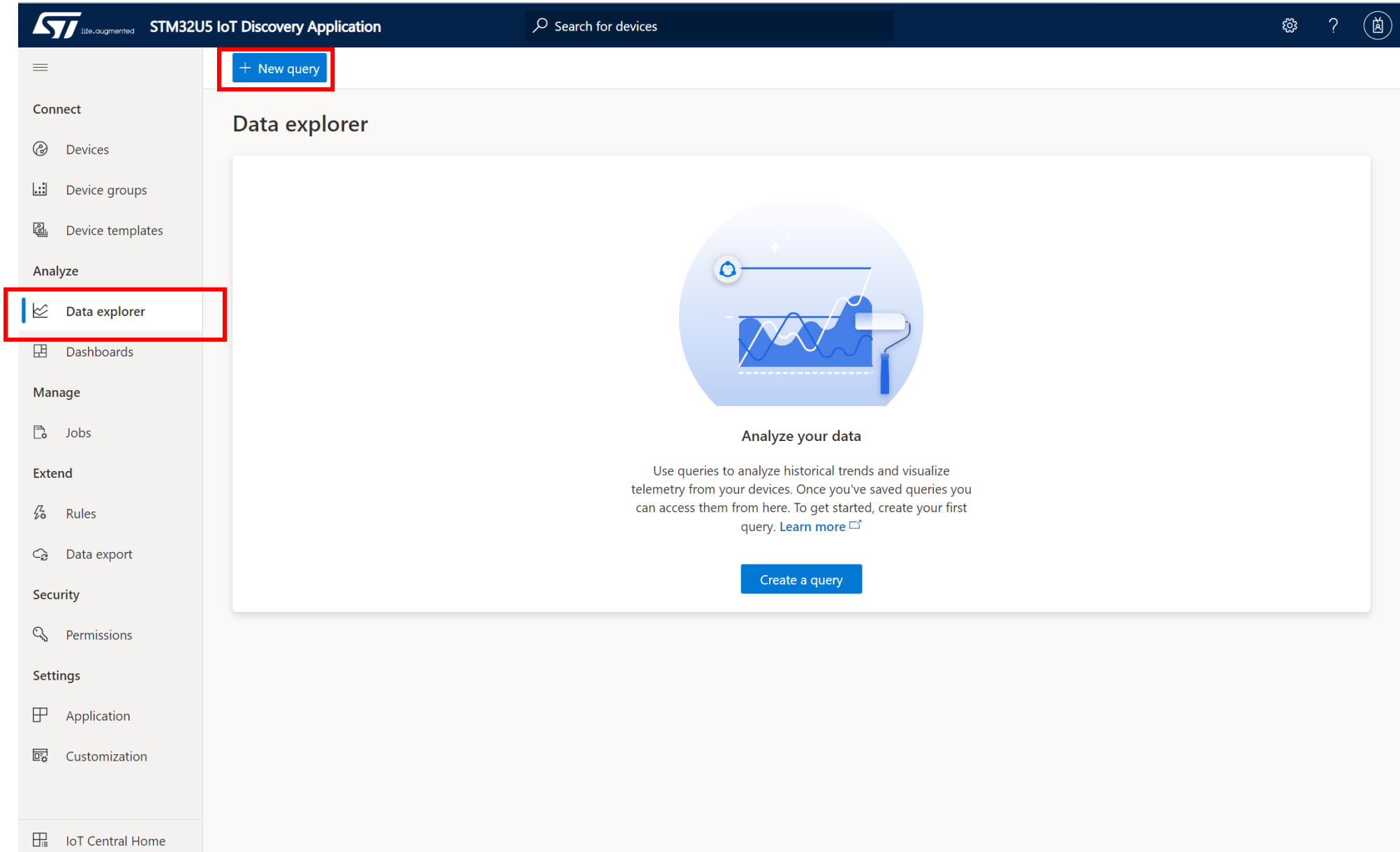

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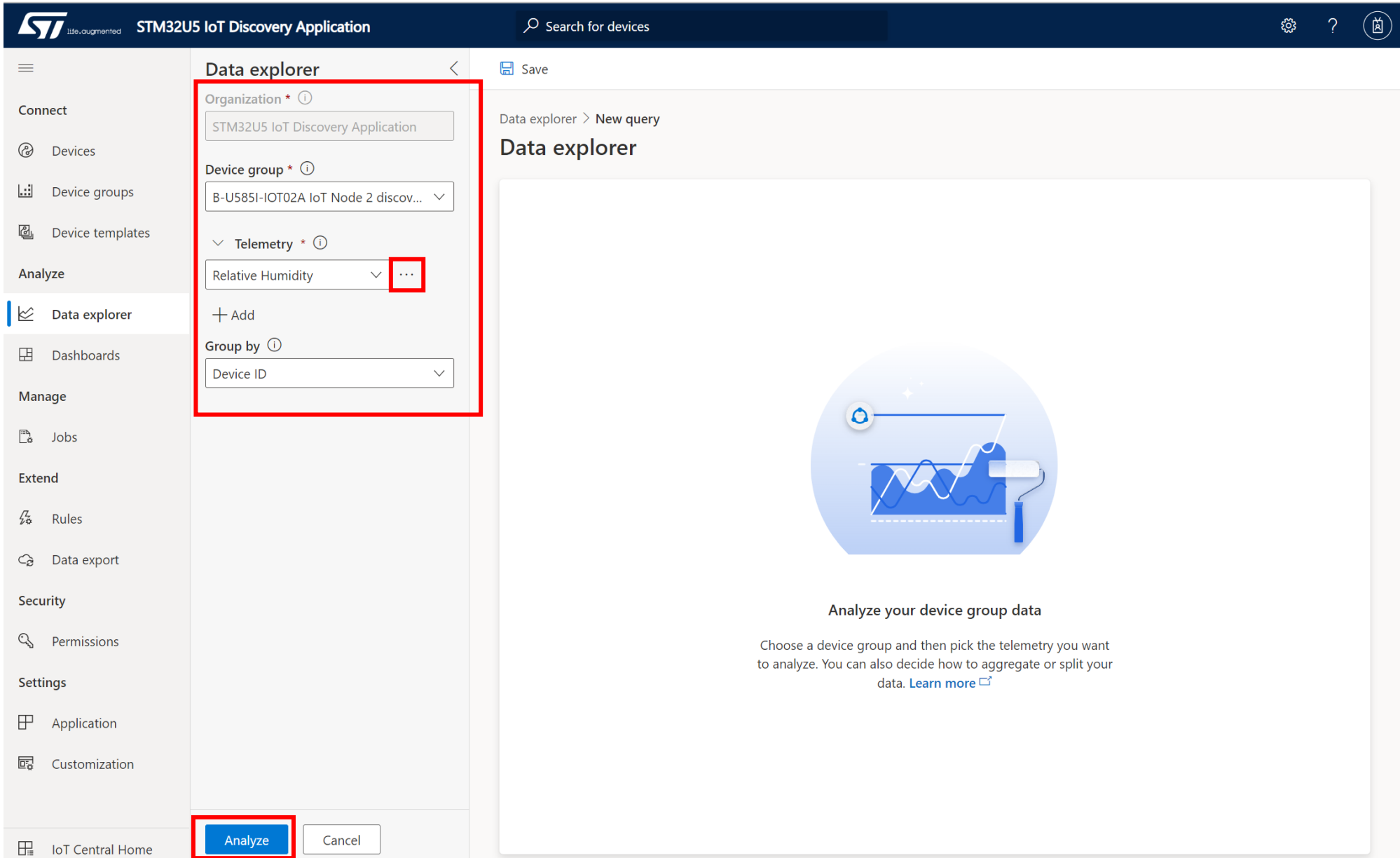

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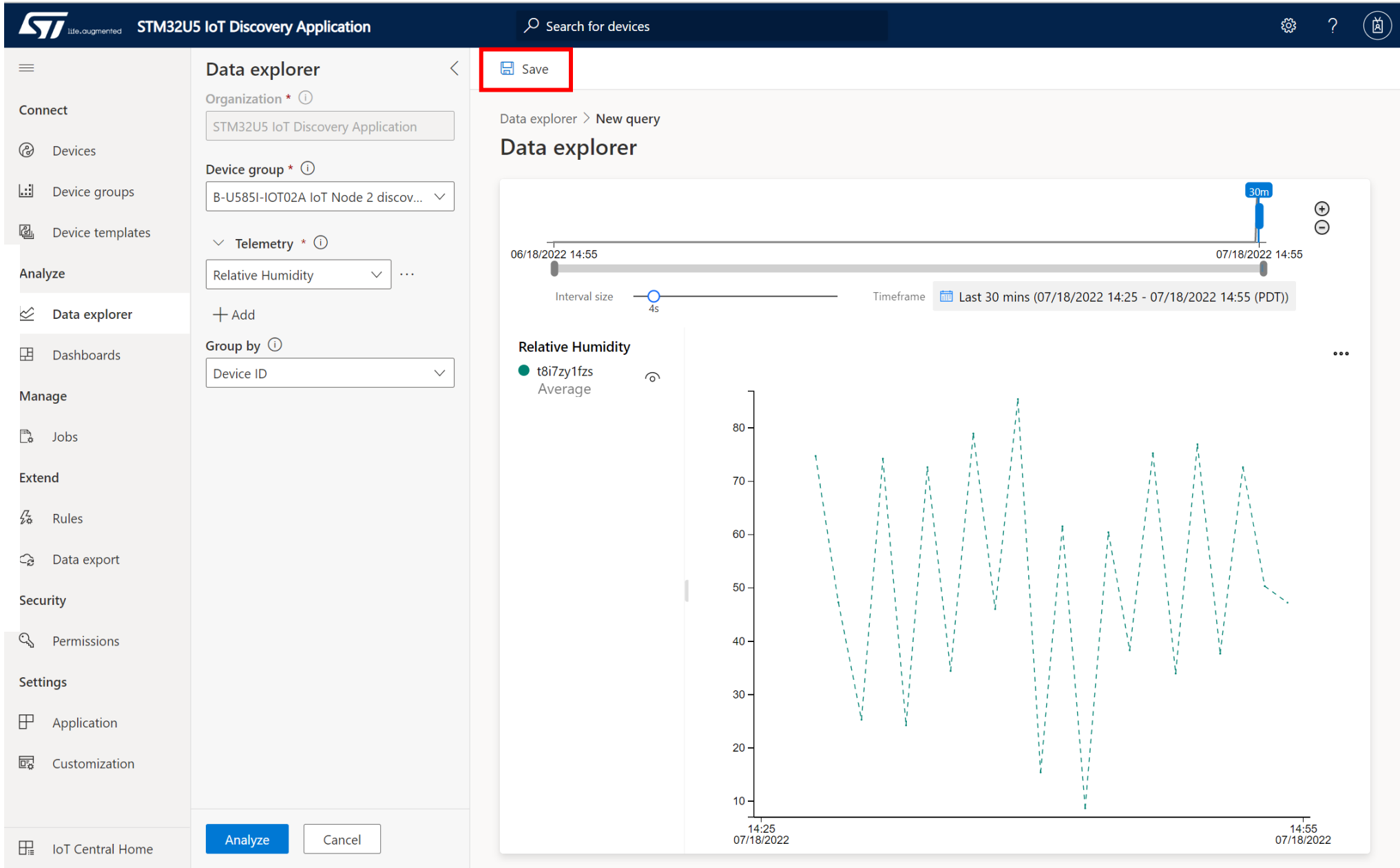

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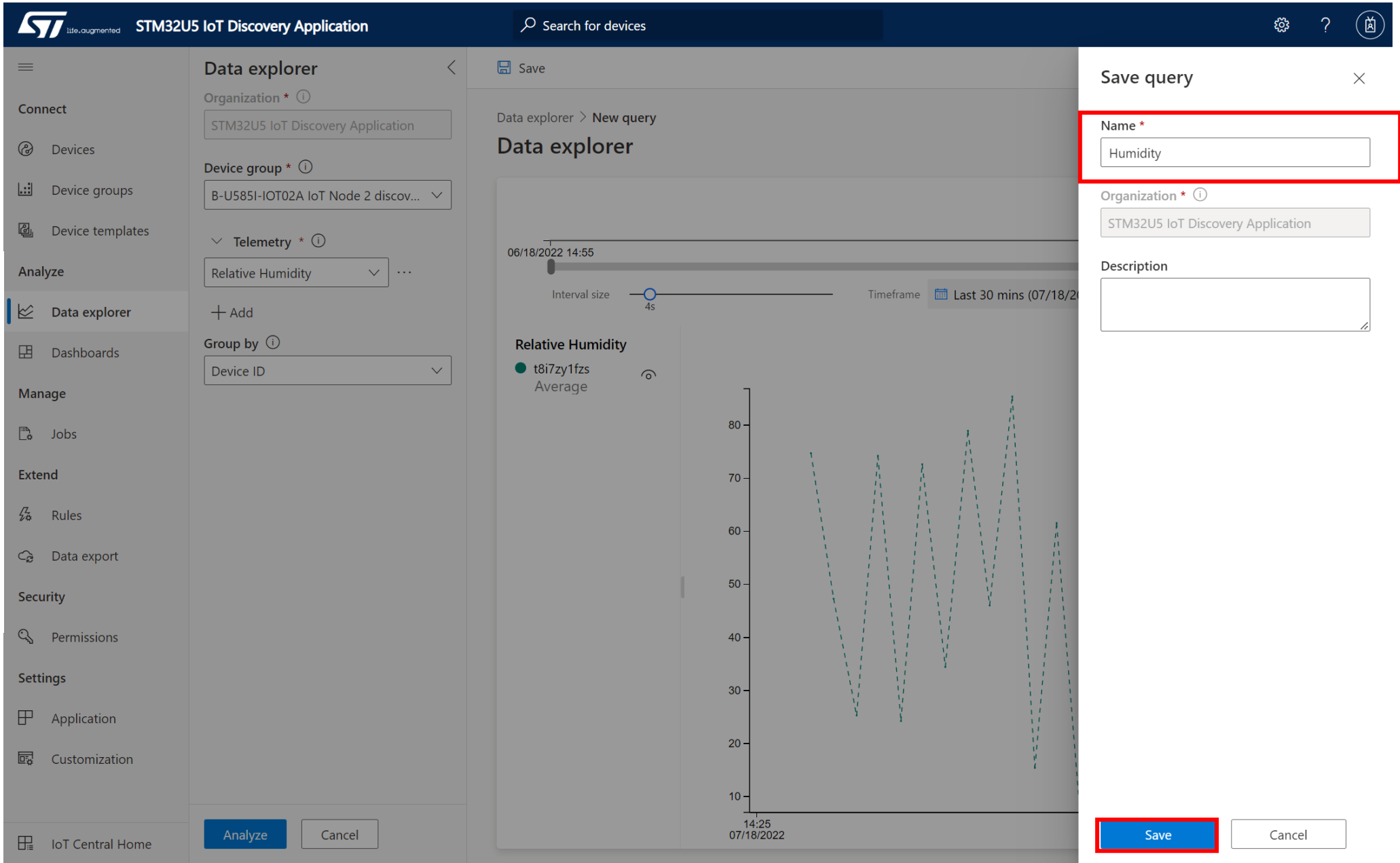

Data Explorer

- When you need to run an adhoc query over a device or devices, Data Explorer is useful

Data Export via Webhook

- Export data to Webhook IoT Central | Microsoft Docs

Goal

Export the data to a webhook

Data Export via Webhook

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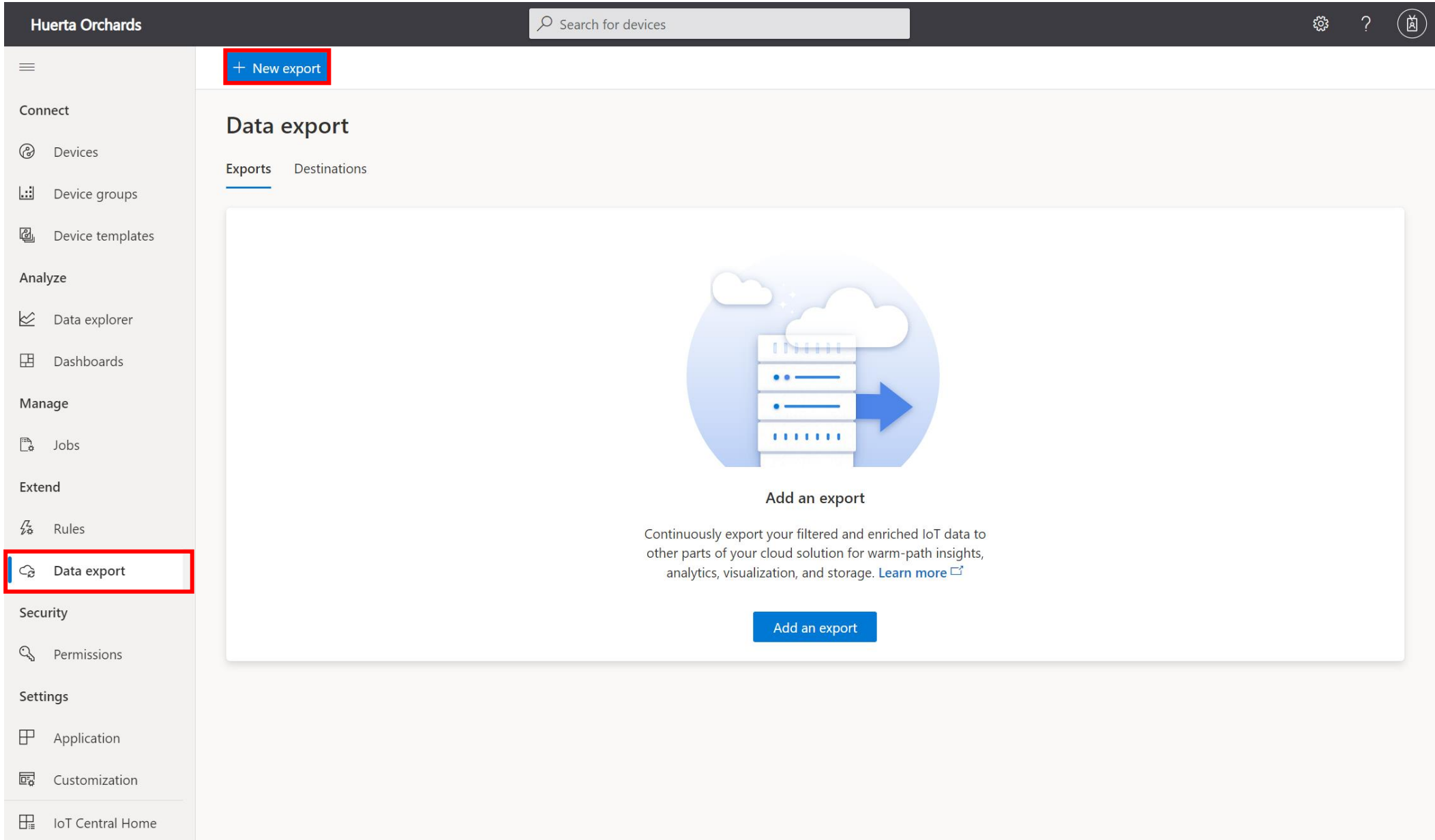

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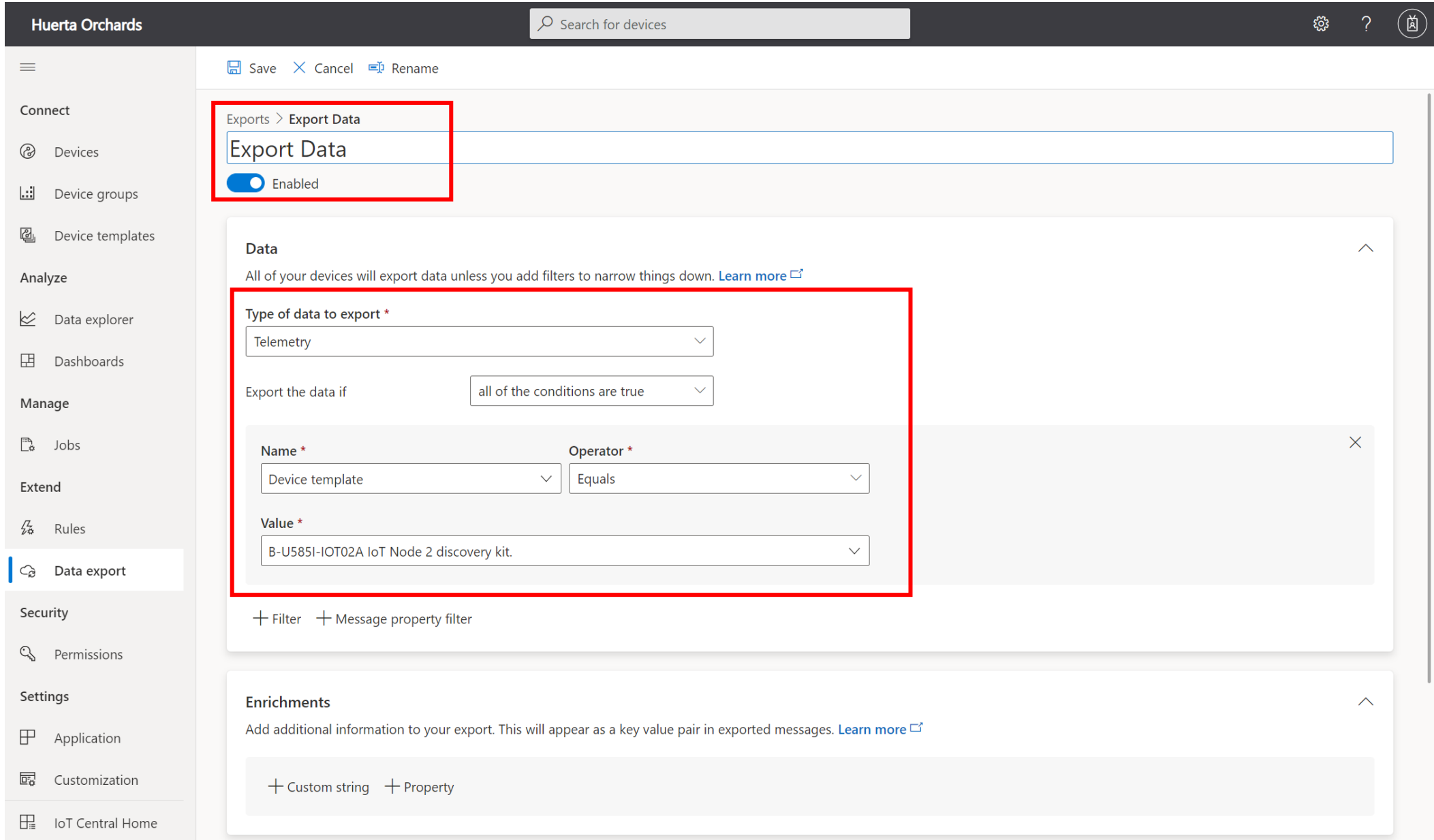

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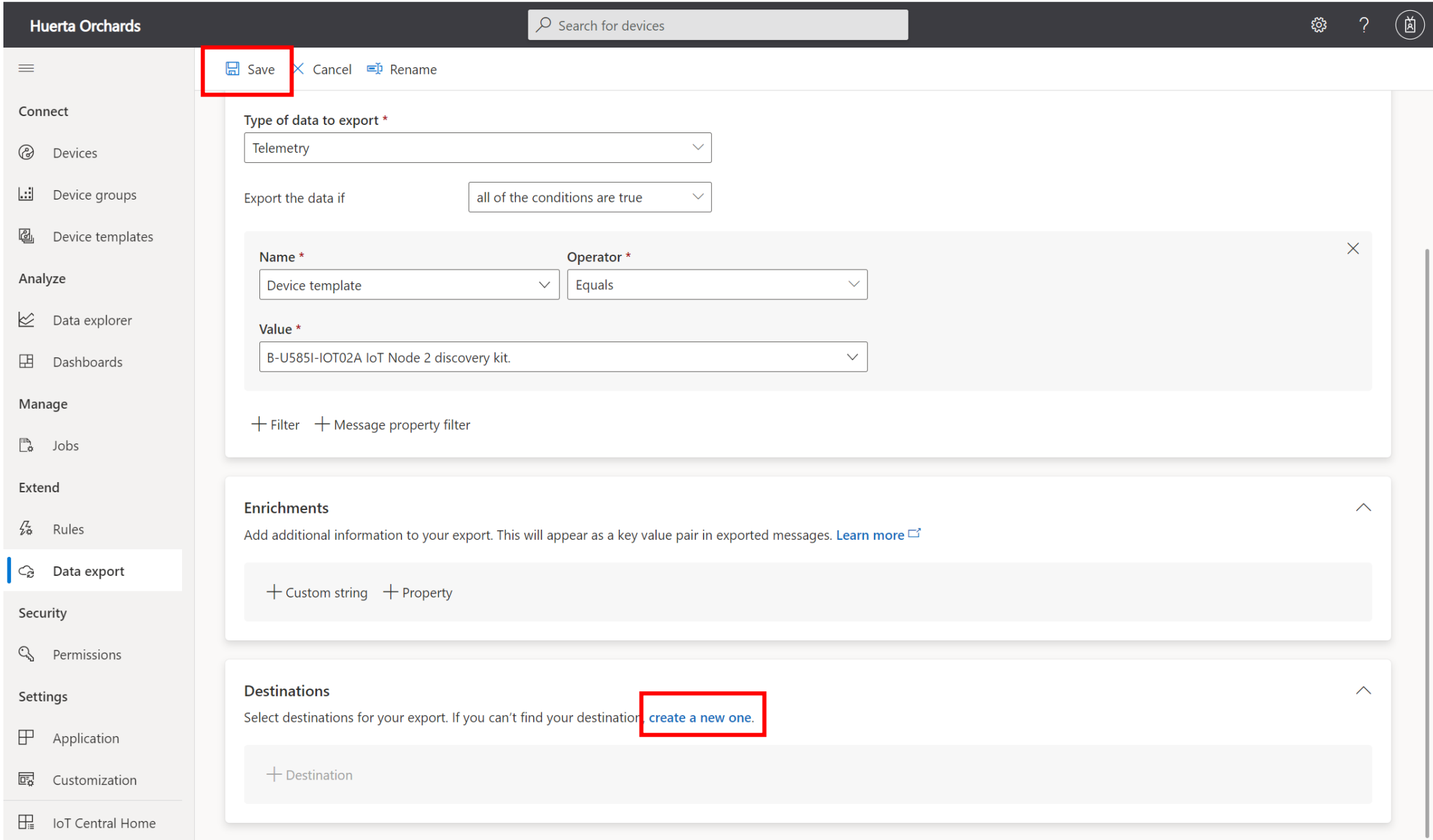

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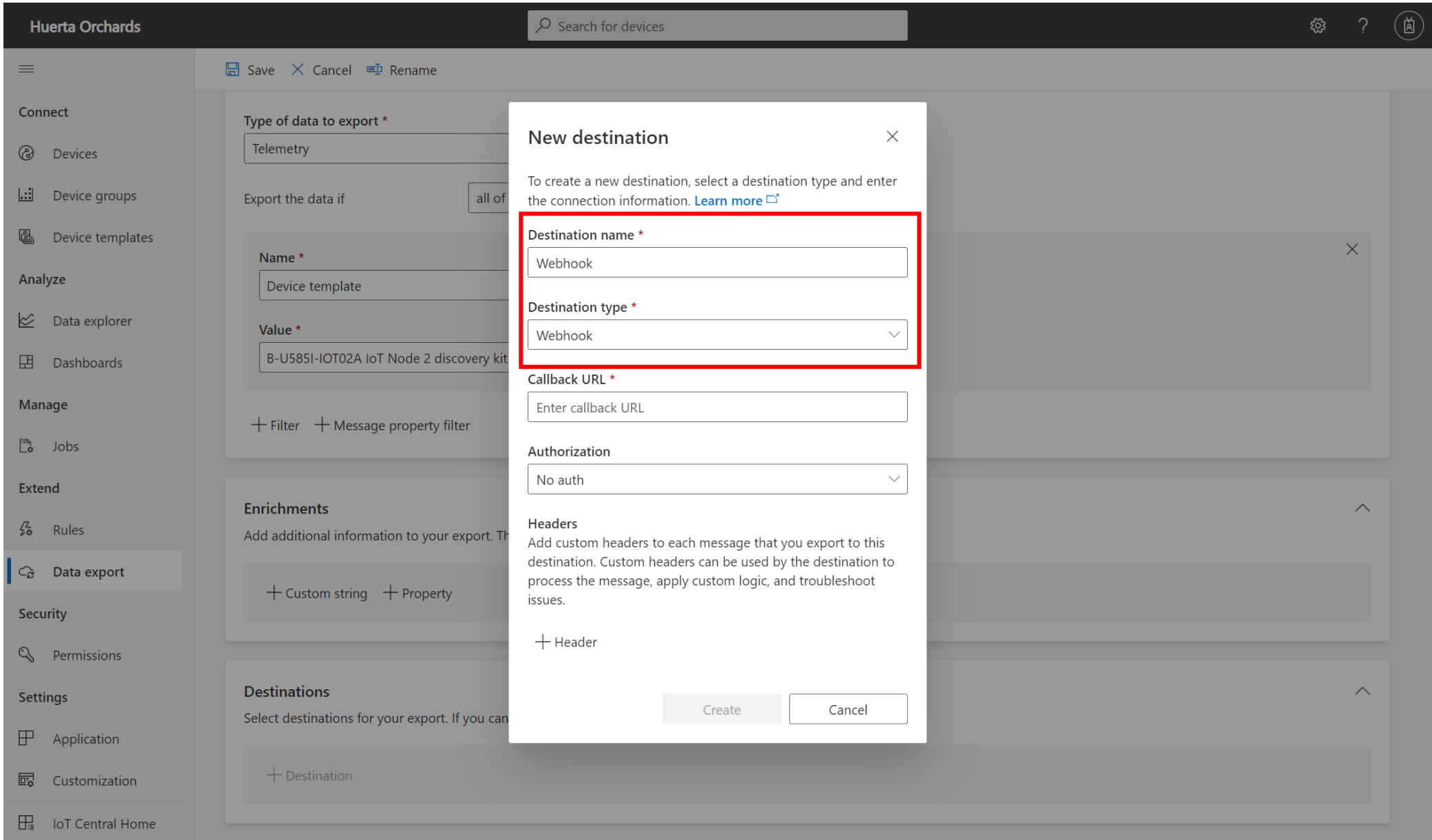

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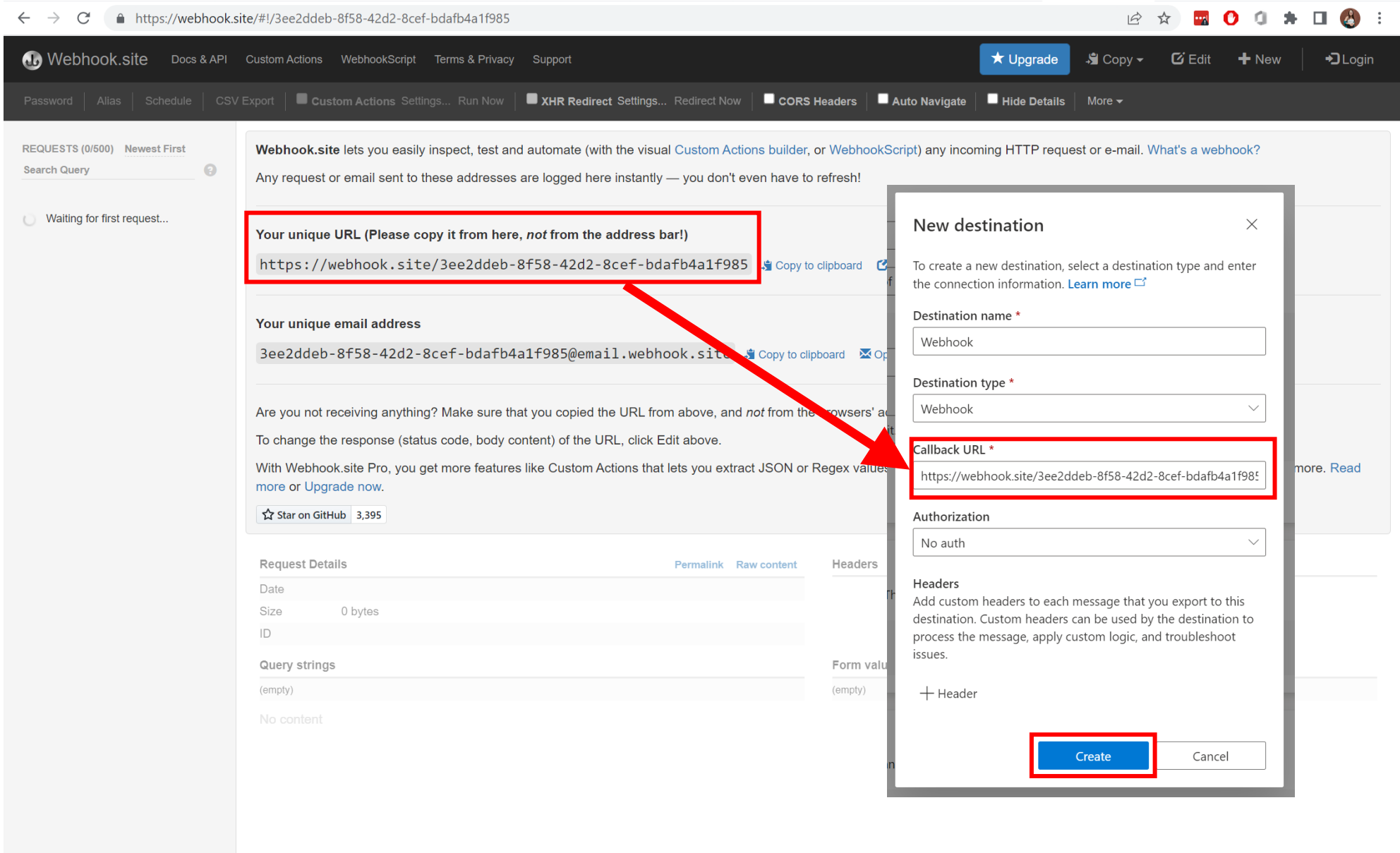

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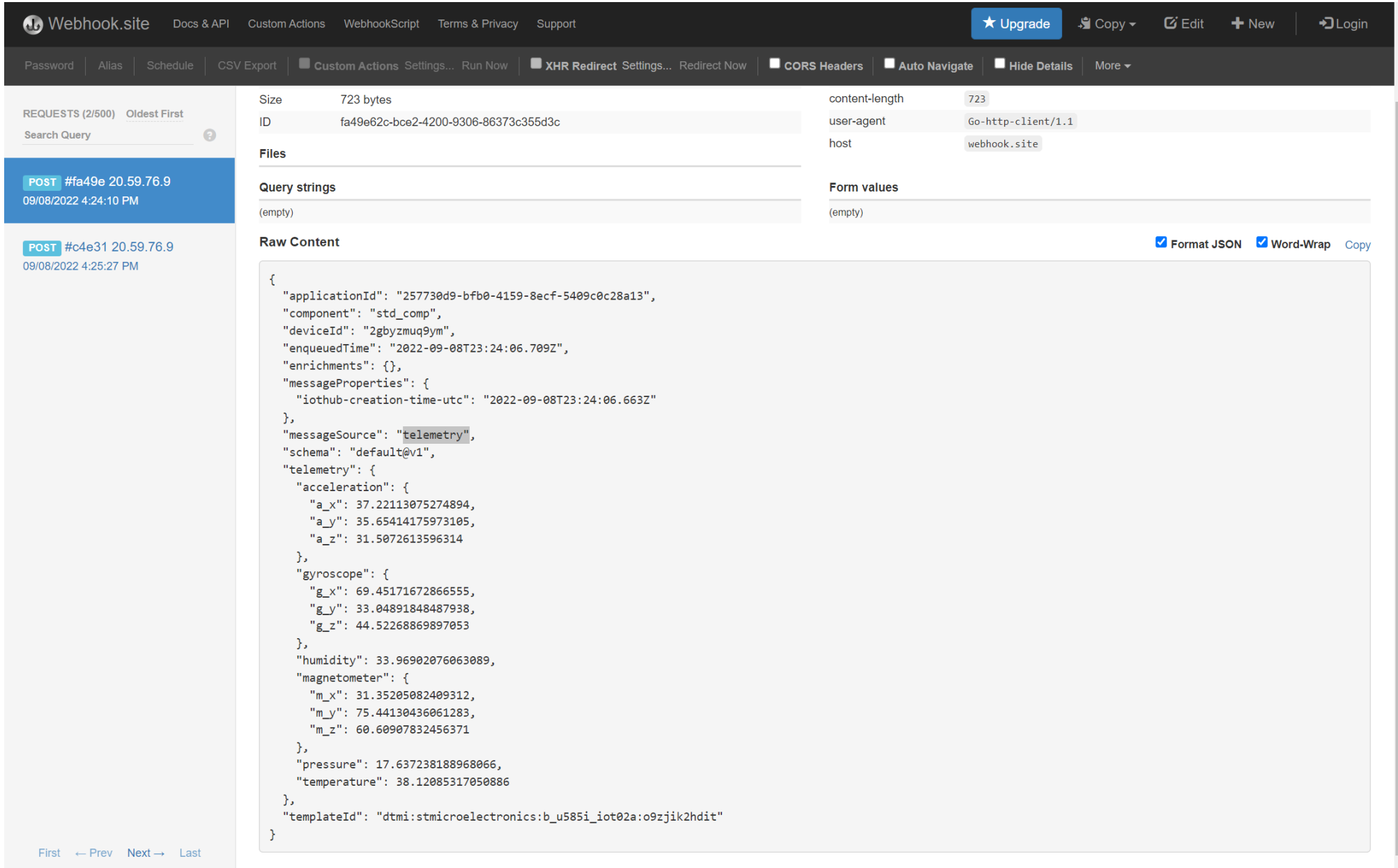

Data Export via Webhook

- When you need to use other services outside of IoT Central, Data Export is the tool to use.