

Provision Dynamics 365

Exercise 1



Get a Free Dynamics Instance

<https://dynamics.microsoft.com/en-us/field-service/overview/>

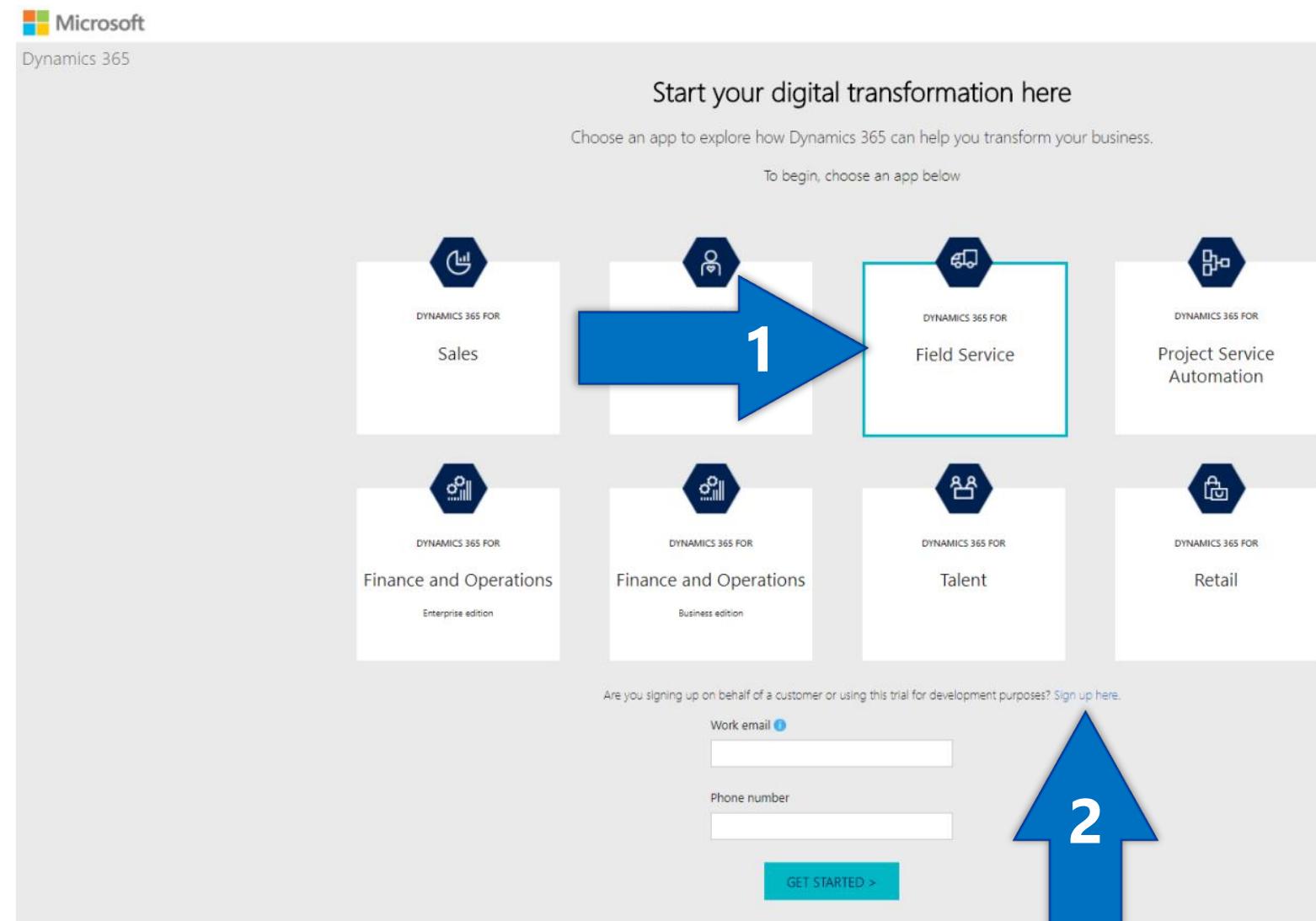
From a Web Browser, visit the Dynamics 365 for Field Service home page and click the START FREE > button.

The screenshot shows the Microsoft Dynamics 365 for Field Service homepage. At the top, there's a navigation bar with links for Microsoft, Microsoft 365, Azure, Office 365, Dynamics 365, SQL, Windows 10, and More. Below that is a secondary navigation bar with links for Dynamics 365, Applications, Pricing, Partners, Developers, Resources, Support, and Blog. A sub-navigation bar for 'Field Service' is also present. The main content area features a large heading 'Microsoft Dynamics 365 for Field Service'. Below it is a section titled 'Innovate with proactive service' with a subtext about delivering a seamless service experience. It includes a 'START FREE >' button and a 'WATCH VIDEO' link. A large blue arrow points upwards from the bottom towards the 'START FREE >' button. To the right, there's a screenshot of a tablet displaying the Dynamics 365 mobile app interface. At the bottom, a call-to-action reads 'Proactive and connected field service begins here'.



Sign up

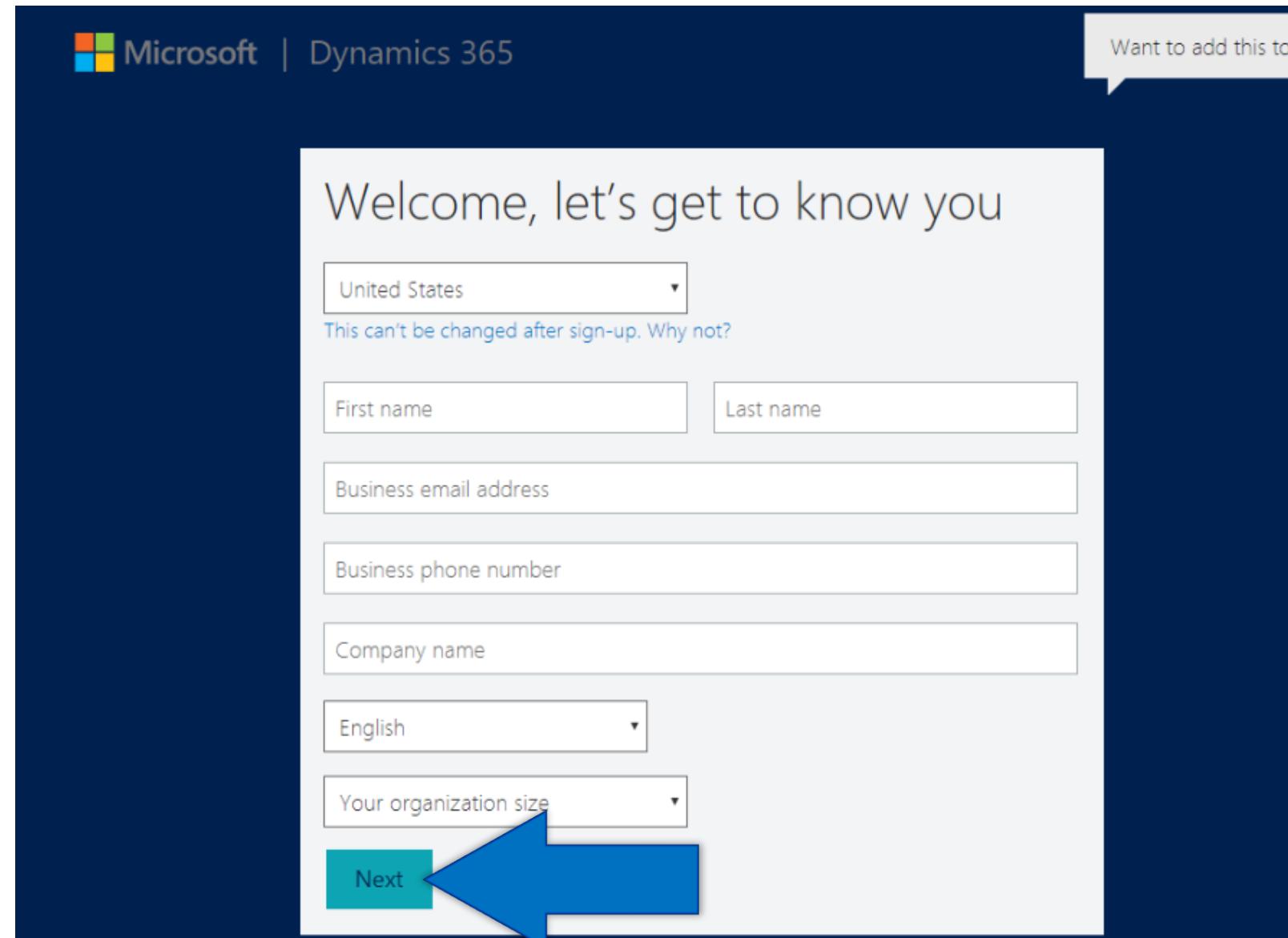
- `1` Select the Field Service app if it is not selected already
- `2` Click `Sign up here`



Business Information

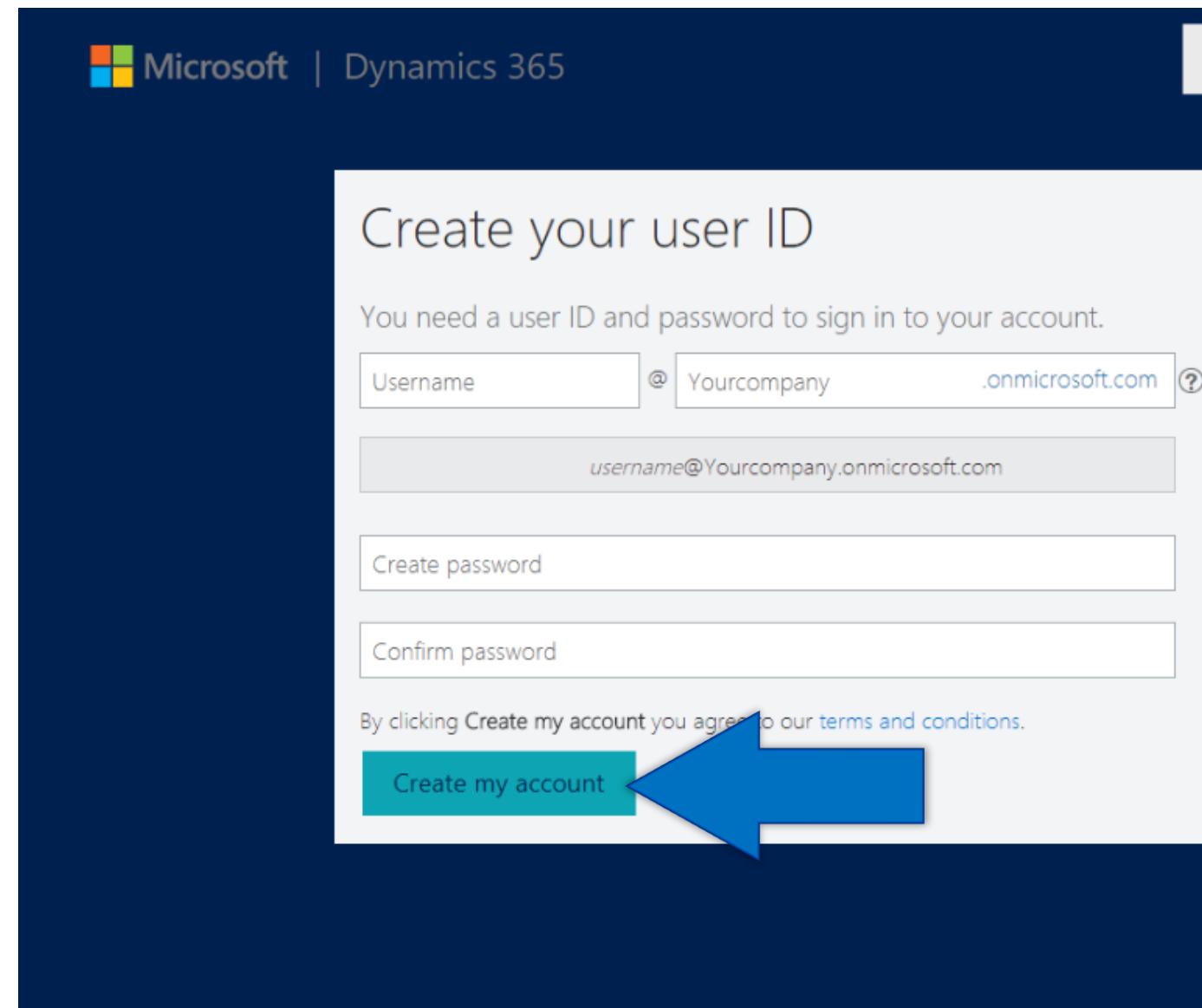
Next you'll be navigated to provision your new Dynamics Trail.

Fill out your general information and your company information then click 'Next'.



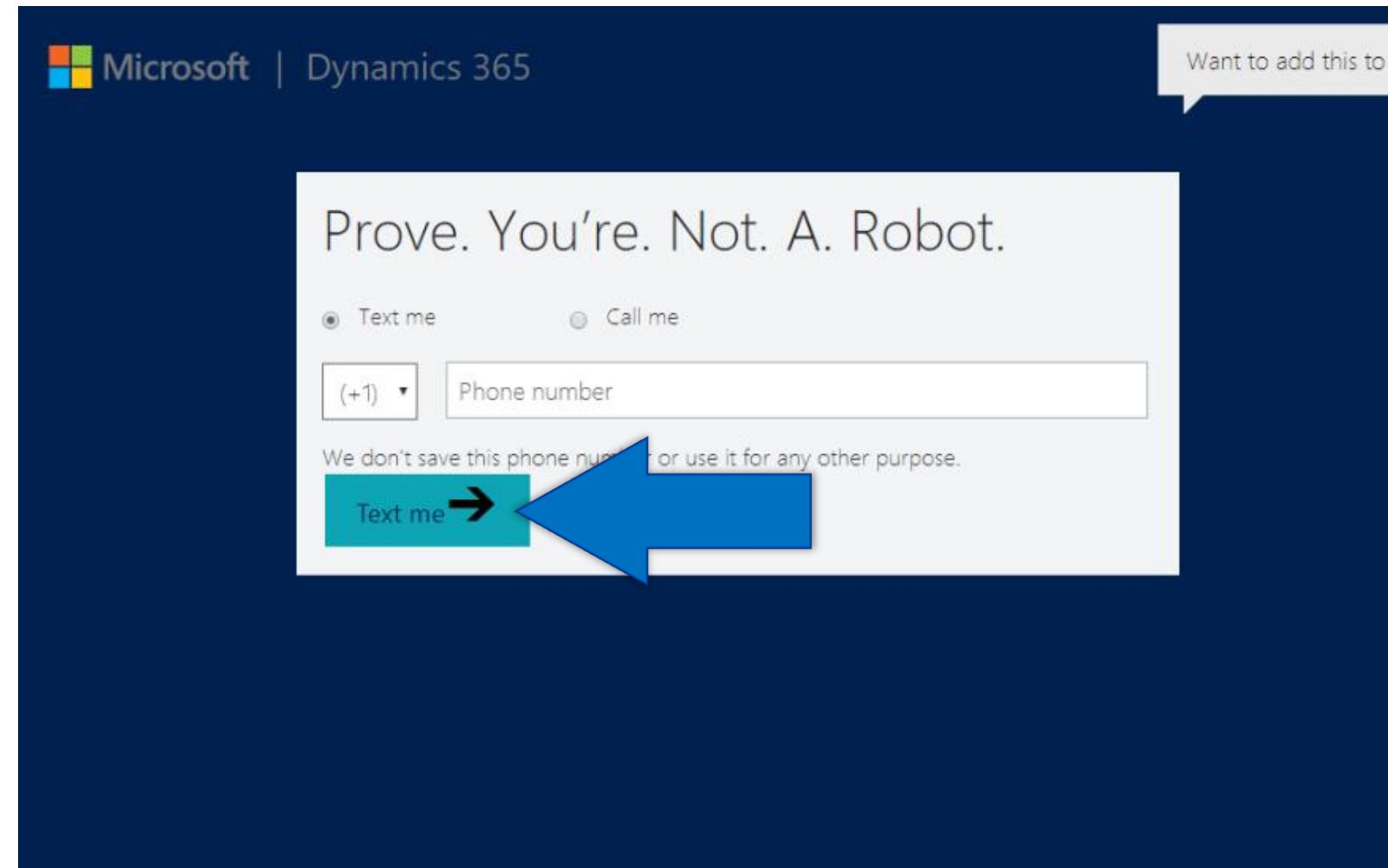
User ID

Enter your user ID information and click 'Create my account'.



Verify

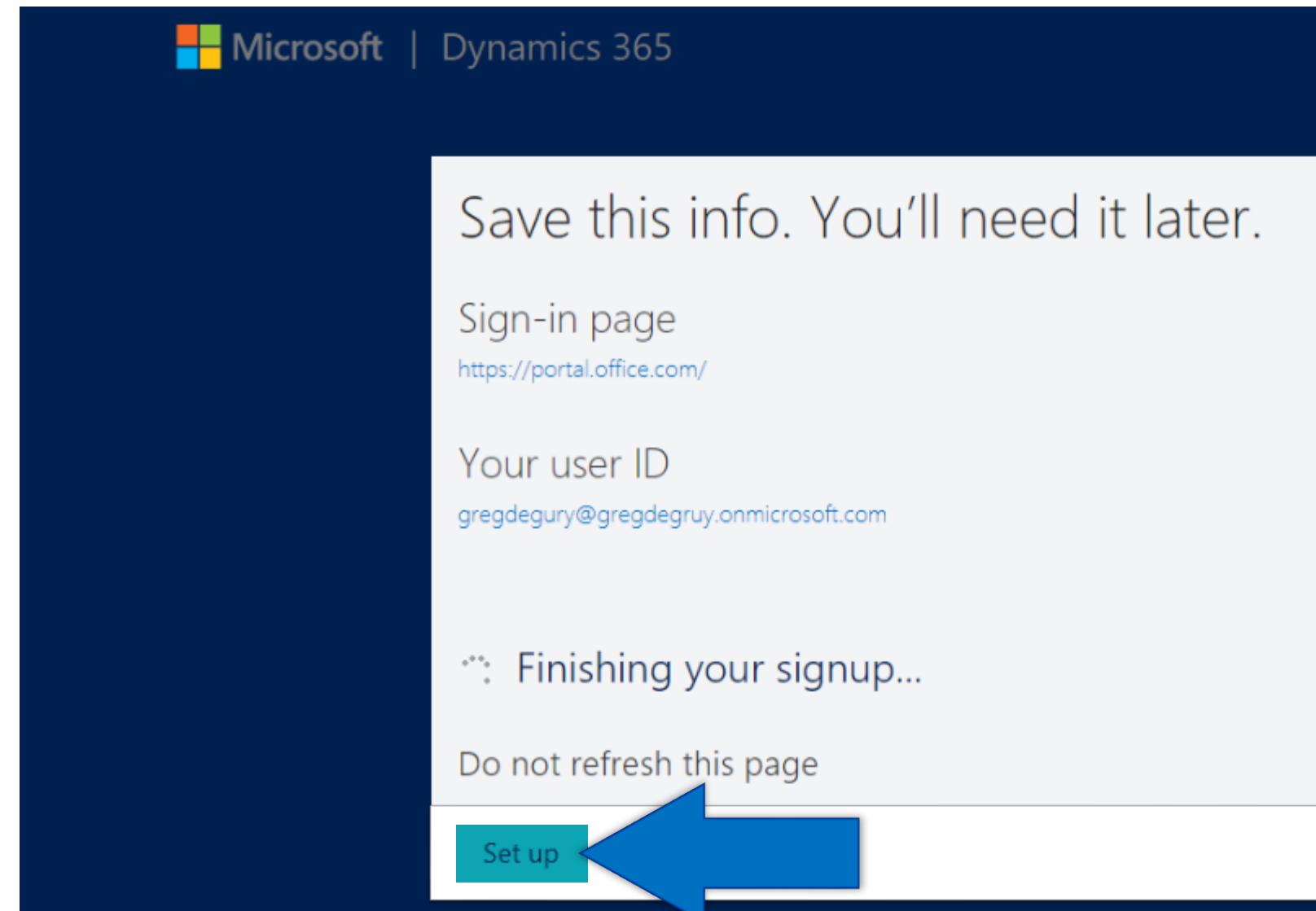
Lastly you'll have to confirm your identity using your phone, enter your phone number and click 'Text me ->'.

Save this Information

After phone authentication is complete, you'll be given some important links that you should note down while the signup is finishing.

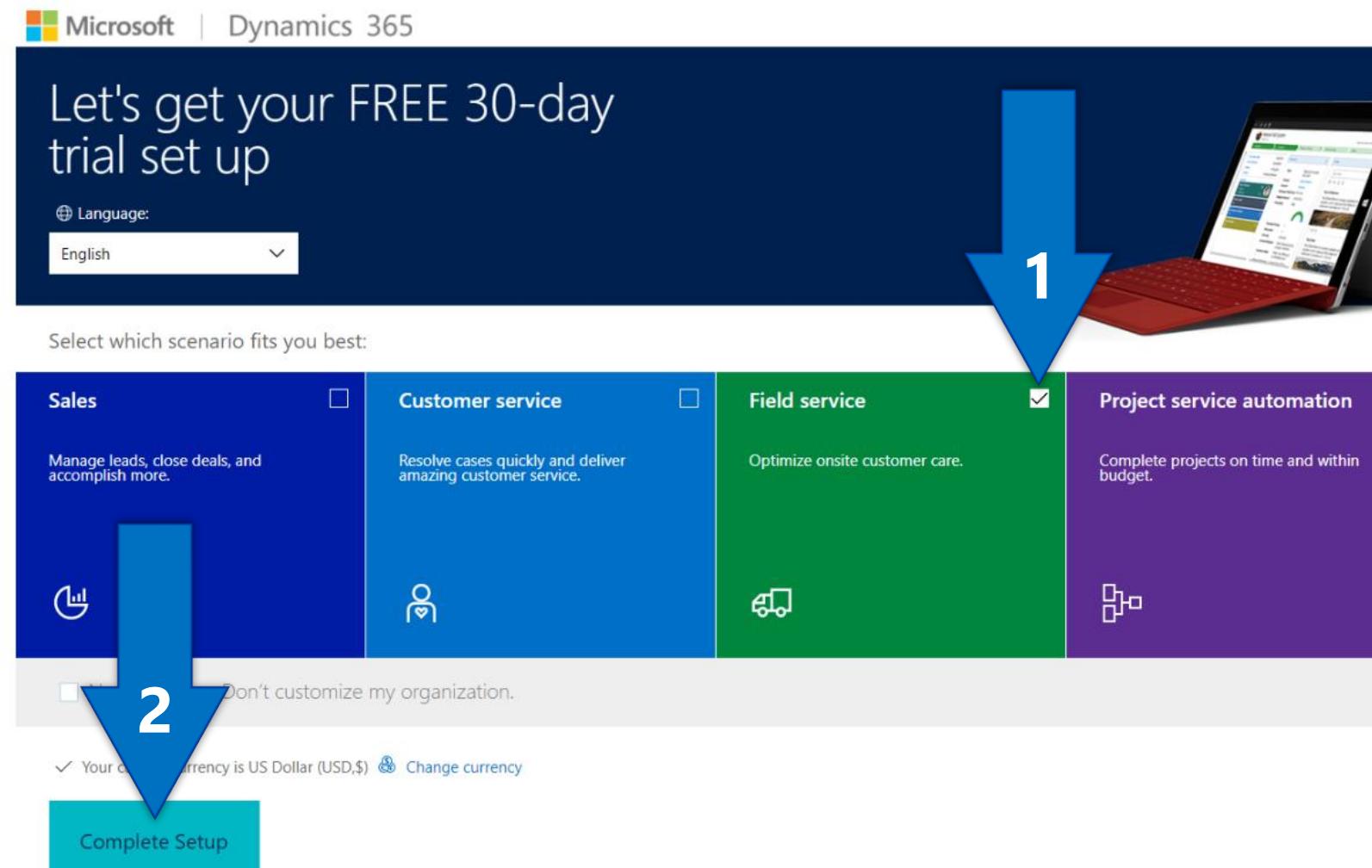
Once the signup is finished click the 'Set up' button that appears.



Complete Setup

Now you should be on the Dynamics 365 FREE 30-day Trial set up page.

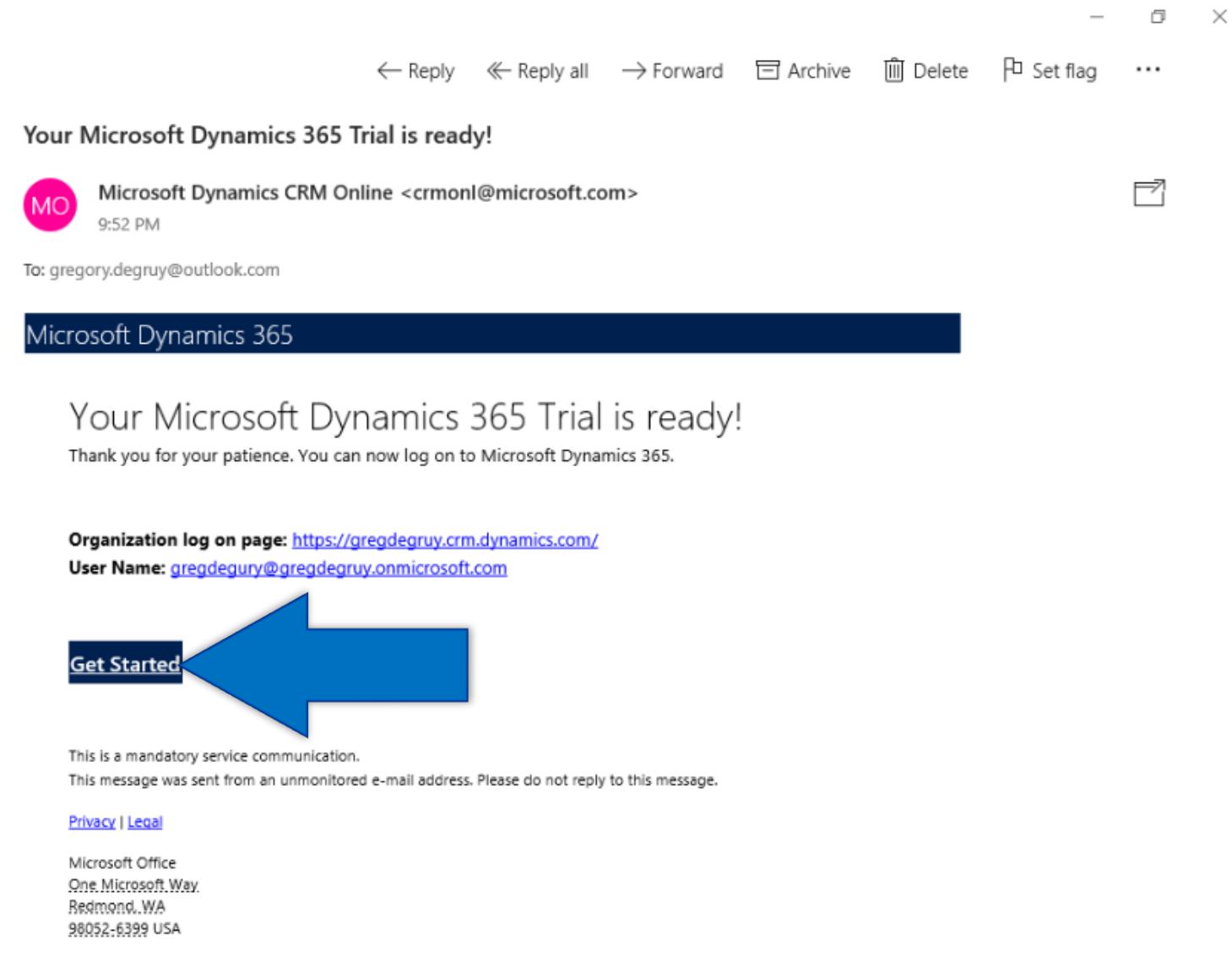
- `1` Field service should already be checked, if not make sure to click the check box.
- `2` Click `Complete Setup`, A "Setting Up..." alert will appear.
- `3` After the setup is complete you'll get another alert letting you know your Trial Organization will be ready soon!



Trail email

Head over the Outlook mail website <https://outlook.office.com/owa/> and sign in with your business email address from step 3.

Find the email from Microsoft Dynamics 365 and click the 'Get Started' button from that email.



The screenshot shows an Outlook email inbox with the following details:

- From:** Microsoft Dynamics CRM Online <crmonl@microsoft.com>
- To:** gregory.degruy@outlook.com
- Subject:** Your Microsoft Dynamics 365 Trial is ready!
- Time:** 9:52 PM
- Message Preview:** Microsoft Dynamics 365
- Email Content:**

Your Microsoft Dynamics 365 Trial is ready!
Thank you for your patience. You can now log on to Microsoft Dynamics 365.

Organization log on page: <https://gregdegruy.crm.dynamics.com/>
User Name: gregdegruy@gregdegruy.onmicrosoft.com

Get Started

This is a mandatory service communication.
This message was sent from an unmonitored e-mail address. Please do not reply to this message.

[Privacy](#) | [Legal](#)

Microsoft Office
One Microsoft Way
Redmond, WA
98052-6399 USA

Dynamics 365

Welcome to Dynamics 365!

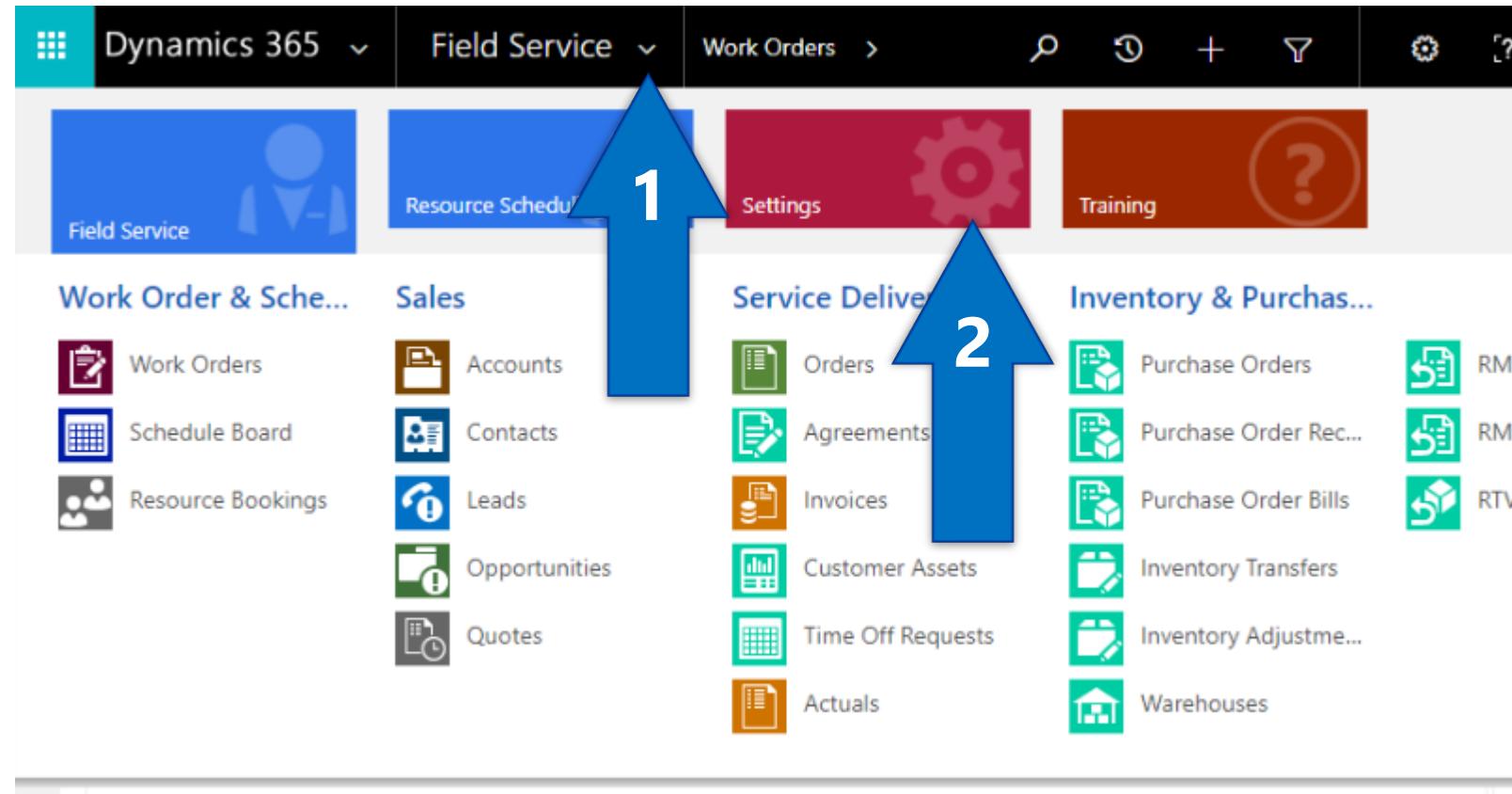
Now let's make sure your account has the right permissions to configure the system.

The screenshot shows the Dynamics 365 Field Service Work Orders interface. At the top, there is a navigation bar with the Dynamics 365 logo, a dropdown menu for 'Field Service', and a 'Work Orders' link. Below the navigation bar is a blue banner with the text 'Don't Lose Access to Dynamics 365. Convert to a paid subscription' and a 'Buy Now' button. The main area displays a list titled 'Active Work Orders'. The list includes columns for 'Work Order Number', 'Service Account', 'Sub-Status', 'System Status', 'Created On', and 'Work Orc'. A search bar labeled 'Search for records' is located above the list. The bottom of the screen shows a toolbar with various icons for navigation and system functions.

Settings

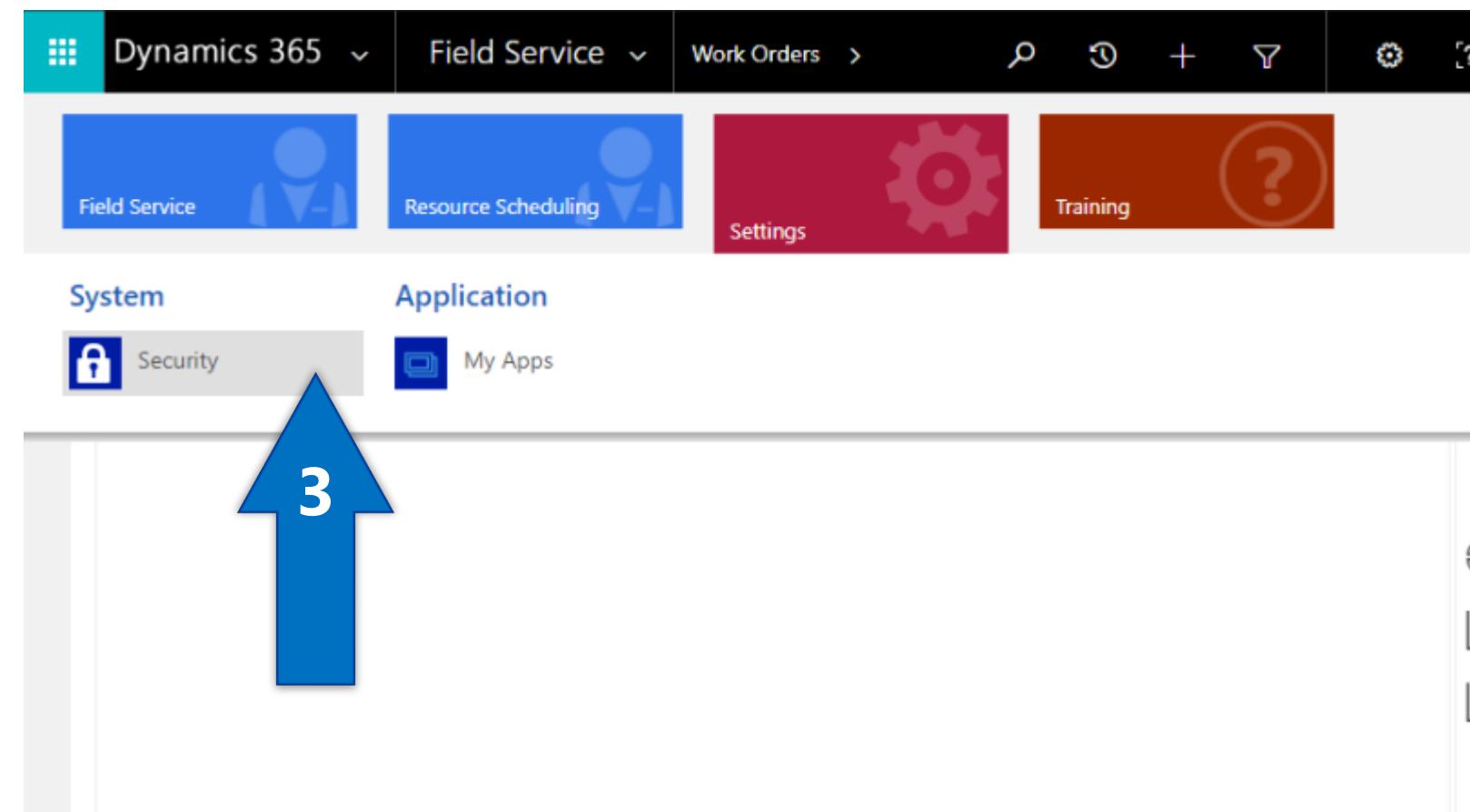
We're going to do this by navigating through our organization's Site Map.

- '1' Click the drop down arrow next to 'Field service'
- '2' Then click 'Settings' to open our system and application settings



Security

3 Click 'Security' under System settings



Users

On the Security Settings page Click Users.

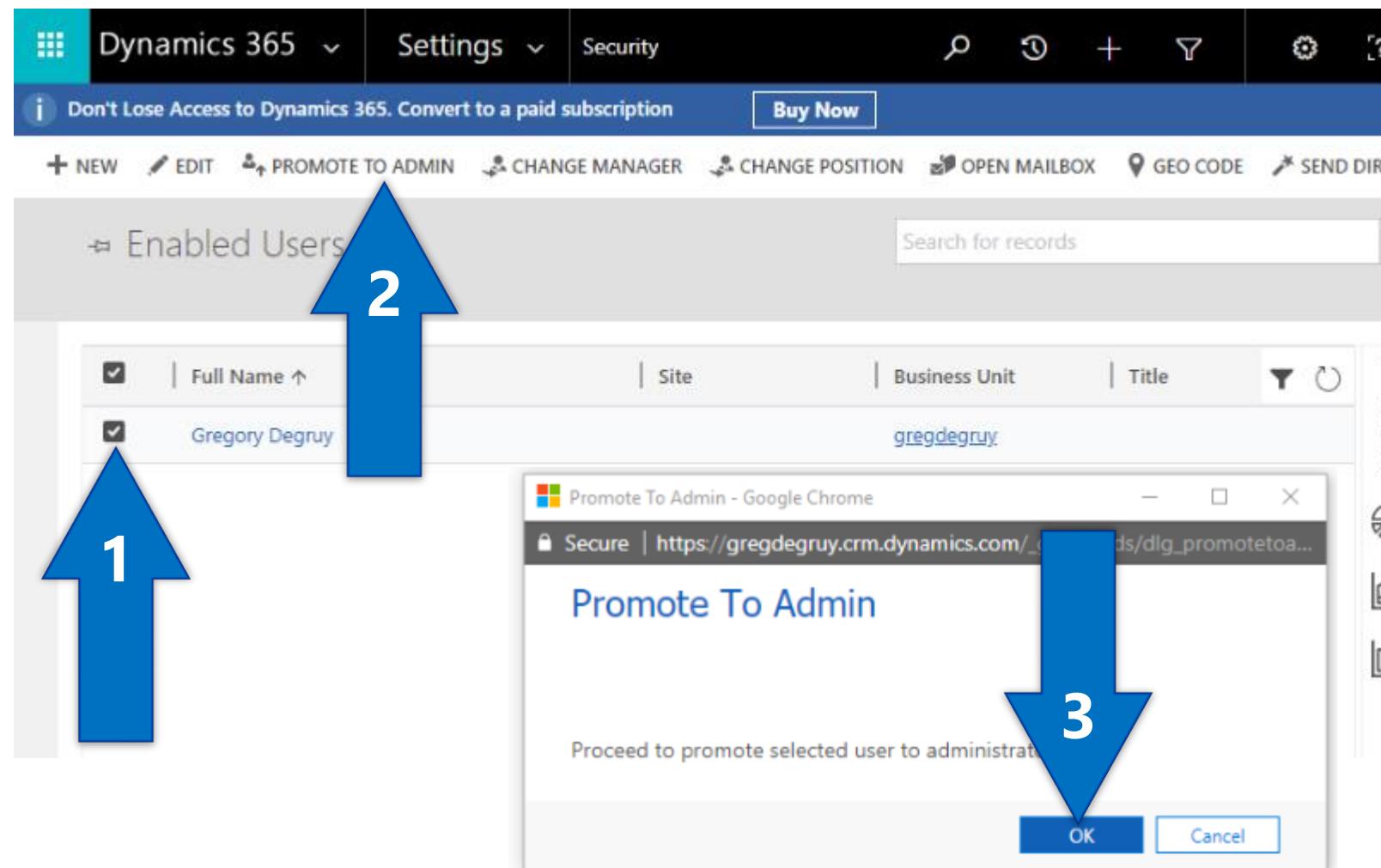
The screenshot shows the Dynamics 365 interface with the title bar "Dynamics 365" and "Settings". A banner at the top right says "Don't Lose Access to Dynamics 365. Convert to a paid subscription" with a "Buy Now" button. The main content area is titled "Security" and contains a section titled "Which feature would you like to work with?". It lists four options: "Users", "Business Units", "Access Team Templates", and "Teams". A large blue arrow points from the text "On the Security Settings page Click Users." in the exercise instructions to the "Users" option. The "Users" option is highlighted with a blue box and has a detailed description below it: "Add new users. Edit and deactivate user records. Manage the teams, roles, and licenses assigned to users." The other three options have their descriptions and icons visible but are not highlighted.

Feature	Description
Users	Add new users. Edit and deactivate user records. Manage the teams, roles, and licenses assigned to users.
Business Units	Add new business units. Edit and deactivate existing business units. Change the parent business unit.
Access Team Templates	Add new team templates. Modify the team template description.
Teams	Add new teams and new members to existing teams. Modify the team description and delete members from teams.
Field Security Profiles	Manage user and team permissions to read, create, or write information in secured fields.

User Role

On the Enabled Users page:

- `1` Click the check box next to your name
- `2` Click `Promote to Admin` button
- `3` Then click `OK` in the alert dialog that comes up



Provision Azure

Exercise 2



Start Free

Now that we've provisioned our own Dynamics 365 Online tenant with Field Service installed, we need to provision an Azure environment to host the IoT services for our solution.

Keep all of your tabs open and use the same web browser going forward.

Browse to the Azure free trial website <https://azure.microsoft.com/en-us/free/> by opening a new tab.

Click 'Start Free >' and sign In with your Dynamics Tenant Trial User ID and password you created.

The screenshot shows the Microsoft Azure homepage. At the top, there's a navigation bar with links like 'Why Azure', 'Solutions', 'Products', 'Documentation', 'Pricing', 'Training', 'Marketplace', 'Partners', 'Support', 'Blog', and 'More'. Below the navigation, a large banner reads 'Create your Azure free account today' with the subtext 'Get started building your next great idea with Azure'. A large blue arrow points from the left towards a green button labeled 'Start free >'. To the right of the button is another link 'Or buy now >'. The bottom half of the page is a dashboard showing various resource metrics and charts, including CPU usage, memory usage, and database activity.

Account sign up

Fill out steps 1 through 4 in Full through the free account sign up form.

You can use the same email address you created in Exercise 1 for Dynamics or a personal email address.

Microsoft Azure gregdegury@gregdegruy.onmicrosoft.com Sign out

Azure free account sign up

Start with a \$200 credit for 30 days, and keep going for free

1 About you

Country/Region i
United States

First name
Gregory

Last name
Degruy

Email address i
[REDACTED]

Phone
[REDACTED]

By proceeding you acknowledge the [Terms of Use](#), [Statement of Account](#) and [Subscription Agreement](#)

Next 

2 Identity verification by phone

3 Identity verification by card

4 Agreement

Verify phone

Fill out steps 1 through 4 in Full through the free account sign up form.

1 About you

2 Identity verification by phone

Country code

United States (+1)

Phone number

Text me

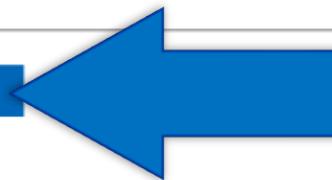
Call me

Verification code

Verify code

3 Identity verification by card

4 Agreement



Verify card

*not charged unless explicitly convert to payed
azure offer*

Fill out steps 1 through 4 in Full through
the free account sign up form.

1 About you 

2 Identity verification by phone 

3 Identity verification by card 

We keep prices low by verifying that account holders are real people, not bots or anonymous trouble makers.
Don't worry, your card will not be charged unless you explicitly convert to a paid offer, though you might see a temporary authorization hold.



Card number

Expiration date CVV 

Month  Year 

Name on card

Address line 1

Address line 2

- Optional -

City

State

ZIP code

- 97531 -

Next

4 Agreement 



Complete

Fill out steps 1 through 4 in Full through the free account sign up form.

Start with a \$200 credit for 30 days, and keep going for free

1 About you

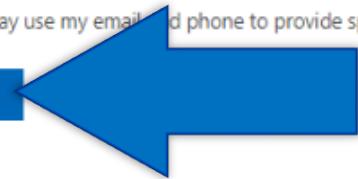
2 Identity verification by phone

3 Identity verification by card

4 Agreement

I agree to the [subscription agreement](#), [offer details](#), [privacy statement](#), and [communications policy](#).
Microsoft may use my email and phone to provide special Microsoft Azure offers.

Sign up

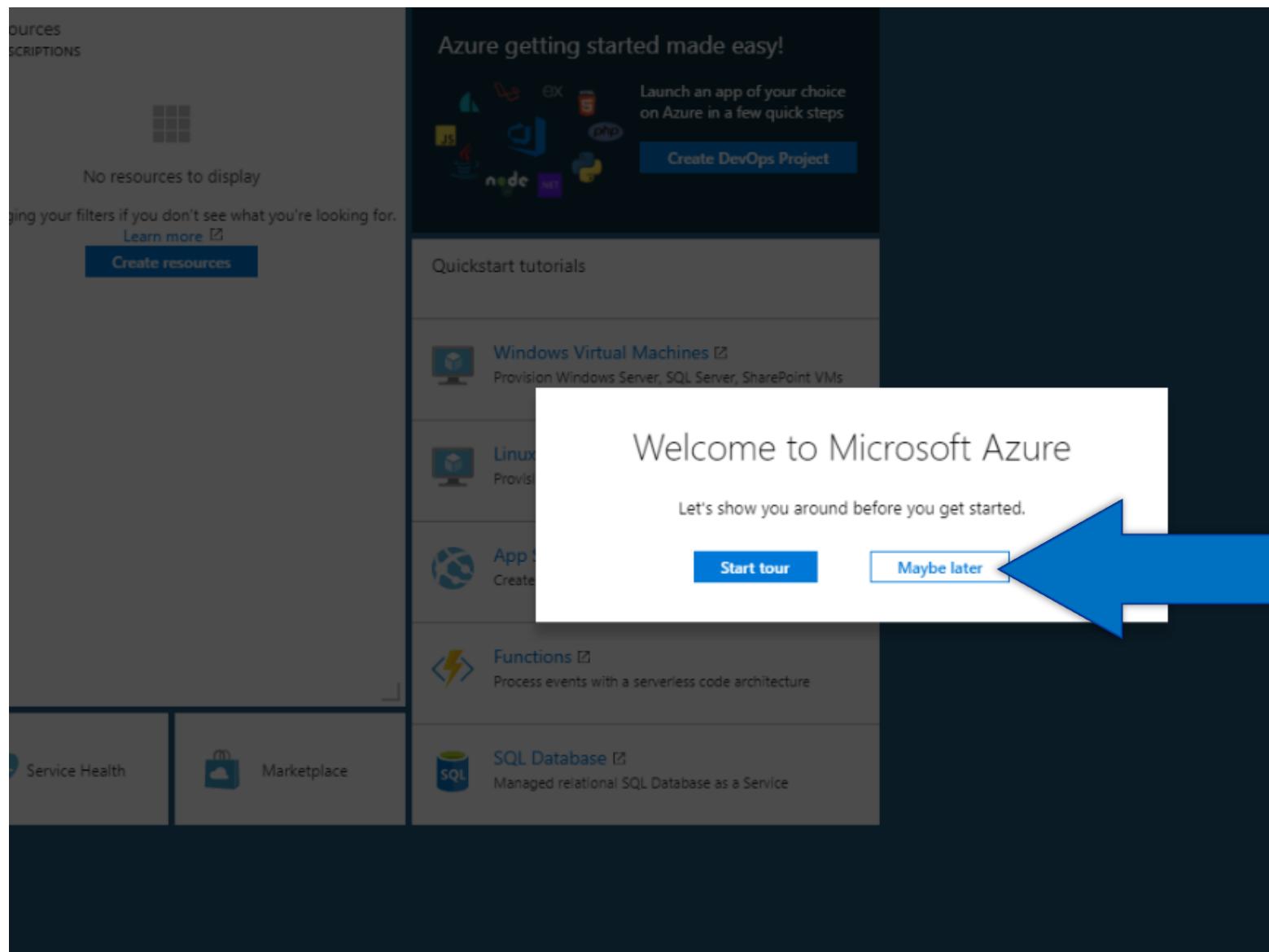


Azure Portal

After agreeing to the terms and clicking 'Sign up', you'll then be navigated to the Azure welcome page.

Close this page and head to the Azure portal <https://portal.azure.com/>. You should see the following landing page, choose maybe 'Maybe later' for on the alert window.

Tours are fun and there's a time and place for everything, but not now.



Install Connected Field Service Add-on

Exercise 3

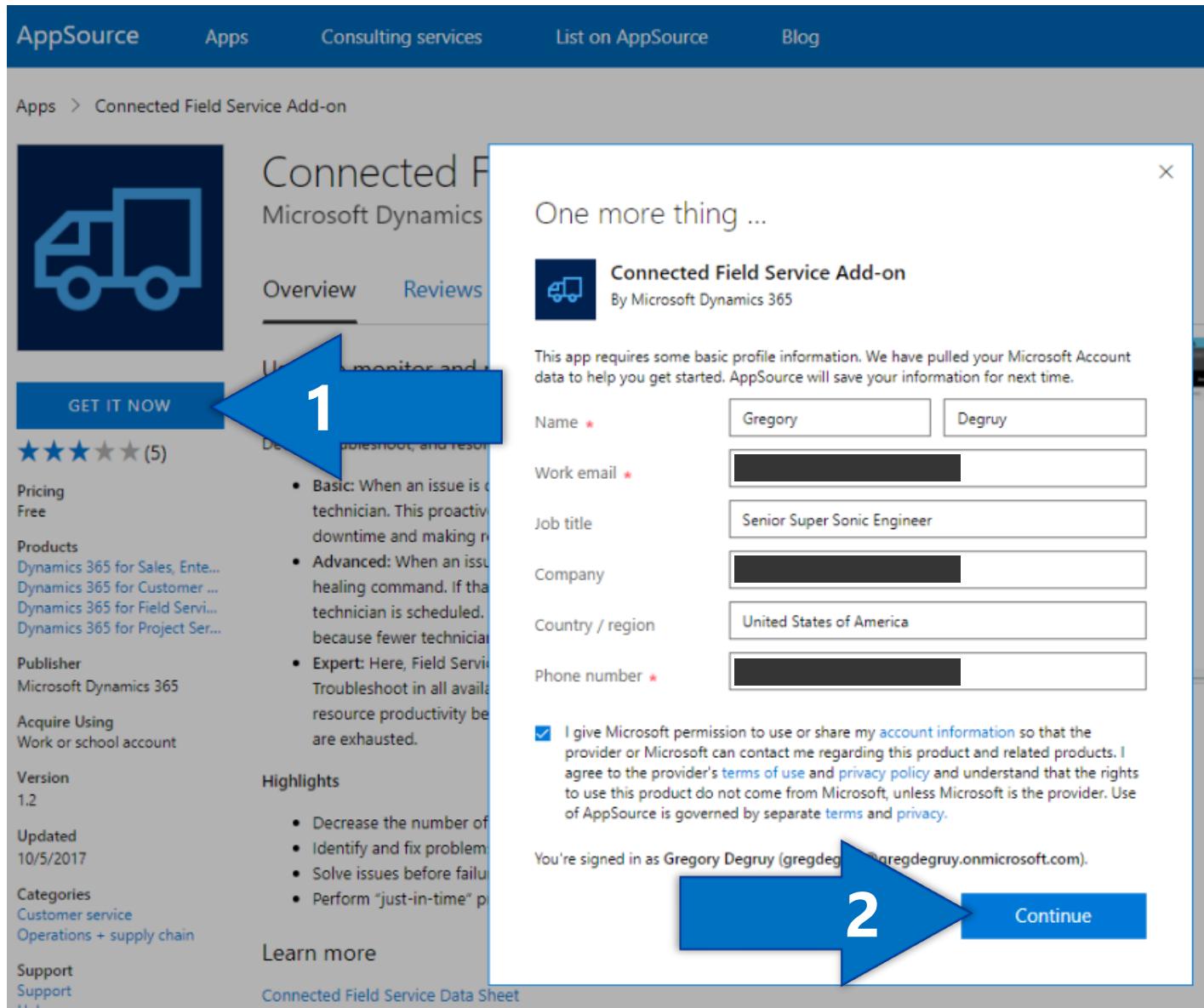


CFS Add-on

On your computer, browse to AppSource
<https://appsource.microsoft.com/en-us/product/dynamics-365/mscrm.58666c7d-65ee-452d-8708-70b4d471d4c0>

1` Install the "Connected Field Service Add-On" by clicking `GET IN NOW`. Make sure to complete the form with valid company information and your User ID / email created in Exercise 1.

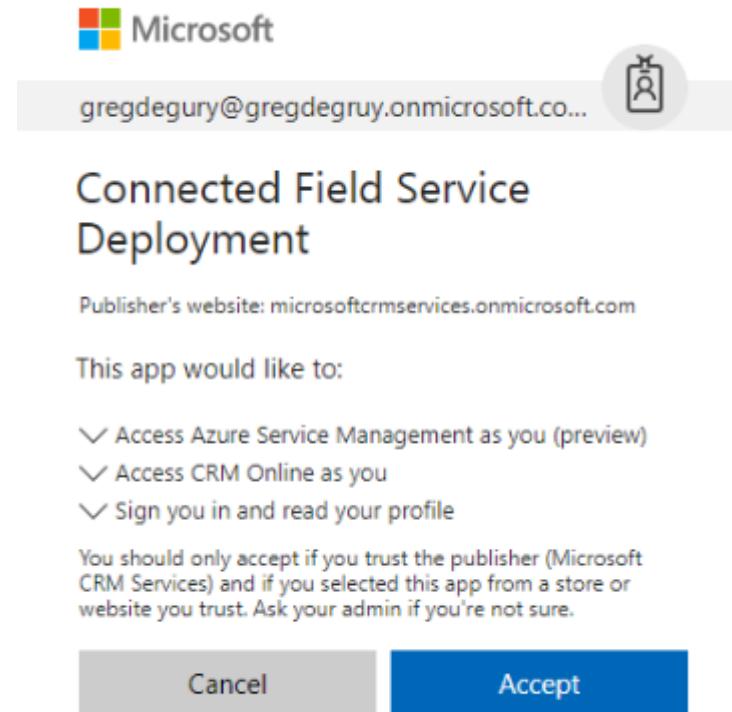
2` Click `Continue`



The screenshot shows the Microsoft AppSource interface for the "Connected Field Service Add-on". The main page includes navigation links like AppSource, Apps, Consulting services, List on AppSource, and Blog. The app's details are shown, including its icon (a truck), name, Microsoft Dynamics 365 publisher, and a "GET IT NOW" button. The app has a rating of 5 stars. The "Reviews" tab is selected. A large blue arrow labeled "1" points to a modal window titled "One more thing ...". This modal contains the app's description, a preview image, and a form for entering user information. The form fields include Name (Gregory Degruy), Work email (redacted), Job title (Senior Super Sonic Engineer), Company (redacted), Country / region (United States of America), and Phone number (redacted). A checkbox for giving Microsoft permission to use account information is checked. A message at the bottom of the modal says "You're signed in as Gregory Degruy (gregdeg...@microsoft.com)". A large blue arrow labeled "2" points to the "Continue" button at the bottom right of the modal.

App permissions

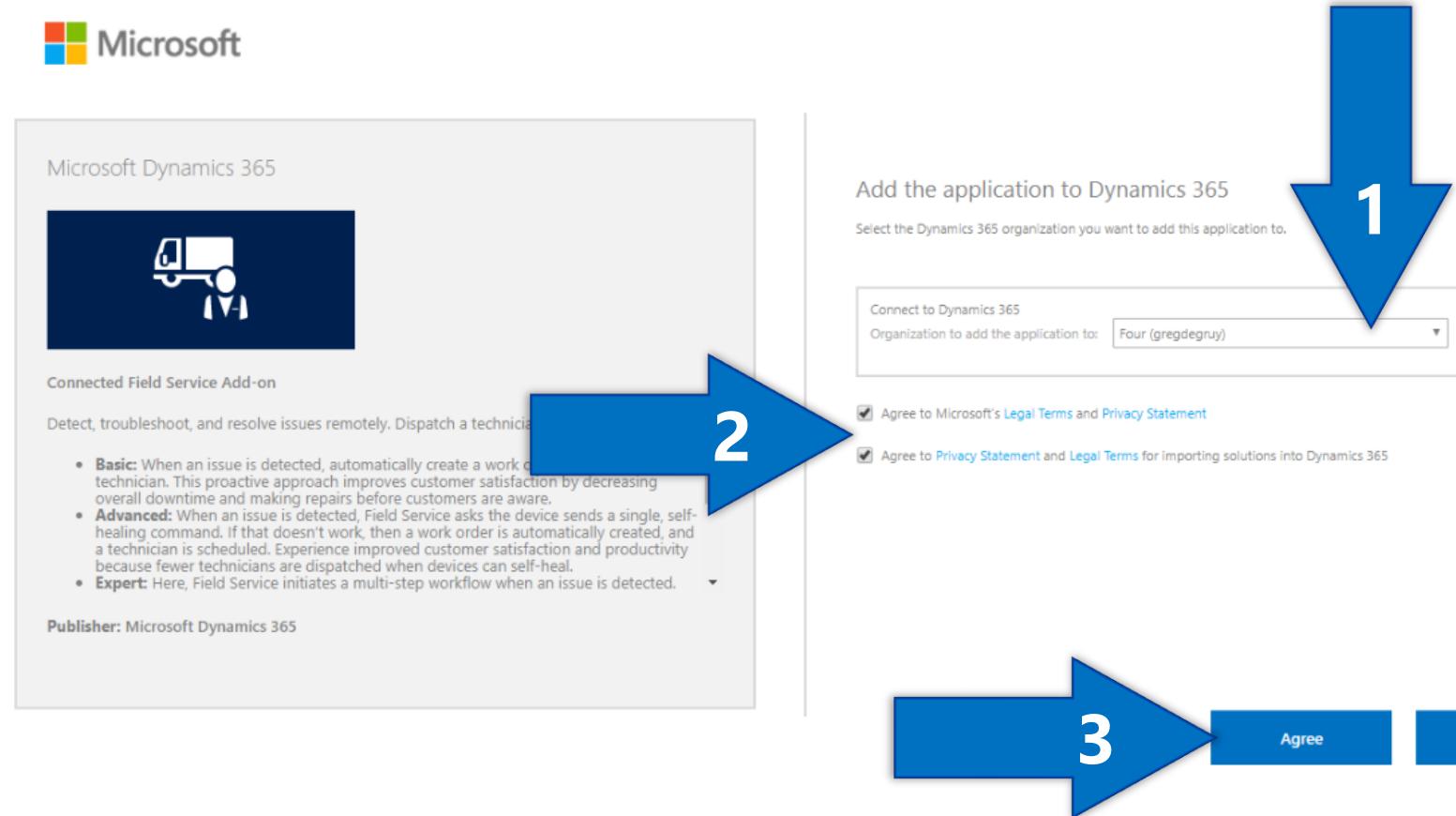
You should now see a prompt notifying you that you are being taken to Dynamics 365 to complete the process and to choose a consent option for app permissions.



Dynamics org

The first step in configuring your Connected Field Service environment is choosing the Dynamics 365 organization you want to install the Connected Field Service Add-On too.

- `1` Your Dynamics 365 organization is auto selected for you
- `2` Check off the two boxes if you agree to the terms of use
- `3` Click the `Agree` button



Service terms

Read over the Terms of service. Click 'Next' when you're ready.

Terms of service

These license terms are an agreement between you and Microsoft Corporation (or one of its affiliates). They apply to the software named above and updates are accompanied by new or additional terms, in which case those different terms apply prospectively and do not alter your or Microsoft's rights. TERMS, YOU HAVE THE RIGHTS BELOW. BY USING THE SOFTWARE, YOU ACCEPT THESE TERMS.

1. INSTALLATION AND USE RIGHTS.

a) General. You may install and use any number of copies of the software.

b) Third Party Software. The software may include third party applications that are licensed to you under this agreement or under their own terms. License terms for such applications will be included in the software and/or be accessible in an accompanying notices file. Even if such applications are governed by other agreements, the disclaimer, limitations on, and exclusions from

2. DATA COLLECTION. The software may collect information about you and your use of the software and send that to Microsoft. Microsoft may use that information to provide you with services and improve the software. Your rights regarding data collection and use by Microsoft will depend on your country or region. Your opt-out rights, if any, are described in the product documentation. Some features in the software may enable collection of data from users of your application. If you choose to use those features, you must comply with applicable law, including getting any required user consent, and maintain a prominent privacy policy. You can learn more about Microsoft's data collection and use in the product documentation and the Microsoft Privacy Statement at <https://go.microsoft.com/fwlink/?linkid=871152>. Microsoft Privacy Statement.

3. DISTRIBUTABLE CODE. The software may contain code you are permitted to distribute (i.e. make available for third parties) in applications you develop.

a) Distribution Rights. The code and test files described below are distributable if included with the software.

i. Sample Code. You may copy, modify, and distribute the source and object code form of code marked as "sample".

ii. Third Party Distribution. You may permit distributors of your applications to copy and distribute any of this distributable code you elect to distribute.

b) Distribution Requirements. For any code you distribute, you must:

i. add significant primary functionality to it in your applications;

ii. require distributors and external end users to agree to terms that protect it and Microsoft at least as much as this agreement; and

iii. indemnify, defend, and hold harmless Microsoft from any claims, including attorneys' fees, related to the distribution or use of your applications, or the use of any code you distribute.

By clicking next you are agreeing to the above terms of service agreement.

Next



Privacy statement

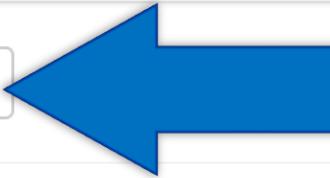
Read over the Privacy statement. Click 'Next' when you're ready.

Privacy Statement

By enabling this command, you consent to share your data with external systems. Data imported from external system statement that can be accessed [here](#). Please consult the feature technical documentation for more information.

Back

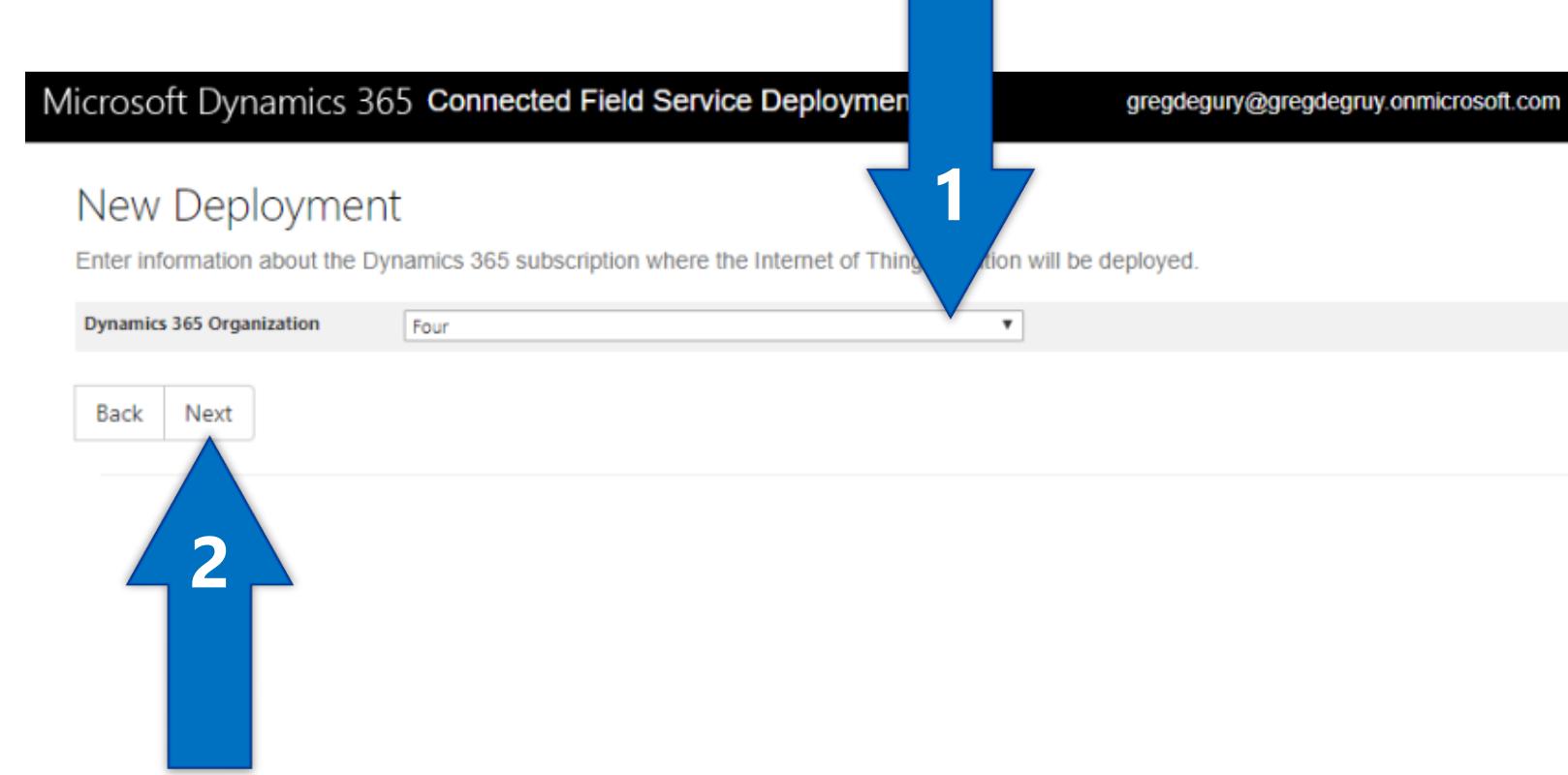
Next



Deployment org

Verify the Dynamics 365 subscription where the Internet of Things solution will be deployed is selected properly.

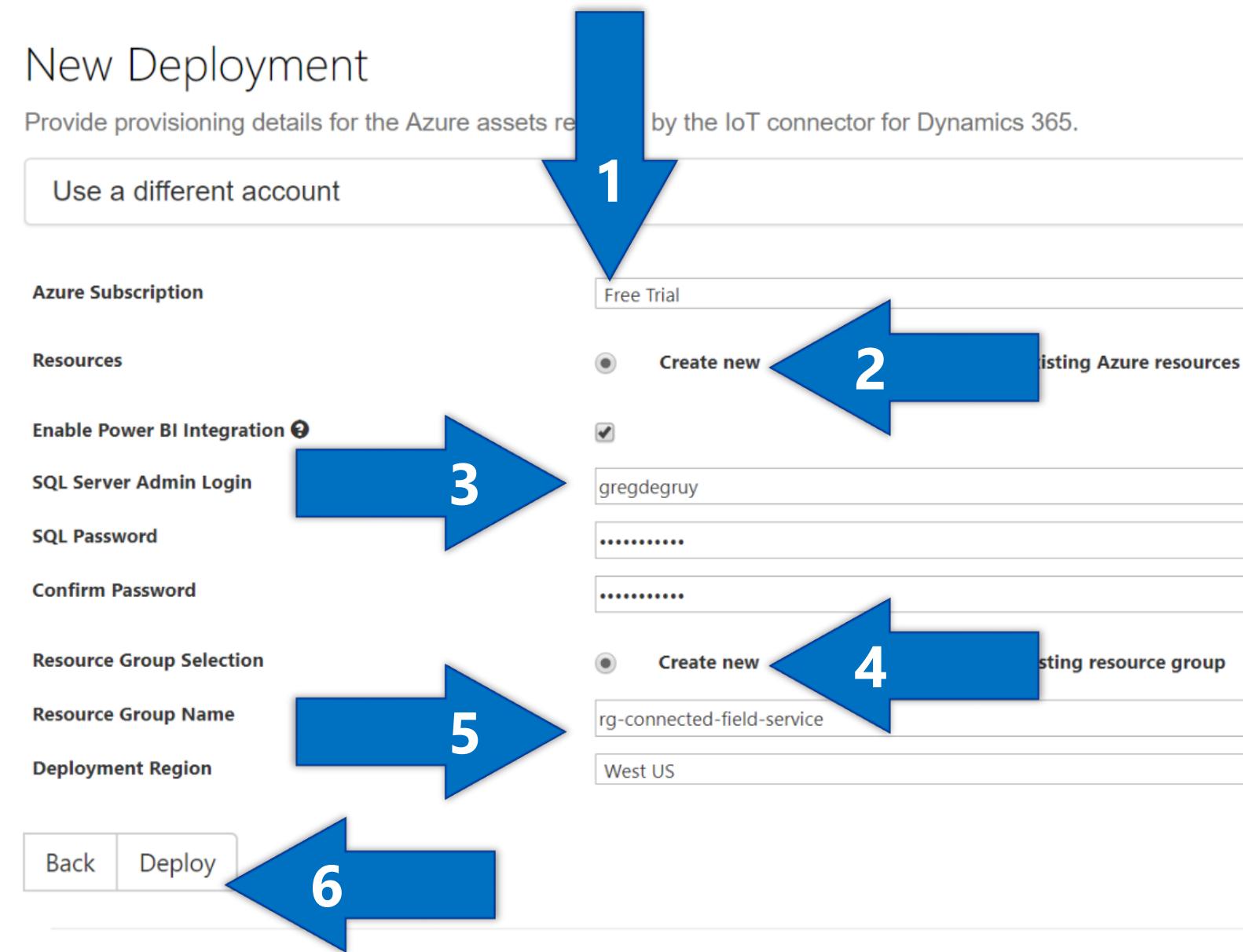
- `1` Your Dynamics 365 organization is auto selected for you and there should only be since we created only one instance in Exercise 1
- `2` Click the `Next` button



Azure service information

Let's setup the Azure IoT services for your Dynamics organization.

- `1` Your Azure Trial is auto selected for you and should say "Free Trial", this came from the work we did in Exercise 2.
- `2` Choose `Create new` for our Resources
- `3` Check Enable Power BI Integration and add data storage information. In my case I choose "gregdegruy" as my SQL Server Admin Login.
- `4` Choose `Create new` for our Resource Group Selection
- `5` Give your Resource Group a name and deployment region, in my case I called it "rg-connected-field-service" and choose "West US".
- `6` Click Deploy



Azure service deployment

Your Azure IoT services for your Dynamics organization are now automatically deploying for you!

Starting with your Azure StorageAccount that currently has a InProgress Deployment Status, but will soon show success and so will the other services that will slowly appear under Resource Type.

This deployment will take around 25 minutes to complete.

Deployment Status

Free Trial

Submitted On	3/12/2018 11:18:58 PM
Deployment Status	InProgress
Resource Group Name	rg-connected-field-service
Deployment Region	West US
Dynamics 365 Organization	https://gregdegruy.crm.dynamics.com
Authorize Dynamics 365 API Connection <small>?</small>	Authorize

[Open Simulator Web Application](#)

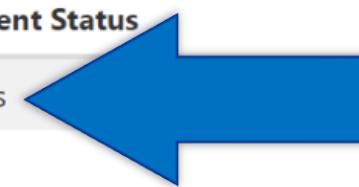
[Open Simulator](#)

Resource Type

StorageAccount

Deployment Status

InProgress



Authorize Dynamics

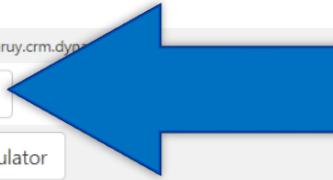
Once deployment is completed, you'll notice all services will have a Success Deployment Status.

You should now be able to click the Authorize button that will take you to your Azure Portal where we will complete our setup.

Click the `Authorize` button.

Deployment Status

Free Trial	
Submitted On	3/12/2018 11:18:58 PM
Deployment Status	InProgress
Resource Group Name	rg-connected-field-service
Deployment Region	West US
Dynamics 365 Organization	https://gregdegruy.crm.dyn365.com
Authorize Dynamics 365 API Connection <small>?</small>	Authorize
Open Simulator Web Application	Open Simulator
Resource Type	
Deployment Status	
StreamAnalytics	Success
Simulator	Success
CrmHelperConnector	Success
StreamAnalytics	Success
StorageAccount	Success
QueueMessageParserApiApp	Success
IoTHub	Success
ServiceBus	Success
SqlDatabase	Success
CrmToloTLogicApp	Success
IoTHubApiApp	Success
IoTToCrmLogicApp	Success
ServicePlan	Success

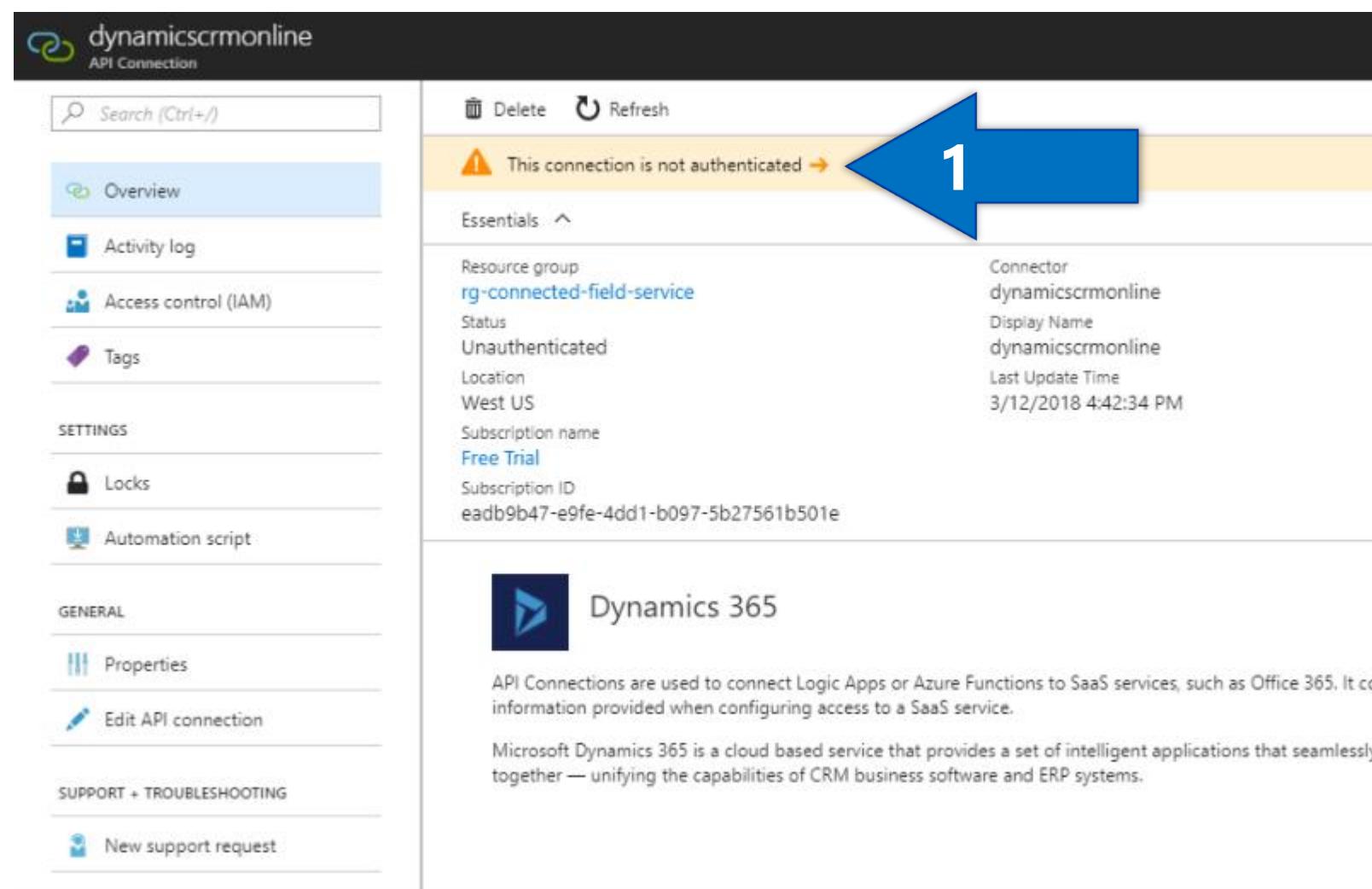


Dynamics API connection

The first windows you'll see in your Azure portal is for the dynamicscrmonline API Connection service.

We need to authorize this API Connection service to connect to our Dynamics organization.

- 1 Click "This connection is not authenticated" highlighted in yellow.



The screenshot shows the Azure portal interface for managing API connections. The main title is "dynamicscrmonline API Connection". On the left, there's a navigation menu with options: Overview (highlighted in blue), Activity log, Access control (IAM), Tags, SETTINGS (with Locks and Automation script), GENERAL (with Properties and Edit API connection), and SUPPORT + TROUBLESHOOTING (with New support request). The main content area has a yellow header bar with the message "This connection is not authenticated" and a warning icon. Below this, under the "Essentials" section, are details: Resource group "rg-connected-field-service", Connector "dynamicscrmonline", Status "Unauthenticated", Location "West US", Subscription name "Free Trial", Subscription ID "eadb9b47-e9fe-4dd1-b097-5b27561b501e", and Last Update Time "3/12/2018 4:42:34 PM". A large blue arrow points from the bottom-left towards the yellow header bar. In the bottom right corner, there's a "Dynamics 365" section with a brief description of API Connections and a link to Microsoft Dynamics 365.

This connection is not authenticated

Overview

Activity log

Access control (IAM)

Tags

SETTINGS

Locks

Automation script

GENERAL

Properties

Edit API connection

SUPPORT + TROUBLESHOOTING

New support request

Delete Refresh

Essentials

Resource group
rg-connected-field-service

Status
Unauthenticated

Location
West US

Subscription name
Free Trial

Subscription ID
eadb9b47-e9fe-4dd1-b097-5b27561b501e

Last Update Time
3/12/2018 4:42:34 PM

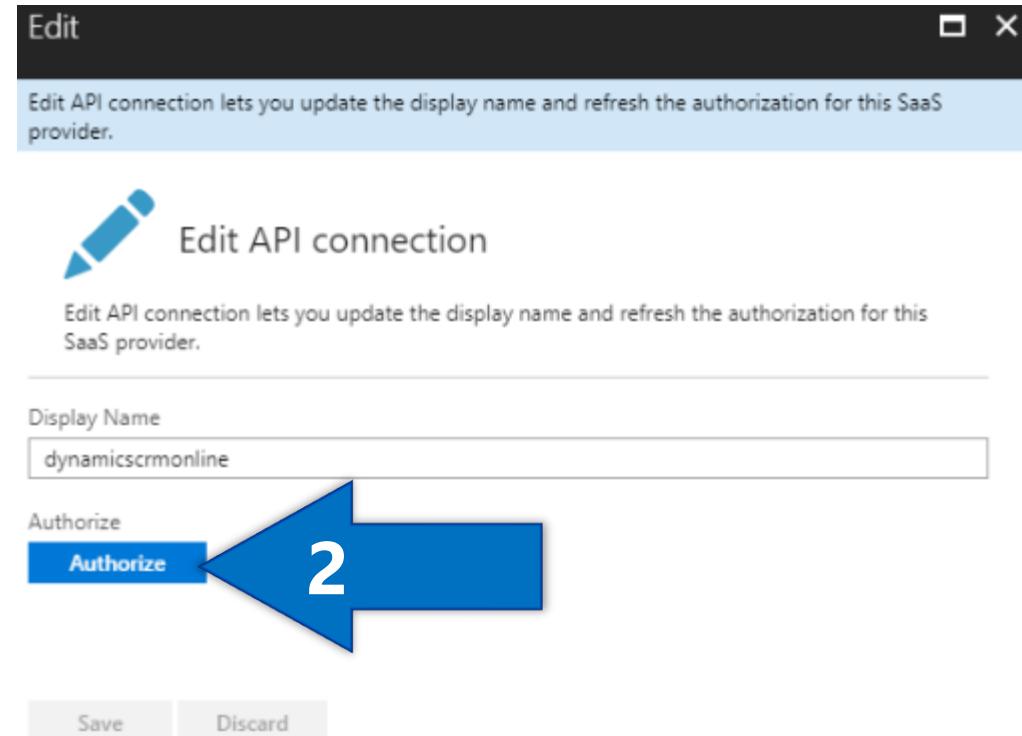
Dynamics 365

API Connections are used to connect Logic Apps or Azure Functions to SaaS services, such as Office 365. It contains information provided when configuring access to a SaaS service.

Microsoft Dynamics 365 is a cloud based service that provides a set of intelligent applications that seamlessly work together — unifying the capabilities of CRM business software and ERP systems.

Edit API connection

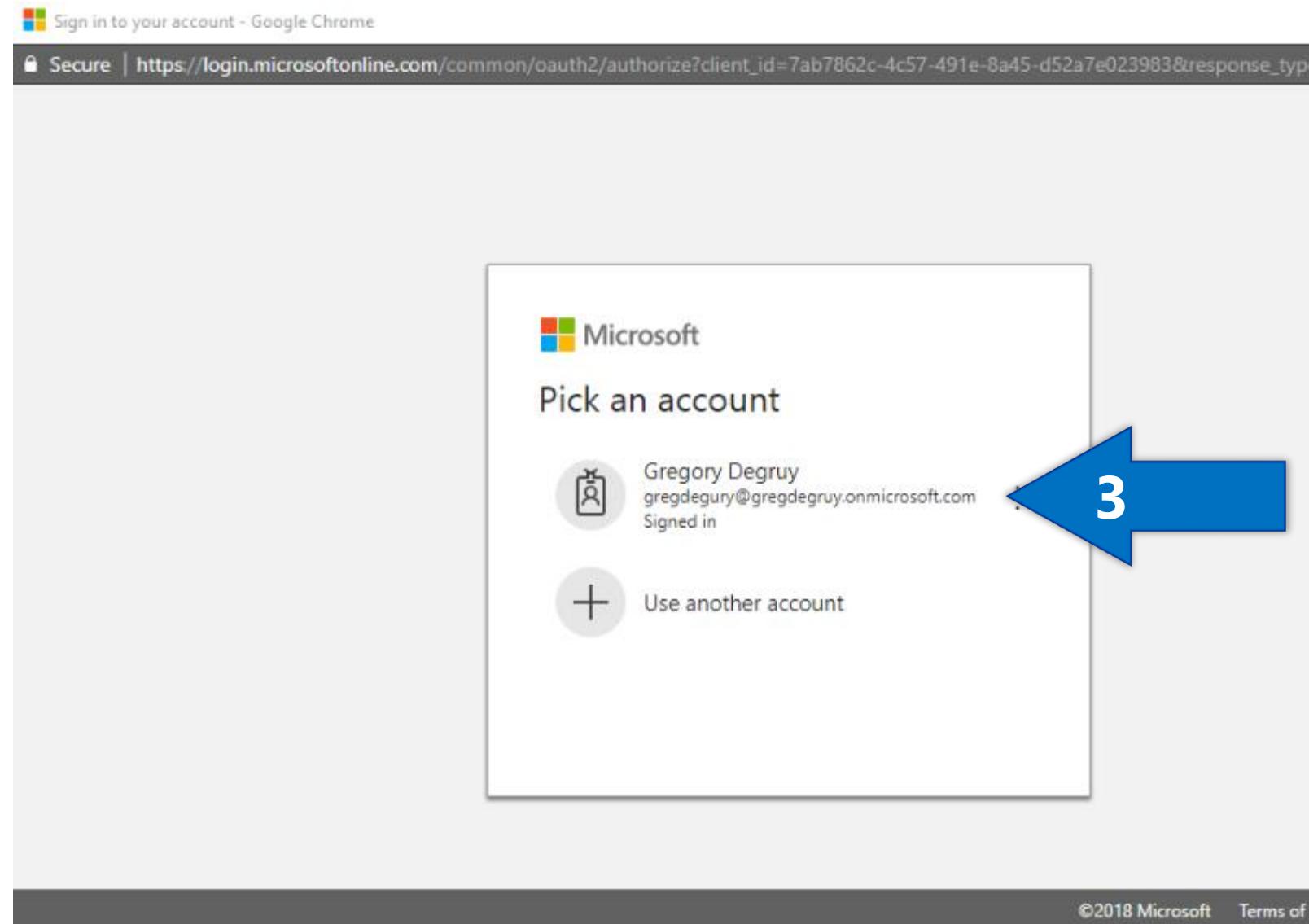
'2' Give your connection a Display Name and click 'Authorize'



Dynamics User ID

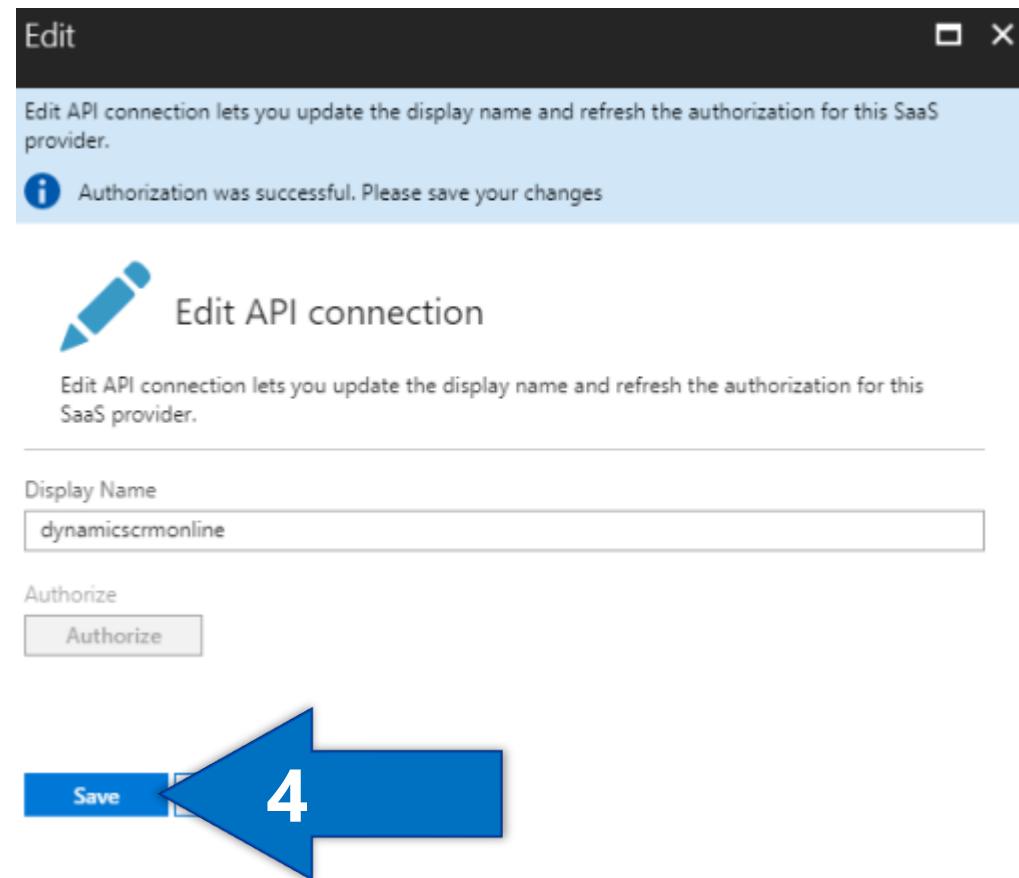
3 A Window will open for you to pick your Microsoft account login.

We created this login in Exercise 1, only one login should be shown so select it.



Save API connection

‘4` The window will close and you'll now have the option to save your API connection information, click ‘Save’.



Resource group menu

Now that we have an authorized API connection between Azure and Dynamics, we can start configuring our IoT Hub.

This IoT Hub serves as our management service for the IoT device(s) in our Connected Field Service solution.

Click on `Resource Groups` from the left menu.

The screenshot shows the Microsoft Azure portal interface. On the left, a dark sidebar menu lists various services: Create a resource, All services, Favorites (Dashboard, All resources, Resource groups), App Services, Function Apps, SQL databases, Azure Cosmos DB, Virtual machines, Load balancers, Storage accounts, Virtual networks, Azure Active Directory, Monitor, Advisor, Security Center, Cost Management + Billing, and Help + support. The 'Resource groups' option is highlighted with a large blue arrow pointing to it. The main content area shows an 'API Connection' named 'dynamicscrmonline' under the 'dynamicscrmonline' resource group. The 'Overview' tab is selected. To the right, there's a 'Dynamics 365' section with a brief description and a 'New support request' button. The top right corner has a search bar and some connectivity information.

Microsoft Azure

Home > dynamicscrmonline

dynamicscrmonline API Connection

Search (Ctrl+ /)

Overview

Activity log

Locks

Automation script

GENERAL

Properties

Edit API connection

SUPPORT + TROUBLESHOOTING

New support request

Delete Refresh

Essentials

Resource group rg-connected-field-service

Status Connected

Location West US

Subscription name Free Trial

Subscription ID eadb9b47-e9fe-4dd1-b097-5b27561b501e

Connector dynamicscrmonline

Display Name dynamicscrmonline

Last Update Time 3/12/2018 4:54:18 PM

Dynamics 365

API Connections are used to connect Logic Apps or Azure Functions to SaaS services, such as Office 365. It contains information provided when configuring access to a SaaS service.

Microsoft Dynamics 365 is a cloud based service that provides a set of intelligent applications that seamlessly work together — unifying the capabilities of CRM business software.

Search resources, services and docs

CFS resource group

This will bring you to the resource group selection list. We created this resource group int eh 25 minute deployment at the start of this exercise and contains all of the IoT services we'll be using.

Click on `rg-connected-field-service`.

The screenshot shows the Microsoft Azure portal interface. On the left, a sidebar menu includes options like 'Create a resource', 'All services', 'Dashboard', 'All resources', 'Resource groups' (which is selected and highlighted in blue), 'App Services', 'Function Apps', 'SQL databases', 'Azure Cosmos DB', and 'Virtual machines'. The main content area is titled 'Resource groups' and shows a single item: 'rg-connected-field-service'. This item has a small blue icon next to it. A large blue arrow points from the text in the previous slide towards this specific resource group entry. The top navigation bar includes a search bar ('Search resources, services and docs'), a notification bell with a '2' badge, and other standard navigation icons.

IoT services

This resource group contains all of the Azure services we deployed from AppSource solution.

Click on your IoT Hub. It is named the same as your Resource Group with a long list of letters and numbers in the form of a GUID, in my case it's called `rgconnectedfieldservice8e3aca9cda474acd82c08f5a`.

The screenshot shows the Azure portal interface for a Resource Group named 'rg-connected-field-service'. The left sidebar lists various service categories: Overview, Activity log, Access control (IAM), Tags, SETTINGS (Quickstart, Resource costs, Deployments, Policies, Properties, Locks, Automation script), MONITORING (Metrics, Alert rules, Diagnostics logs, Application insights, Log analytics (OMS), Log search, Advisor recommendations). A large blue arrow points from the 'Alert rules' item in the sidebar to the main content area. The main content area displays a table of deployed resources:

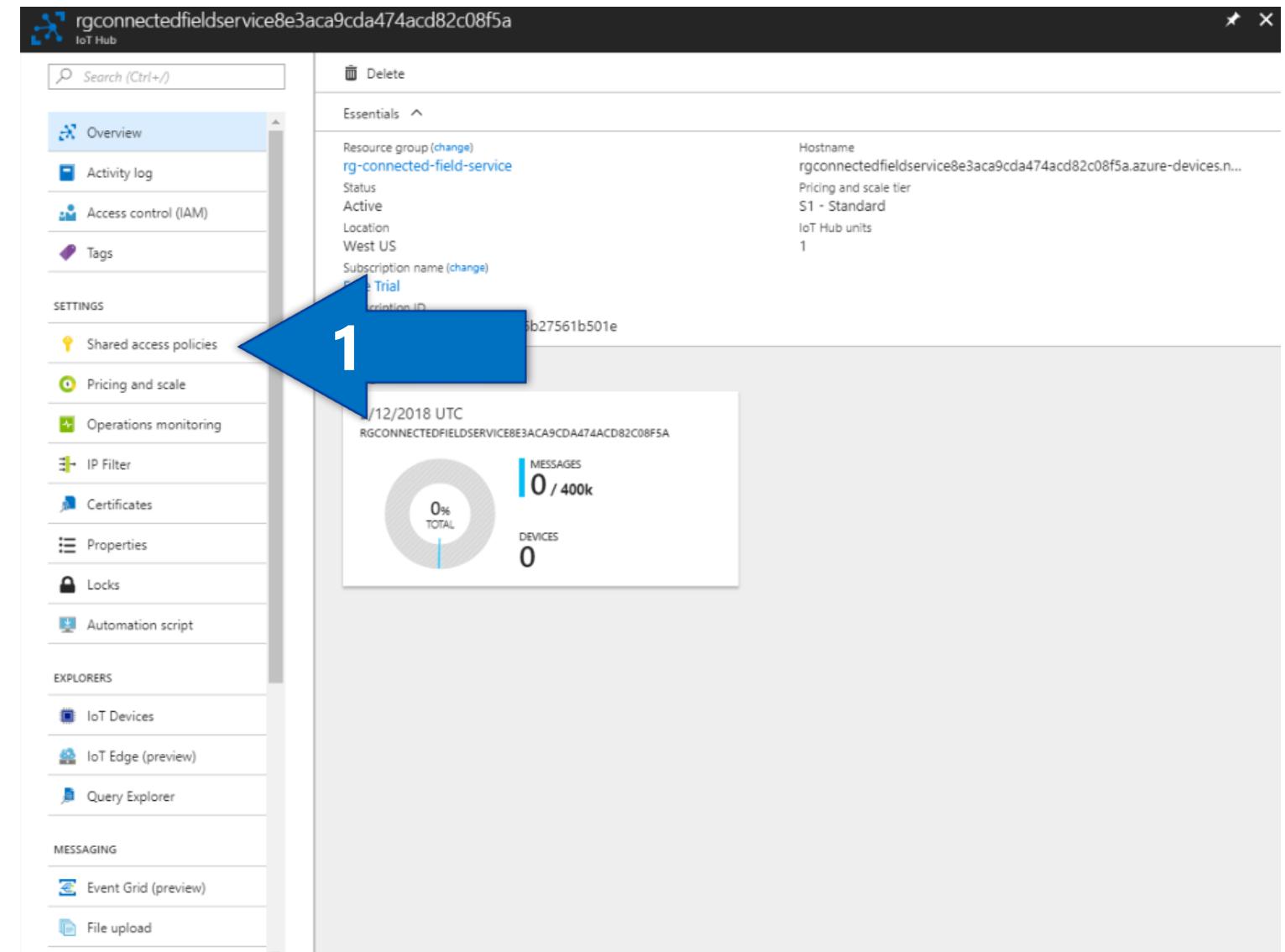
NAME	TYPE	LOCATION	...
CRMHelperrgconnectedfieldservice5e9a1735fb48	App Service	West US	...
CRM-To-IoT	Logic app	West US	...
dynamicscrmonline	API Connection	West US	...
IoTHubrgconnectedfieldservicecfacfa9e6fa047dfb	App Service	West US	...
IoT-To-CRM	Logic app	West US	...
QueueMessageParserrgconnectedfieldservice4be2a	App Service	West US	...
rgconnectedfieldservi	Storage account	West US	...
rgconnectedfieldservice068a507e17dc49049	Stream Analytics job	West US	...
rgconnectedfieldservice7601f2230e9b4efd9	Stream Analytics job	West US	...
rgconnectedfieldservice8e3aca9cda474acd82c08f5a	IoT Hub	West US	...
rgconnectedfieldserviceb041729d72dd4a4c8f9f8e9f	Service Bus	West US	...
SBMessage	API Connection	West US	...
ServicePlan	App Service plan	West US	...
Simulatorrgconnectedfieldservice8b0afe2802a54b3	App Service	West US	...
sqlsvrvgconnectedfieldservicef400495cf22d4128ba	SQL server	West US	...
dbt7txwfc06h5g6	SQL database	West US	...

IoT Hub

Shared access policy

Now we need to add a Shared access policy to create a connection between our IoT Hub and Dynamics.

- `1` Click "Shared access policy" from the IoT Hub menu.



Add Shared access policy

- '2' Click "+ Add" at the very top of the Shares access policy list.

rgconnectedfieldservice8e3aca9cda474acd82c08f5a - Shared access policies

+ Add 2

IoT Hub uses permissions to grant access to each IoT hub endpoint. Permissions limit the access to an IoT hub endpoint.

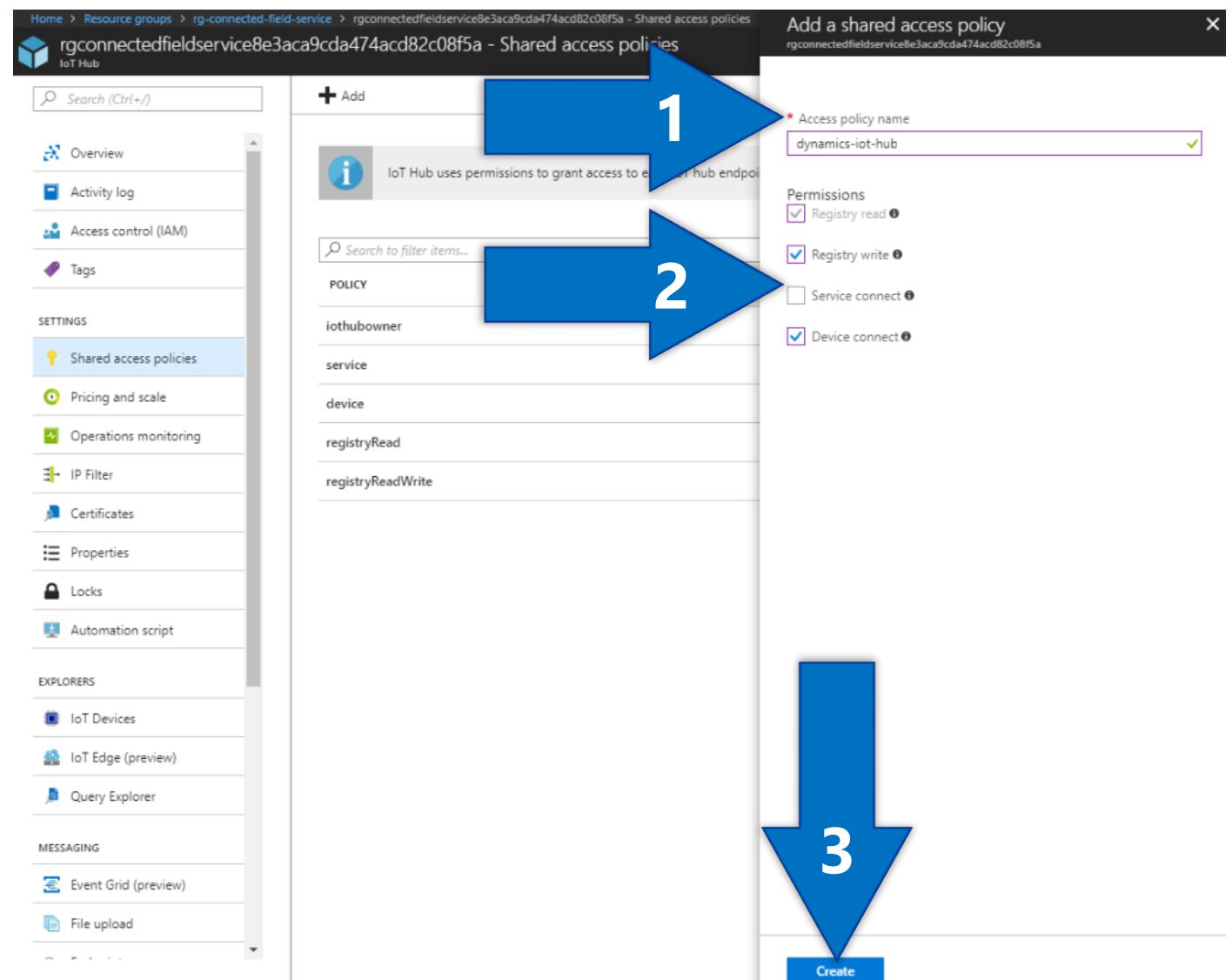
POLICY	PERMISSIONS
iothubowner	registry write, service connect, de
service	service connect
device	device connect
registryRead	registry read
registryReadWrite	registry write



Shared access policy permissions

Then give the Shared access policy the permissions it needs to communicate with Dynamics:

- `1` Give your policy a name, I called mine dynamics-iot-hub
- `2` Select the `Registry read`, `Registry write`, and `Device connect` permissions
- `3` Click the `Create` button



Shared access policy keys

Once created, the shared access policy will provide 4 keys to you.

The one we will need going forward is the 'Primary Key', click the copy button for the primary key and save it in Notepad.

rg-connected-field-service > rgconnectedfieldservice8e3aca9cda474acd82c08f5a - Shared access policies

dservice8e3aca9cda474acd82c08f5a - Shared access policies

+ Add

IoT Hub uses permissions to grant access to each IoT hub endpoint

Search to filter items...

POLICY

- iothubowner
- service
- device
- registryRead
- registryReadWrite
- dynamics-iot-hub

Access policy name: dynamics-iot-hub

Permissions:

- Registry read
- Registry write
- Service connect
- Device connect

Shared access keys:

Primary key: [REDACTED]

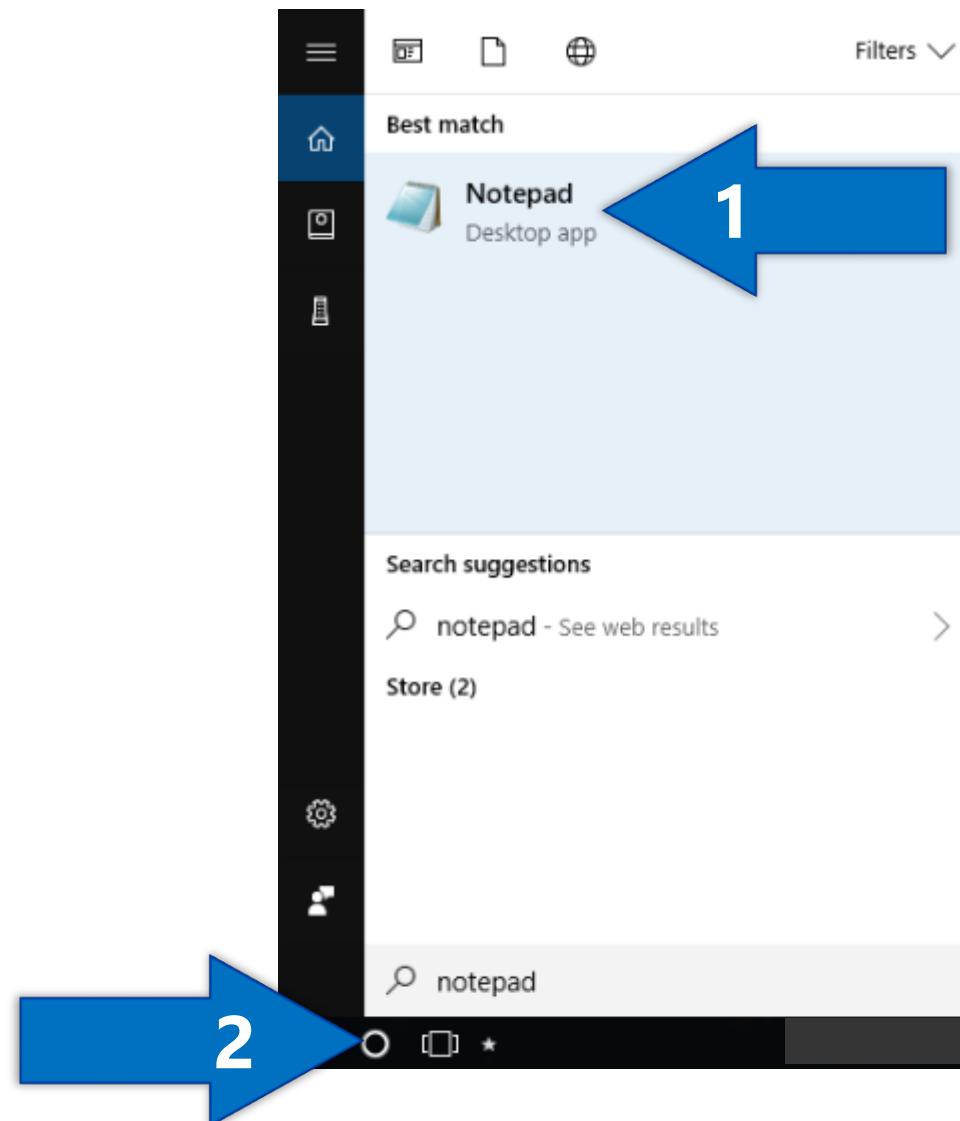
Secondary key: [REDACTED]

Connection string—primary key: [REDACTED]

Connection string—secondary key: [REDACTED]

Notepad

Notepad can be open by clicking the '1' Cortana button next to the Windows icon and typing in Notepad. It will be the first app on the list that you can then '2' click on.



Back to resource group

Now that we have our Primary key saved, we can head to our device simulator.

This simulator is a web app that we can use to see real time IoT device telemetry. Click on `Resource Groups` from the left menu.

The screenshot shows the Microsoft Azure portal interface. On the left, a dark sidebar lists various services: Create a resource, All services, Favorites (Dashboard, All resources), Resource groups (highlighted with a blue arrow), App Services, Function Apps, SQL databases, Azure Cosmos DB, Virtual machines, Load balancers, Storage accounts, Virtual networks, Azure Active Directory, and Monitor. The main content area is titled 'rgconnectedfieldservice8e3aca9cda474acd82c08f5a - Shared access policies'. It includes a search bar, an 'Add' button, and a note about IoT Hub permissions. Below these are sections for 'POLICY' (with items: iothubowner, service, device, registryRead, registryReadWrite, dynamics-iot-hub) and 'SETTINGS' (with items: Shared access policies, Pricing and scale, Operations monitoring, IP Filter, Certificates, Properties, Locks, Automation script). At the bottom are 'EXPLORERS' for IoT Devices.

CFS resource group

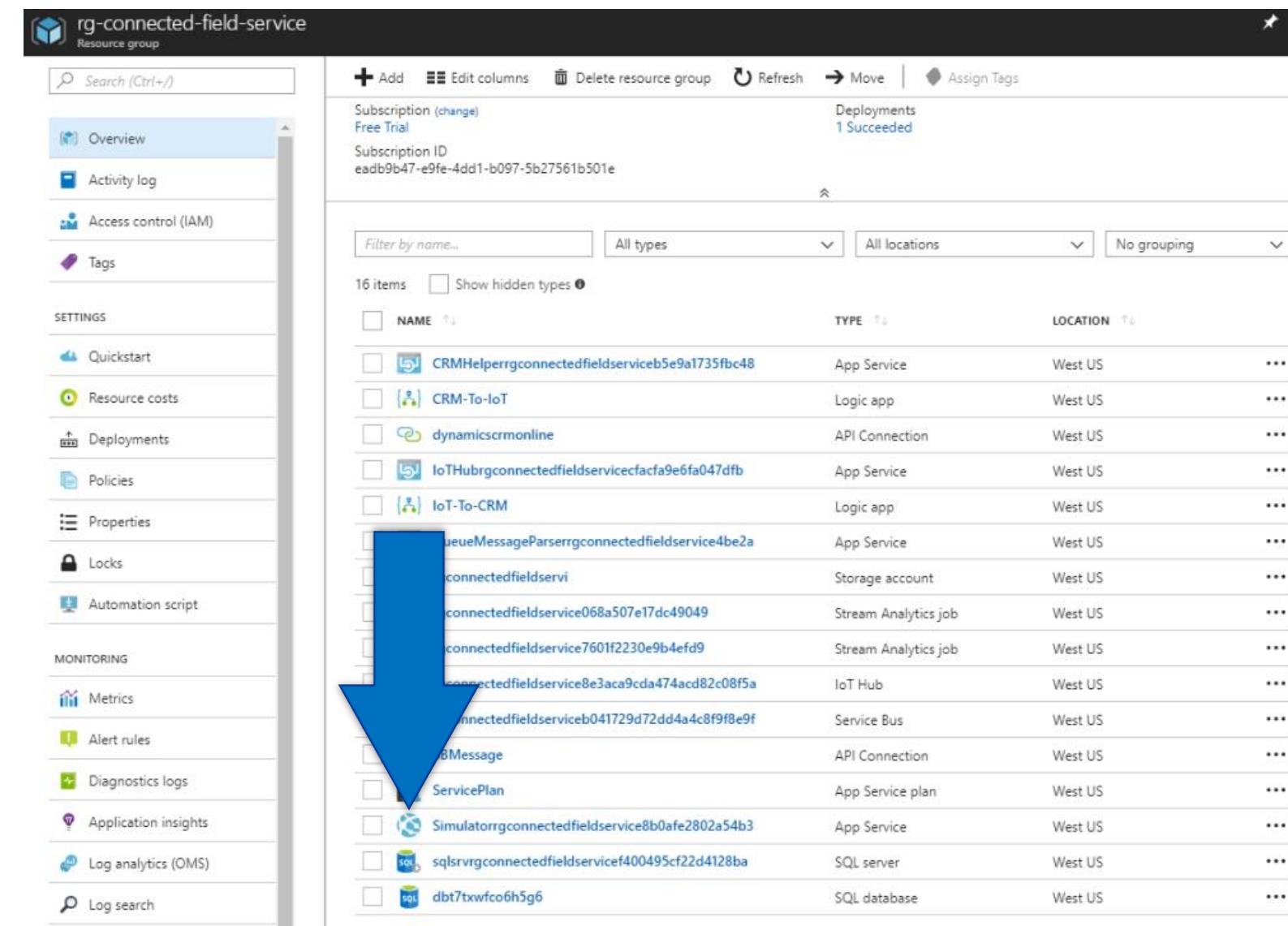
This will bring you to the resource group selection list. Click on `rg-connected-field-service`.

The screenshot shows the Microsoft Azure portal interface. On the left, a sidebar menu lists various services: Create a resource, All services, Dashboard, All resources, Resource groups, App Services, Function Apps, SQL databases, Azure Cosmos DB, and Virtual machines. The 'Resource groups' option is selected. The main content area is titled 'Resource groups' and shows one item: 'rg-connected-field-service'. A large blue arrow points to this item. The top navigation bar includes a search bar, notification icons, and other navigation links.

NAME	SUBSCRIPTION
rg-connected-field-service	Free Trial

App Service

Click on your Simulator App Service. It is named Simulator followed by the same name as your Resource Group with a long list of letters and numbers in the form of a GUID, in my case it's called `Simulatorrgconnectedfieldservice8b0afe2802a54b3`.



The screenshot shows the Azure portal interface for a Resource Group named "rg-connected-field-service". The left sidebar contains navigation links for Overview, Activity log, Access control (IAM), Tags, SETTINGS (Quickstart, Resource costs, Deployments, Policies, Properties, Locks, Automation script), MONITORING (Metrics, Alert rules, Diagnostics logs, Application insights, Log analytics (OMS), Log search), and a search bar. The main content area displays the "Subscription (change)" section with "Free Trial" and "Subscription ID eadb9b47-e9fe-4dd1-b097-5b27561b501e". Below this is a table of resources:

	NAME	TYPE	LOCATION	...
<input type="checkbox"/>	CRMHelperrgconnectedfieldserviceb5e9a1735fb48	App Service	West US	...
<input type="checkbox"/>	CRM-To-IoT	Logic app	West US	...
<input type="checkbox"/>	dynamicscrmonline	API Connection	West US	...
<input type="checkbox"/>	IoTHubrgconnectedfieldservicecfacfa9e6fa047dfb	App Service	West US	...
<input type="checkbox"/>	IoT-To-CRM	Logic app	West US	...
<input type="checkbox"/>	QueueMessageParseerrgconnectedfieldservice4be2a	App Service	West US	...
<input type="checkbox"/>	connectedfieldservice	Storage account	West US	...
<input type="checkbox"/>	connectedfieldservice068a507e17dc49049	Stream Analytics job	West US	...
<input type="checkbox"/>	connectedfieldservice7601f2230e9b4efd9	Stream Analytics job	West US	...
<input type="checkbox"/>	connectedfieldservice8e3aca9cda474acd82c08f5a	IoT Hub	West US	...
<input type="checkbox"/>	connectedfieldserviceb041729d72dd4a4c8f9f8e9f	Service Bus	West US	...
<input type="checkbox"/>	DBMessage	API Connection	West US	...
<input type="checkbox"/>	ServicePlan	App Service plan	West US	...
<input type="checkbox"/>	Simulatorrgconnectedfieldservice8b0afe2802a54b3	App Service	West US	...
<input type="checkbox"/>	sqlsvrvgconnectedfieldservicef400495cf22d4128ba	SQL server	West US	...
<input type="checkbox"/>	dbt7txwfc06h5g6	SQL database	West US	...

IoT device Simulator Web App URL

After you click on your Simulator App Service, you'll be brought to the main page for your App Service.

Move your mouse to the right of the URL link, a copy button will appear. Click the copy button to copy the URL. In a new browser tab, paste the URL.

The screenshot shows the Azure App Service Overview page for a resource named "Simulatorrgconnectedfieldservice8b0afe2802a54b3". The URL <https://simulatorrgconnectedfieldservice8b0afe2802a54b3> is displayed prominently at the top right. A large blue arrow points to the copy icon (a clipboard with a plus sign) next to the URL. The page includes sections for Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Deployment (Quickstart, Deployment credentials, Deployment slots, Deployment options, Continuous Delivery (Preview)), Settings (Application settings, Authentication / Authorization, Managed service identity, Backups), and Application Insights. The status is listed as Running, and the location is West US.

Thermometer simulator

The Field Service IoT device simulator is a web app that we can use in place of a physical device to experiment with sending device alerts to Dynamics.

Next we will show you how to use this simulator to send messages to Azure and capture alerts in Dynamics.

Then we will setup a physical device.



Field Service IoT Thermometer Connection Reboot

Connection Status: Disconnected

Device ID Refresh •

Humidity 40%

Temperature 65°F

Messages Received:

Messages Sent:

Install Connected Field Service Add-on

Exercise 3

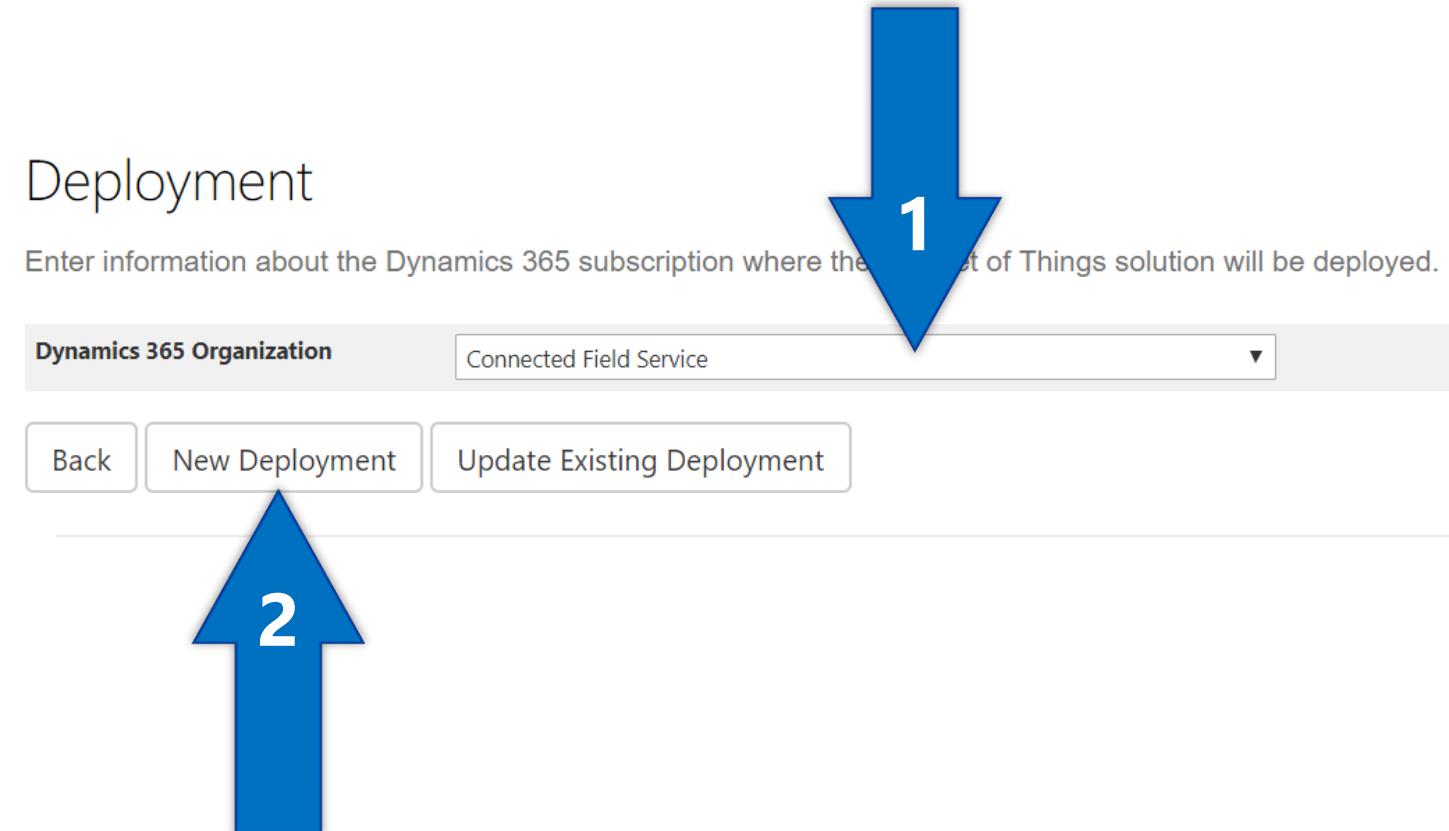
Add-on v1.0.18118.1



Deployment org

Verify the Dynamics 365 subscription where the Internet of Things solution will be deployed is selected properly.

- `1` Your Dynamics 365 organization is auto selected for you and there should only be since we created only one instance in Exercise 1
- `2` Click the `Next` button



New Deployment

Provide provisioning details for the Azure assets required by the IoT connector for Dynamics 365.

[Use a different account](#)

Azure account

Sign in

You can sign in with a different Microsoft account if the Azure subscription where the resources should be deployed is not associated with your Dynamics 365 organization.

Dynamics 365 Organization

1

Azure Subscription

Resources



Create new



Use existing Azure resources

Enable Power BI Integration 



Resource Group Selection



Create new



Use existing resource group

Resource Group Name

Deployment Region

Back

Deploy

New Deployment

Provide provisioning details for the Azure assets required by the IoT connector for Dynamics 365.

Dynamics 365 Organization

1

Azure Subscription

Super Saiyan Goku

Resources

Create new

Use existing Azure resources

Enable Power BI Integration ?

SQL Server Admin Login

grdegr

SQL Password

.....

Confirm Password

.....

Resource Group Selection

Create new

Use existing resource group

Resource Group Name

rg-cfs-two

Deployment Region

West US

Cancel

Deploy

Deployment Status

The deployment has been submitted. You can check the deployment status in <https://cfsdeployment.crm.dynamics.com/>. Please log in using the

Super Saiyan Goku

Submitted On	5/8/2018 4:33:36 PM
Deployment Status	Unknown
Resource Group Name	rg-cfs-two
Deployment Region	West US
Dynamics 365 Organization	https://cfstwo.crm.dynamics.com
Authorize Dynamics 365 API Connection <small>?</small>	Authorize
Open Simulator Web Application	Open Simulator

Super Saiyan Goku

Submitted On	2/28/2018 7:46:54 PM
Deployment Status	Success
Resource Group Name	rg-connected-field-service
Dynamics 365 Organization	https://fieldservice-iot.crm.dynamics.com
Authorize Dynamics 365 API Connection <small>?</small>	Authorize



Deployment Status

The deployment has been submitted. You can check the deployment status in <https://cfsdeployment.crm.dynamics.com/>. Please log in using the Azure account w

Super Saiyan Goku

Submitted On	5/8/2018 4:33:36 PM
Deployment Status	Success
Resource Group Name	rg-cfs-two
Deployment Region	West US
Dynamics 365 Organization	https://cfstwo.crm.dynamics.com

Authorize Dynamics 365 API Connection 

[Authorize](#)

[Open Simulator Web Application](#)

[Open Simulator](#)

Resource Type	Deployment Status
StreamAnalytics	Success
ServiceBus	Success
CrmToloTLogicApp	Success
IoTHub	Success
ServicePlan	Success
IoTToCrmLogicApp	Success
QueueMessageParserApiApp	Success
CFSSolutionInstallation	Success
ServiceEndpointSetup	Success
Simulator	Success
StorageAccount	Success
SqlDatabase	Success
CrmHelperConnector	Success
StreamAnalytics	Success
IoTHubApiApp	Success



	dynamicscrmonline	API Connection
	SBMessage	API Connection
	CRMHelperrgcfstwo0166785af86c4ead945e81b7efa859	App Service
	IoTHubrgcfstwob826801bf9104faeacf391c8c6d35ca5	App Service
	QueueMessageParserrgcfstwo7355a20f73644caebd0cb	App Service
	Simulatorrgcfstwodcb1f809d3a74b01b4d3066a276fae8	App Service
	ServicePlan	App Service plan
	rgcfstwo8c1953e4eff84324a3e77869182768b5	IoT Hub
	CRM-To-IoT-V2	Logic app
	IoT-To-CRM	Logic app
	rgcfstwod349a037a7d84e83a5099729e4c306ee	Service Bus Namespace
	dbfwreyajqmoexs (sqlsvrgcfstwo86d1d8a542584611a3f216c24f9d9755/dbfwreyajqmoexs)	SQL database
	master (sqlsvrgcfstwo86d1d8a542584611a3f216c24f9d9755/master)	SQL database
	sqlsvrgcfstwo86d1d8a542584611a3f216c24f9d9755	SQL server
	rgcfstwoea52d772562143	Storage account
	rgcfstwo341ba4db303842d2a50cba830a34b3e9	Stream Analytics job
	rgcfstwoe4593708abf241c08e26ad42443ae8a9	Stream Analytics job



rg-connected-field-service
Resource group

Search (Ctrl+ /)

Overview

Activity log

Access control (IAM)

Tags

SETTINGS

Quickstart

Resource costs

Deployments

Policies

Properties

Locks

Automation script

MONITORING

Metrics

Alert rules

Diagnostics logs

Application insights

Log analytics (OMS)

Log search

+ Add Edit columns Delete resource group Refresh Move Assign Tags

Subscription (change)
Free Trial

Subscription ID
eadb9b47-e9fe-4dd1-b097-5b27561b501e

Deployments
1 Succeeded

Filter by name... All types All locations No grouping

16 items Show hidden types

	NAME	TYPE	LOCATION	...
	CRMHelperrgconnectedfieldserviceb5e9a1735fbc48	App Service	West US	...
	CRM-To-IoT	Logic app	West US	...
	dynamicscrmonline	API Connection	West US	...
	IoTHubrgconnectedfieldservicecfacfa9e6fa047dfb	App Service	West US	...
	IoT-To-CRM	Logic app	West US	...
	QueueMessageParserrgconnectedfieldservice4be2a	App Service	West US	...
	rgconnectedfieldservi	Storage account	West US	...
	rgconnectedfieldservice068a507e17dc49049	Stream Analytics job	West US	...
	rgconnectedfieldservice7601f2230e9b4efd9	Stream Analytics job	West US	...
	rgconnectedfieldservice8e3aca9cda474acd82c08f5a	IoT Hub	West US	...
	rgconnectedfieldserviceb041729d72dd4a4c8f9f8e9f	Service Bus	West US	...
	SBMessage	API Connection	West US	...
	ServicePlan	App Service plan	West US	...
	Simulatorrgconnectedfieldservice8b0afe2802a54b3	App Service	West US	...
	sqlsvrvgconnectedfieldservicef400495cf22d4128ba	SQL server	West US	...
	dbt7txwfc06h5g6	SQL database	West US	...

Capture alerts in Dynamics

Exercise 4



Disconnected Simulator

The Simulator is currently not connected to any IoT Device or IoT Hub. Notice the "Connection Status: Disconnected" in the top right.

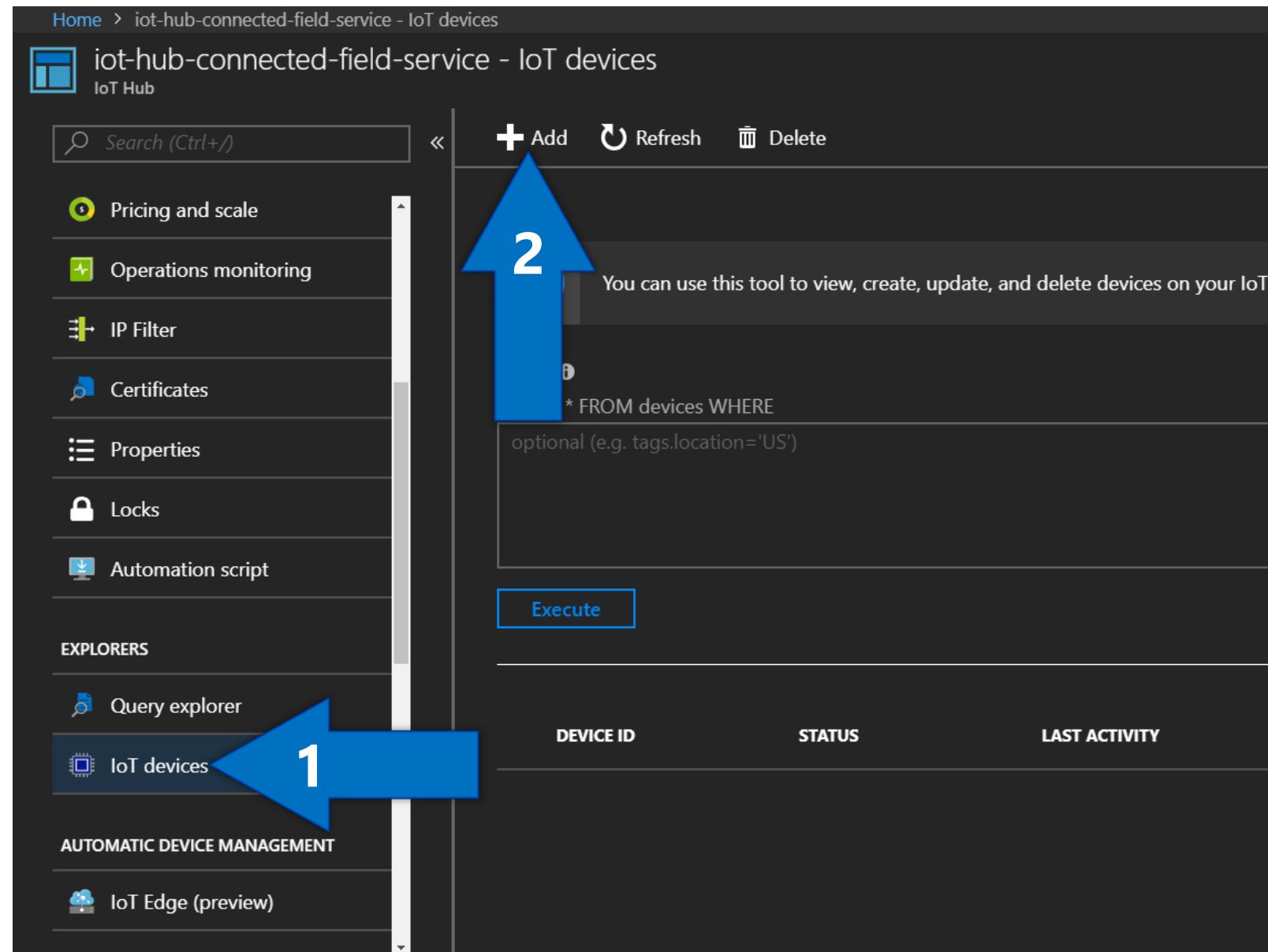
Without this connection no temperature or humidity data from this Simulator will be sent to Dynamics.

The screenshot shows the Field Service IoT application interface. At the top, there are tabs for "Field Service IoT", "Thermometer", "Connection", and "Reboot". The "Connection" tab is selected, indicated by a blue background. To the right of the tabs, the text "Connection Status: Disconnected" is displayed in red. Below the tabs, there is a photograph of a person's finger pointing at a digital control panel on a wall-mounted device. The device has a small screen showing "25.3 °C" and "18.0 °C". To the right of the image, there are two circular gauge charts. The first chart, labeled "Humidity", shows "40%" with a blue arc. The second chart, labeled "Temperature", shows "65°F" with a green arc. At the bottom of the interface, there are two large green rectangular boxes labeled "Messages Received:" and "Messages Sent:", both of which are currently empty.

Add Simulator Device to IoT Hub

Head back to your Azure portal and open your IoT Hub.

- `1` Under the EXPLORERS section click IoT devices
- `2` Click Add

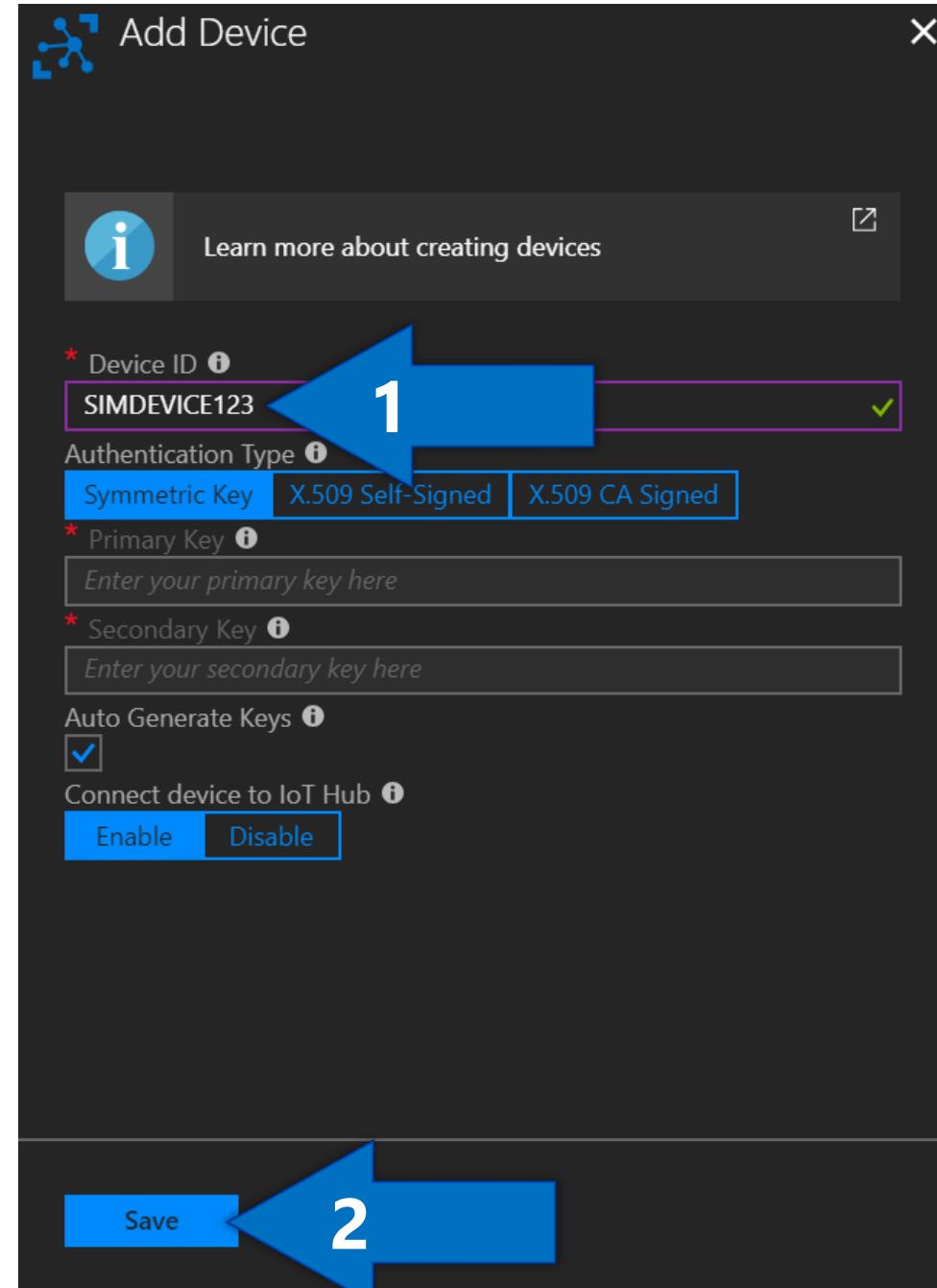


Simulator Device Information

The device we are adding to the IoT Hub is going to represent the device we use to communicate with the Thermostat Simulator.

In the Add Device form:

- `1` Give a unique Device ID, in my case SIMDEVICE123
- `2` Click Save



Azure connection information

In the last exercise we captured this information. Let's ensure we have captured it correctly.

- `1` We need the Hostname for our IoT Hub from the Overview section, Click to copy
- `2` Also go into Shared access policies and click the iothubowner Policy. Click to copy the Primary key

The screenshot shows the Azure IoT Hub Overview page for the hub "iot-hub-connected-field-service". On the left, the navigation menu includes "Overview", "Activity log", "Access control (IAM)", "Tags", and "Events". Under "SETTINGS", "Shared access policies" is selected. The main content area displays the following details:

- Hostname:** iot-hub-connected-field-service.azure-devices.net
- Pricing and scale tier:** S1 - Standard
- Number of IoT Hub units:** 1

A blue arrow points from the "Hostname" text to a "Click to copy" button in a callout box. Below this, the "Shared access policies" blade is open, showing the "iothubowner" policy. The "Permissions" section includes checked boxes for Registry read, Registry write, Service connect, and Device connect. The "Shared access keys" section shows the "Primary key" field with a copy icon. A large blue arrow labeled "2" points to this "Primary key" field.



Disconnected Simulator

Head back to the tab your simulator is open in and click Connection

The screenshot shows a web-based interface for a Field Service IoT application. At the top, there is a navigation bar with tabs: 'Field Service IoT' (selected), 'Thermometer', 'Connection', and 'Reboot'. To the right of the tabs, it displays 'Connection Status: Disconnected'. Below the navigation bar is a photograph of a digital thermometer device mounted on a wall. A blue arrow points upwards from the text instructions to the 'Connection' tab in the navigation bar. On the right side of the interface, there is a 'Device ID' dropdown menu and a 'Refresh' button with a red dot indicating an update. Below these are two circular gauge charts: one for 'Humidity' showing 40% and another for 'Temperature' showing 65°F. At the bottom, there are two large green rectangular boxes labeled 'Messages Received:' and 'Messages Sent:'.

Connection Status: Disconnected

Device ID •

Humidity 40%

Temperature 65°F

Messages Received:

Messages Sent:

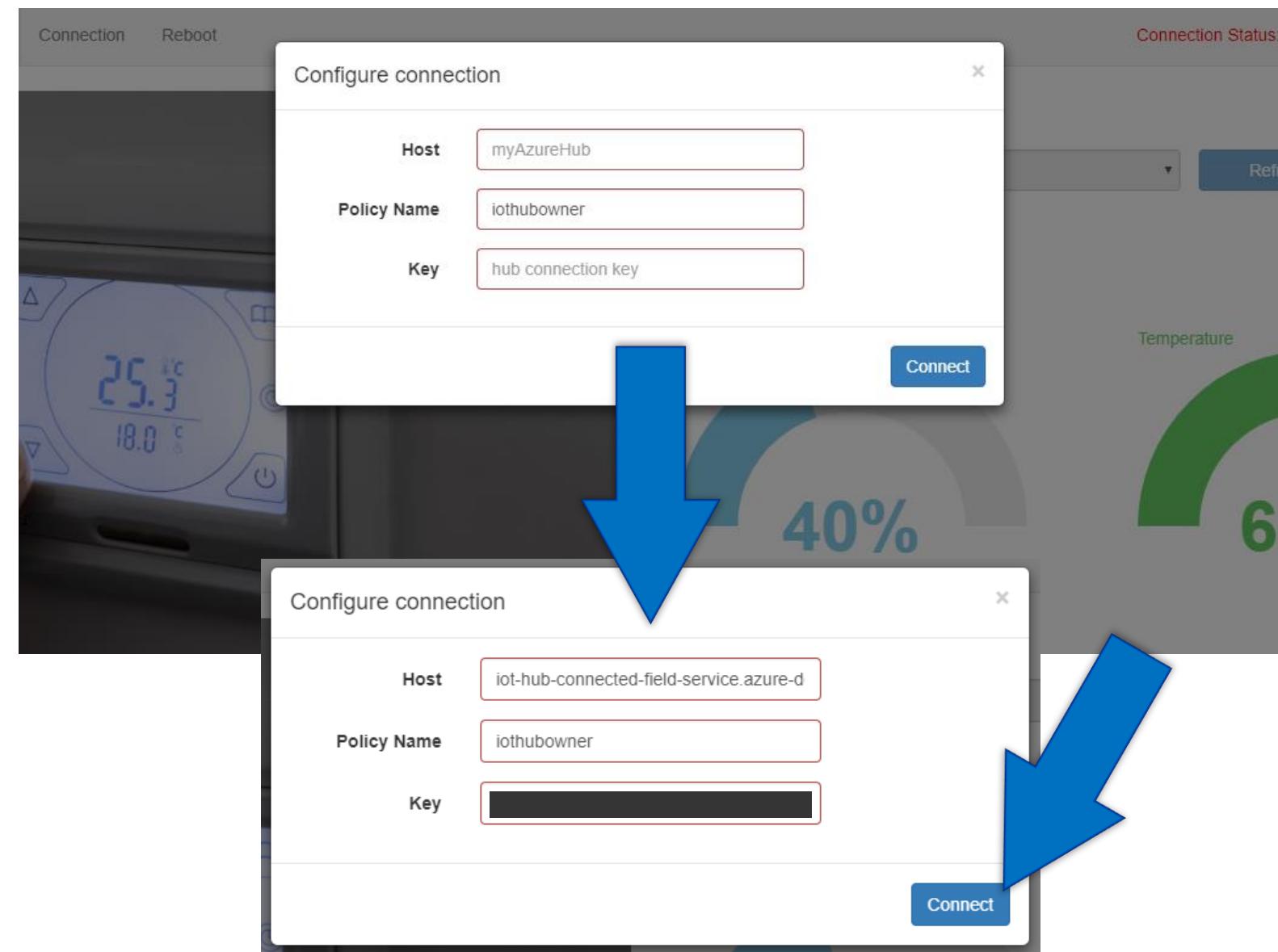
Configure connection

Paste the Hostname you copied to the Host field.

Paste iothubowner to the Policy name field.

Paste the Primary key for the iothubowner shared access policy in the Key field.

Click connect when complete.



Link simulator to device

The Simulator is now connected to your IoT Hub. Notice the "Connection Status: connected" in the top right.

Click the Device ID drop down and the select the simulator device we created earlier. In my case it is SIMDEVICE123.

The screenshot shows the Field Service IoT interface. At the top, there are tabs for "Field Service IoT", "Thermometer", "Connection", and "Reboot". The "Connection" tab is active. To the right, the "Connection Status" is shown as "Connected". Below the tabs, there is a photograph of a digital thermometer mounted on a wall. A hand is pointing at the screen of the thermometer. To the right of the thermometer, a large blue arrow points from the "Device ID" dropdown menu towards the thermometer. The "Device ID" dropdown menu is open, showing three options: "Select a device", "Select a device", and "SIMDEVICE123", with "SIMDEVICE123" highlighted. Below the dropdown are two circular gauge charts: one for "Humidity" showing 40% and one for "Temperature" showing 65°F. At the bottom, there are sections for "Messages Received:" and "Messages Sent:", each with a long green progress bar.

Field Service IoT Thermometer Connection Reboot

Connection Status: Connected

Device ID

Select a device

Select a device

SIMDEVICE123

Refresh

Humidity

40%

Temperature

65°F

Messages Received:

Messages Sent:

Automatically messages are sent

Now Humidity and Temperature messages will be sent from this Thermostat simulator directly to our simulator device in our IoT Hub.

If you ever want to stop sending messages click the Refresh button.

The screenshot shows the Field Service IoT interface. At the top, there are tabs for "Field Service IoT", "Thermometer", "Connection", and "Reboot". The "Connection" tab is selected, indicated by a grey background. To the right, it says "Connection Status: Connected". Below the tabs, there's a "Device ID" dropdown set to "SIMDEVICE123" with a refresh button next to it. A green dot indicates the connection is active. On the left, a photograph shows a hand interacting with a digital thermostat device. The device's screen displays "25.3 °C" and "18.0 °C". To the right, two circular gauges show "Humidity" at 40% (blue) and "Temperature" at 65°F (green). Below these are sections for "Messages Received:" and "Messages Sent:". The "Messages Received:" section is empty. The "Messages Sent:" section lists five entries: "CURRENT STATUS -> Te", "CURRENT STATUS -> Temperature: 65 Humidity: 40", "CURRENT STATUS -> Temperature: 65 Humidity: 40", "CURRENT STATUS -> Temperature: 65 Humidity: 40", and "CURRENT STATUS -> Temperature: 65 Humidity: 40".

Field Service IoT Thermometer Connection Reboot

Connection Status: Connected

Device ID: SIMDEVICE123 Refresh

Humidity: 40%

Temperature: 65°F

Messages Received:

Messages Sent:

- CURRENT STATUS -> Te
- CURRENT STATUS -> Temperature: 65 Humidity: 40

Data feed into IoT Hub

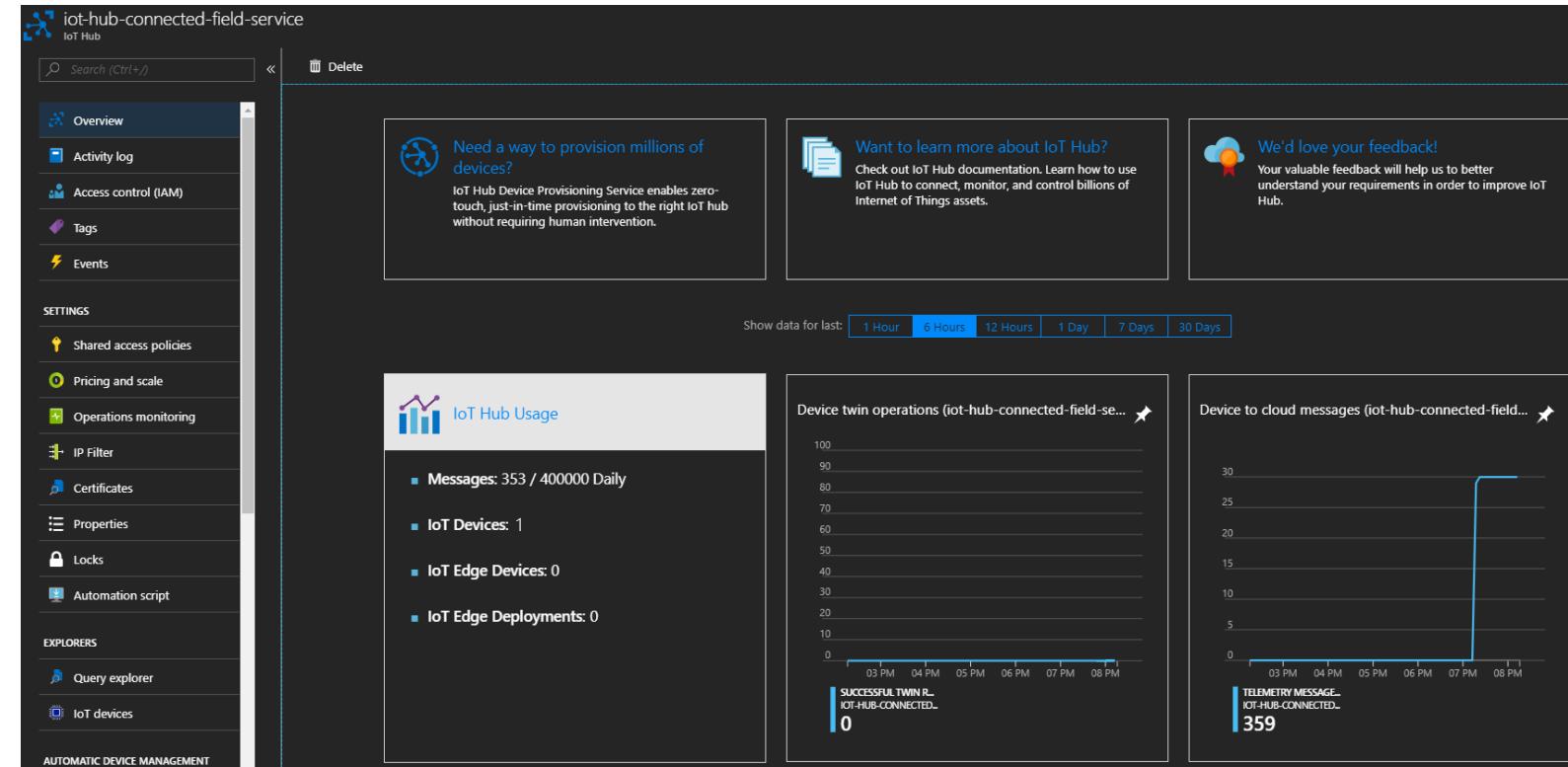
Where are our messages going?

How are these messages sent to Dynamics, they must start in Azure somewhere?

First visit your IoT Hub.

Our IoT Hub serves as the bi directional messaging infrastructure for our simulator. Right now it's doing the work of ingesting the Humidity and Temperature messages our device is sending.

I left my Simulator running for one hour and the resulting messaging data is seen here.



IoT data using Stream Analytics

Navigate to your Stream Analytics Job with the Alerts Queue Output. As an input. In my case it is rgconnectedfieldservice96e5071ebdd64bf88.

Our job takes our IoT Stream (Temperature and Humidity data) as input and a DevicesRulesBlob (contains a JSON payload defining our temperature threshold for when to send Alerts)

Our job sends a message to the AlertsQueue based on our Query and the threshold from our DevicesRulesBlob.

The screenshot shows the Azure Stream Analytics job overview page for the job `rgconnectedfieldservice96e5071ebdd64bf88`. The job status is **Stopped**. Key details include:

- Resource group:** rg-connected-field-service
- Status:** Stopped
- Location:** West US
- Subscription:** Super Saiyan Goku
- Subscription ID:** 6e1349e1-005a-44ba-8190-1013f89aab24
- Created:** Wednesday, February 28, 2018, 11:57:36 AM
- Started:** Thursday, April 26, 2018, 12:08:13 PM
- Last output:** -
- Hosting environment:** Cloud

Inputs:

- 2 DeviceRulesBlob
- 1 IoTStream

Outputs:

- 1 AlertsQueue

Query:

```

1 WITH AlertData AS
2 (
3     SELECT
4         Stream.DeviceID,
5         'Temperature' AS ReadingType,
6         Stream.Temperature AS Reading,
7         Stream.EventToken AS EventToken,
8         Ref.Temperature AS Threshold,
9         Ref.TemperatureRuleOutput AS RuleOutput,
10        Stream.EventEnqueuedUtcTime AS [Time]
11    FROM IoTStream Stream
12    JOIN DeviceRulesBlob Ref ON Ref.DeviceType = 'Thermostat'
13    WHERE
14        Ref.Temperature IS NOT null AND Stream.Temperature > Ref.

```

Monitoring:

Blob Storage

We've visited our IoT Hub and have a good picture of how this input functions.

Now visit your Storage account (in my cases called `storageconnfs`) to see where the `DevicesRulesBlob` and JSON lives for our Alerts threshold.

Click on the Blobs service and click into the `devicerules` container. You will need to click into the container folders

2016-05-30

> 22-40

Here you will see the `devicerules` JSON

The screenshot shows the Azure Storage account interface for the account `storageconnfs`. The left sidebar lists various services: Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Storage Explorer (preview), SETTINGS, Access keys, and Configuration. The `Blobs` service is selected, indicated by a blue background. The right pane shows the `Blobs` service details, including REST-based operations like Configure CORS rules, Setup custom domain, and View metrics. Below it, the `Tables` service is listed with its own set of operations. A large blue arrow points from the text above to the `Blobs` service. The bottom part of the screenshot shows the Blob service for the `storageconnfs` account, with the `devicerules` container selected. The container overview shows an `Overview` tab selected, along with Access Control (IAM), SETTINGS, Access policy, Properties, and Editor (preview). The blob list shows a single file named `devicerules.json`.

Stream Analytics Alert Threshold

This is a deeper look at our stream analytics job query and the device rules JSON.

Notice from this we can tell our temperature threshold for this Connected Field Service Add-on solution is 70.0°F out of the box.

And this threshold is referenced in the JOIN to the DevcieRulesBlobm, allowing us to use the WHERE clause defining an alert as a temperature from our IoT Hub data stream greater than the threshold defined in the device rules JSON.

Stream.Temperature > Ref.Temperature

STREAM ANALYTICS QUERY

```
WITH AlertData AS
(
SELECT
    Stream.DeviceID,
    'Temperature' AS ReadingType,
    Stream.Temperature AS Reading,
    Stream.EventToken AS EventToken,
    Ref.Temperature AS Threshold,
    Ref.TemperatureRuleOutput AS RuleOutput,
    Stream.EventEnqueuedUtcTime AS [Time]
FROM IoTStream Stream
JOIN DeviceRulesBlob Ref ON Ref.DeviceType = 'Thermostat'
WHERE
    Ref.Temperature IS NOT null AND Stream.Temperature > Ref.Temperature
)

SELECT data.DeviceId,
    data.ReadingType,
    data.Reading,
    data.EventToken,
    data.Threshold,
    data.RuleOutput,
    data.Time
INTO AlertsQueue
FROM AlertData data
WHERE LAG(data.DeviceID) OVER (PARTITION BY data.DeviceId, data.Reading,
    data.ReadingType LIMIT DURATION(minute, 1)) IS NULL
```

DEVICE RULES JSON

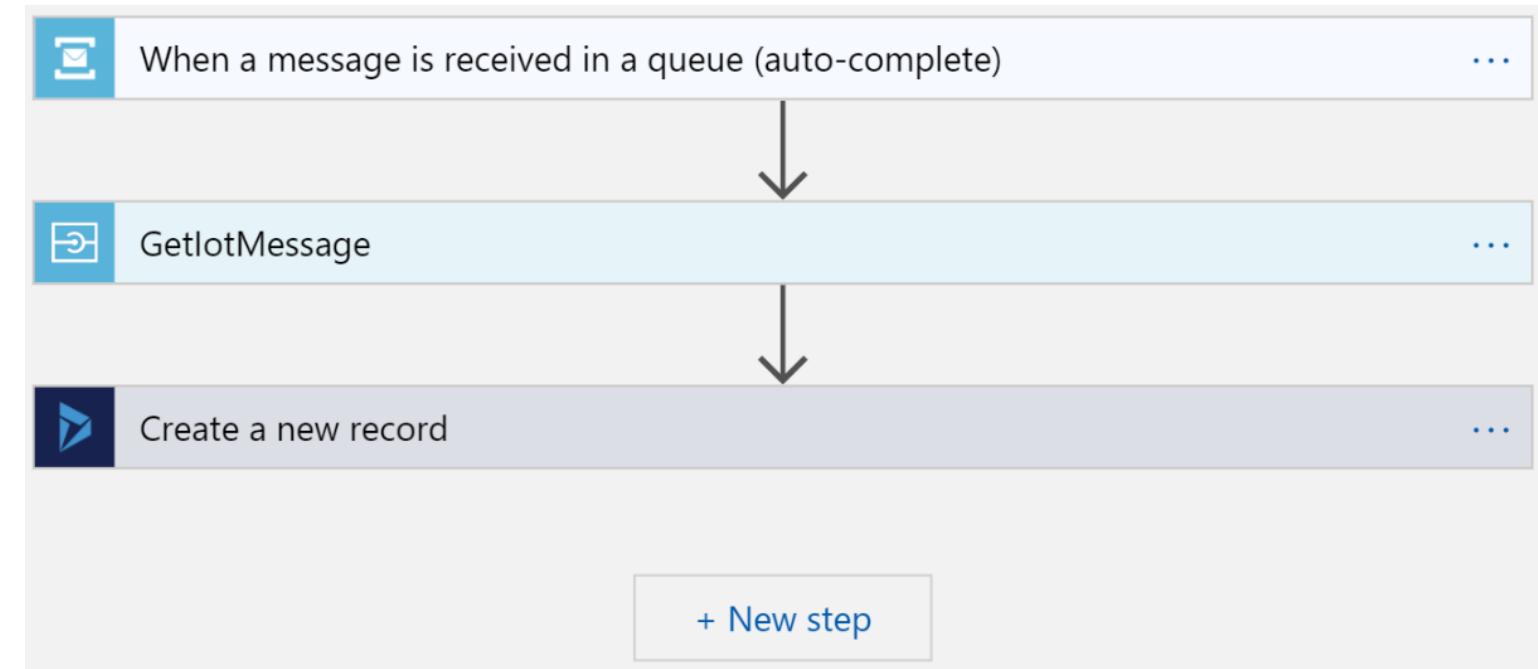
```
[
  {
    "DeviceType": "Thermostat",
    "Temperature": 70.0,
    "Humidity": null,
    "TemperatureRuleOutput": "AlarmTemp",
    "HumidityRuleOutput": null
  }
]
```



IoT to CRM Logic App

This Logic app is responsible for capturing the alert event from Stream Analytics and sending the necessary information to Dynamics 365.

This information is sent in the form of a new custom Dynamics Entity called IoT Alerts.



Start API App Queue Message Parser

The second step in our logic depends on one on the Queue Message Parser ur API Apps, so ensure it is running before continuing.

Go to the Queue Message Parser API App and click Start.

In my case my app is called QueueMessageParserrgconnectedfieldse rvicesc0e4e.

rg-connected-field-service

GetlotMessage

Subscription (change)
Super Saiyan Goku

Tags (change)
Click here to add tags

Filter by name... All types All locations

17 items Show hidden types

NAME ↑	TYPE ↑↓
iot-hub-connected-field-service	IoT Hub
IoTHubrgconnectedfieldservice6f633b0236b14f838	App Service
{IoT-To-CRM}	Logic app
QueueMessageParserrgconnectedfieldservicec0e4e	App Service
rgconnectedfieldservice5f94d97edd1540449	Stream Analytics job
rgconnectedfieldservice96e5071ebdd64bf88	Stream Analytics job
SBMessage	API Connection

QueueMessageParserrgconnectedfieldservicec0e4e

App Service

Browse **Start** **Swap**

Start Stream Analytics

Go back to your Stream Analytics Job with the AlertsQueue output.

Click the Start button in the Overview section and in the blade that appears click the Start button there too.

In my case the job is called rgconnectedfieldservice96e5071ebdd64bf88.

The screenshot shows the Azure Stream Analytics job overview page for the job 'rgconnectedfieldservice96e5071ebdd64bf88'. The left sidebar contains navigation links: Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Settings (Locks), Job Topology (Inputs, Functions, Query, Outputs), Configure (Scale, Locale, Event ordering), Monitoring, and a large blue arrow pointing to the 'Start' button in the Monitoring blade. The main content area displays the job details: Name: rgconnectedfieldservice96e5071ebdd64bf88, Status: Stopped, Last output: -, Hosting environment: Cloud. To the right is a detailed view of the job's configuration, including the query:

```

1 WITH AlertData AS
2 (
3     SELECT
4         Stream.DeviceID,
5         'Temperature' AS ReadingType,
6         Stream.Temperature AS Reading,
7         Stream.EventToken AS EventToken,
8         Ref.Temperature AS Threshold,
9         Ref.TemperatureRuleOutput AS RuleOutput,
10        Stream.EventEnqueuedUtcTime AS [Time]
11    FROM IoTStream Stream
12    JOIN DeviceRulesBlob Ref ON Ref.DeviceType = 'Thermostat'
13    WHERE
14        Ref.Temperature IS NOT null AND Stream.Temperature > Ref.

```

The Monitoring blade shows the 'Start job' dialog with the job name 'rgconnectedfieldservice96e5071ebdd64bf88'. It includes a 'Job output start time' dropdown with options: Now (selected), Custom, and When last stopped. A large blue arrow points from the 'Start' button in the main overview area to the 'Start' button in this dialog.

Simulator temperature

Got back to the simulator web app and turn the temperature past the 70 degree threshold.

The screenshot shows a web-based interface for a Field Service IoT Thermometer. At the top, there's a navigation bar with tabs: 'Field Service IoT' (selected), 'Thermometer', 'Connection', and 'Reboot'. To the right of the tabs, it says 'Connection Status: Connected'. Below the navigation is a photograph of a digital wall-mounted thermometer displaying 25.3°C and 18.0°F. A hand is pointing at the screen. To the right of the device are two circular gauge charts: one for Humidity (40%) and one for Temperature (72°F). Below the device and charts are sections for 'Messages Received:' and 'Messages Sent:', each containing a single green message box. The 'Messages Sent:' box contains the text 'CURRENT STATUS -> Temperature: 72 Humidity: 40'.

Field Service IoT Thermometer Connection Reboot

Connection Status: Connected

Device ID: SIMDEVICE123 Refresh

Humidity: 40%

Temperature: 72°F

Messages Received:

Messages Sent:

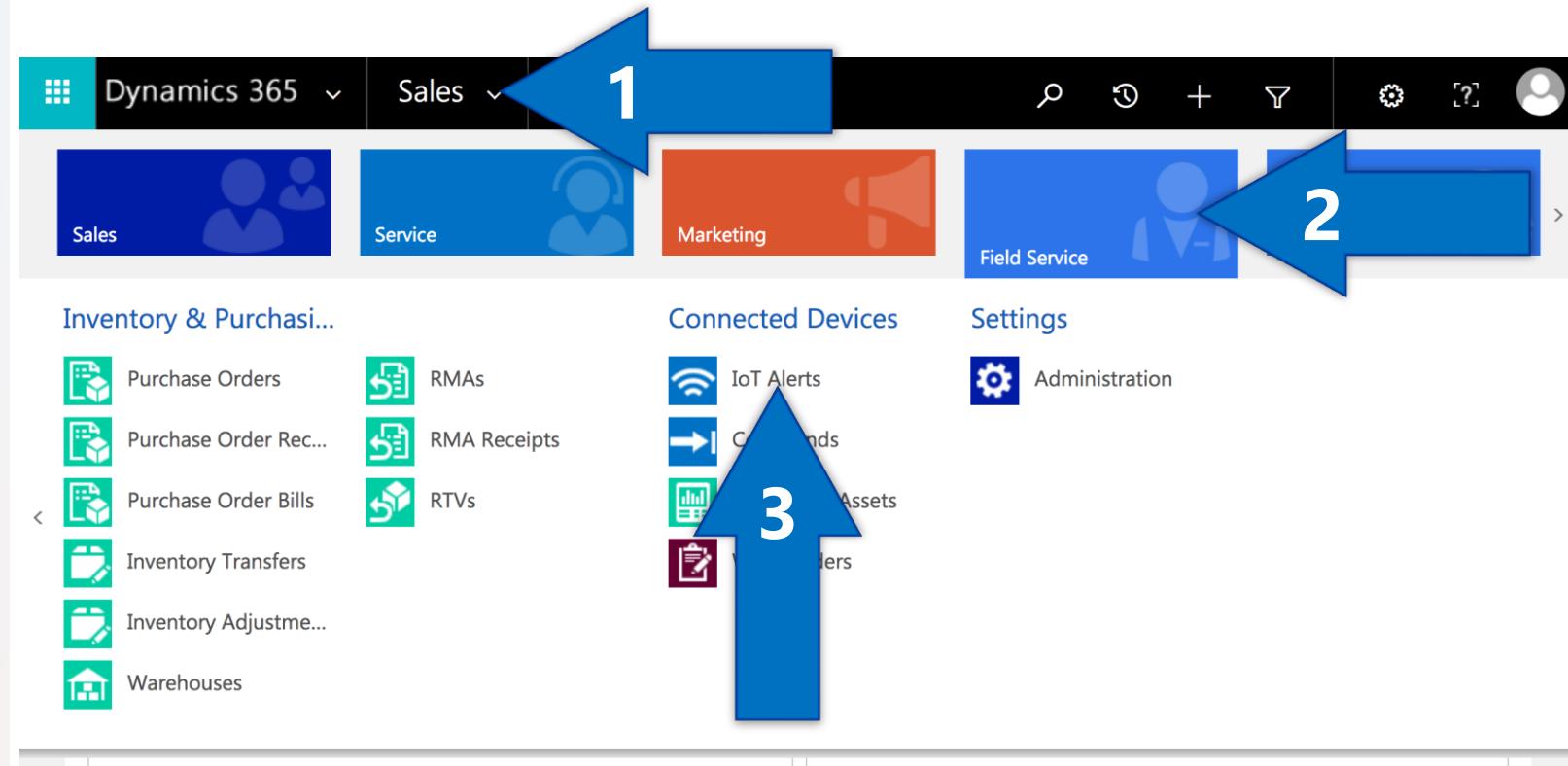
CURRENT STATUS -> Temperature: 72 Humidity: 40

Dynamics 365

In your browser go back to Dynamics 365 at your organization URL or just click on the tabs it's in if you haven't closed it.

The URL should look something like this
<https://{{YOUR ORGANIZATION NAME HERE}}.crm.dynamics.com/main.aspx>

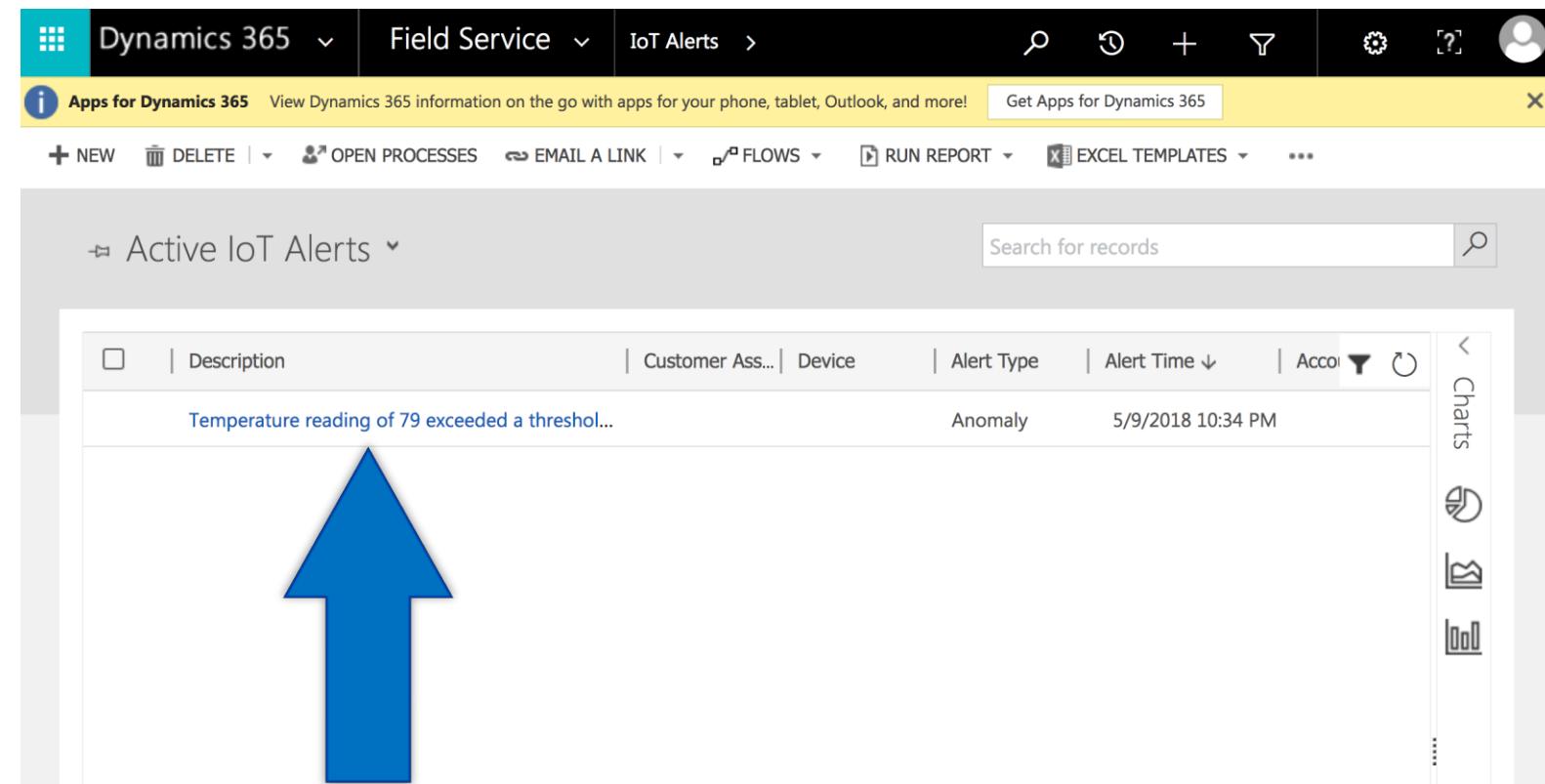
- `1` On the navigation bar click on the drop down next to Sales.
- `2` The Sitemap will appear, click Field Service.
- `3` Click on IoT Alerts.



Basic IoT Alert

Nice! We our first basic IoT Alert captured. Click into it.

If you visit the IoT-To-CRM logic you'll also notice a new succeeded Run. If you click it into you can see run details step by step in the logic app as well as the data piped through each step.



A screenshot of the Dynamics 365 Field Service IoT Alerts page. The page title is "IoT Alerts". The main content area shows a single active IoT alert with the following details:

Description	Customer Ass...	Device	Alert Type	Alert Time	Account
Temperature reading of 79 exceeded a threshold.			Anomaly	5/9/2018 10:34 PM	

A large blue arrow points upwards towards the alert description.

IoT Alert Information

We'll see the alert description for the reason this anomaly was detected, timestamp, and alert data in the form of JSON (it was thanks to https://en.wikipedia.org/wiki/Douglas_Crockford and many others for making this standard possible)

This new IoT Alert Entry still has the incomplete Customer Asset information. This is because the simulator device we registered in our IoT Hub was not registered as a connected device in Dynamics.

The Customer Asset is identified by Device ID, but there is none in the Dynamics system.

The screenshot shows the Dynamics 365 interface for managing IoT alerts. At the top, a navigation bar includes options like NEW, DEACTIVATE, DELETE, OPEN PROCESSES, CREATE COMMAND, PROCESS, ADD TO QUEUE, QUEUE ITEM DETAILS, ASSIGN, and more. The current item is 'IOT ALERT : INFORMATION'.

A message at the top states: "Temperature reading of 79 exceeded a threshold of 70". To the right, it shows the 'Owner' as 'Greg Degruy'.

The main area displays a process flow titled 'CFS - IoT Alert Process Flow (Active for 9 minutes)'. The steps shown are: Created (Active for 9 minutes) → Create Case → Create Work Order → Schedule Work Order → Close Work Order. The 'Create Case' step is currently active.

Below the process flow, there's a 'General' section with the following data:

- Description:** Temperature reading of 79 exceeded a threshold of 70
- Alert Type:** Anomaly
- Alert Token:** 82a40d4f-1c9e-4159-83b7-b9be078b0ad7
- Alert Time:** 5/9/2018 10:34 PM
- Alert URL:** (link)
- Alert Data:** A JSON object containing device information, reading type, temperature, event token, rule output, and time.

To the right of the general section are three panels: ASSISTANT, NOTES, and Connected Device Readings. The ASSISTANT panel contains a note input field with the placeholder 'Enter a note'. The NOTES panel displays a message: 'There aren't any notes to show. To go back to the alert entry, click here.' A large blue arrow points downwards from the NOTES panel towards the Customer Asset section.

The bottom section is titled 'CUSTOMER ASSET' and lists the following fields:

- Customer Asset:** (empty)
- Device:** (empty)
- Device ID:** SIMDEVICE123

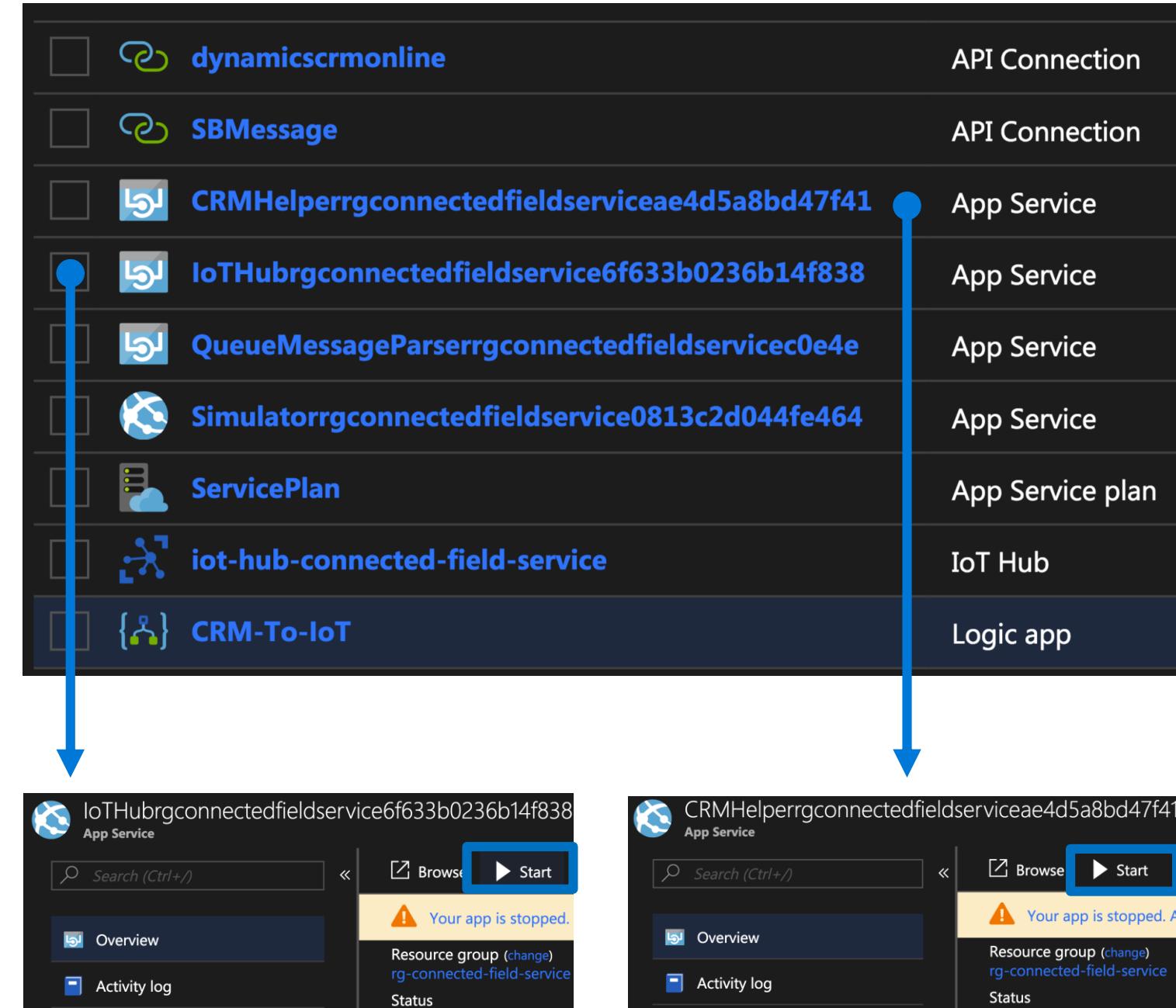
Start API Apps

Go back to your Azure portal and view your connected field service resource group. Our second logic app CRM-To-IoT is responsible for any Customer Asset registration in Dynamics.

This Logic App Depends on the CRMHelper and IoTHub Api apps, so we'll need to ensure they're running first.

Go to each API app and click start.

In my case I needed to start CRMHelperrgconnectedfieldserviceae4d5a8bd47f41 and IoTHubrgconnectedfieldservice6f633b0236b14f838 respectively.

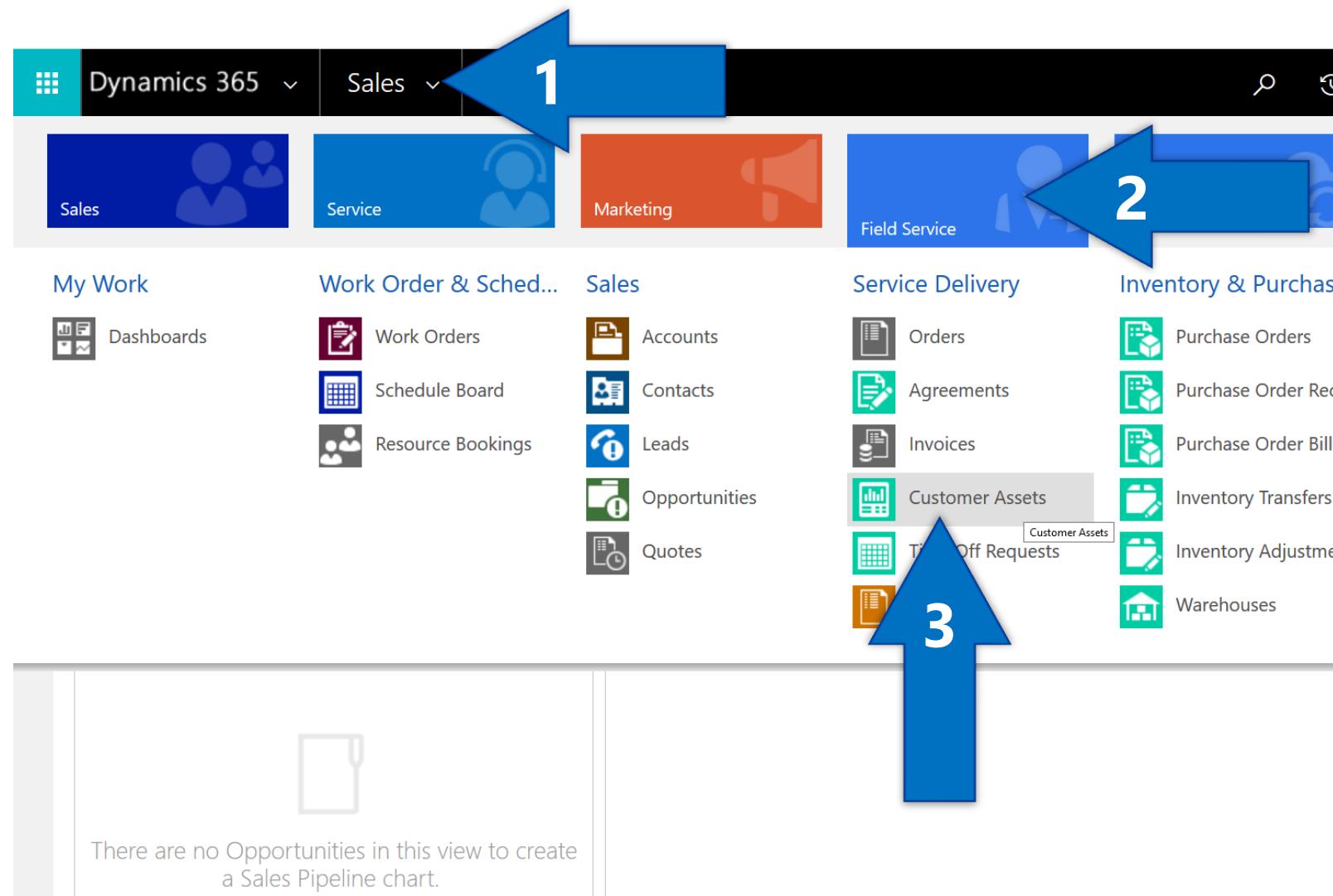


Add Dynamics Asset

In your browser go back to Dynamics 365 at your organization URL or just click on the tabs it's in if you haven't closed it.

The URL should look something like this
<https://{{YOUR ORGANIZATION NAME HERE}}.crm.dynamics.com/main.aspx>

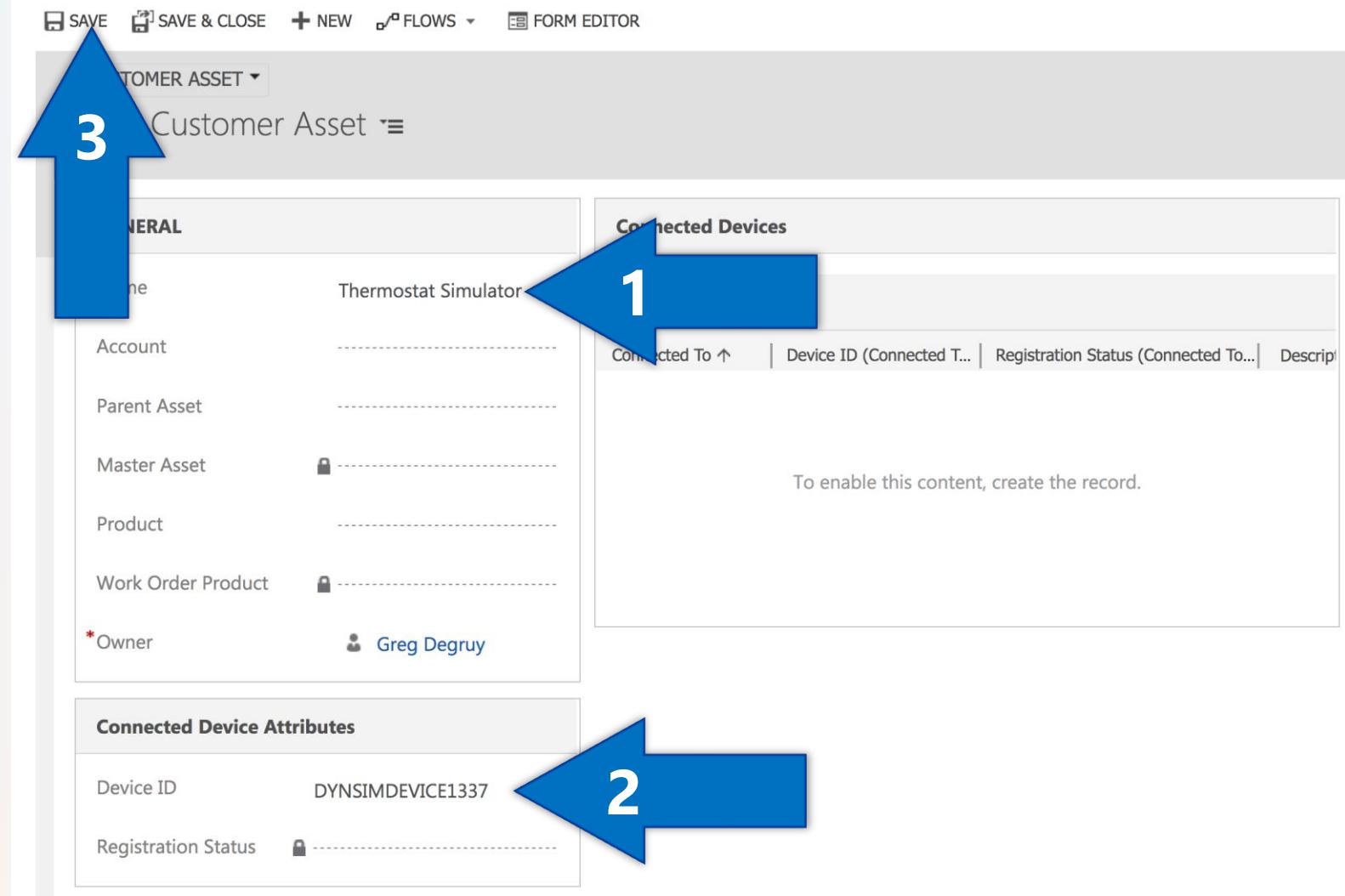
- `1` On the navigation bar click on the drop down next to Sales
- `2` The Sitemap will appear, click on Field Service
- `3` Click Customer Assets.



New Customer Asset

Make sure this Device ID is unique from any existing Device IDs in IoT Hub.

- '1' Add an asset name, in my case Thermostat Simulator
- '2' Add a unique Device ID that does not exists in your IoT Hub, in my case I used DYNSSIMDEVICE1337
- '3' Click Save



Register with IoT Hub

For a moment you'll see "The asset is being registered in the background". You can continue to use Microsoft Dynamics CRM. Takes seconds to complete.

CFS LAB 1

The screenshot shows the Microsoft Dynamics CRM interface for managing Customer Assets. At the top, there's a toolbar with actions: NEW, DEACTIVATE, DELETE, REGISTER DEVICES, CREATE COMMAND, ASSIGN, SHARE, EMAIL A LINK, RUN WORKFLOW, and more. Below the toolbar, the title bar says 'CUSTOMER ASSET' and the specific asset name is 'Thermostat Simulator'. The main area is divided into sections: 'Summary', 'GENERAL', 'Connected Devices', and 'Connected Device Attributes'. In the 'GENERAL' section, fields include Name (Thermostat Simulator), Account, Parent Asset, Master Asset (locked), Product, Work Order Product (locked), and Owner (Greg Degrugy). The 'Connected Devices' section shows a table header with columns for Connected To, Device ID (Connected To...), Registration Status (Connected To...), and Description. Below the table, it says 'No Connections found for this Customer Asset. Select Add (+)'. In the 'Connected Device Attributes' section, the Device ID is listed as DYNSSIMDEVICE1337 and the Registration Status is shown as locked.

Thermostat Simulator

Summary

GENERAL	
* Name	Thermostat Simulator
Account	-----
Parent Asset	-----
Master Asset	🔒 -----
Product	-----
Work Order Product	🔒 -----
* Owner	Greg Degrugy

Connected Devices

Connected To ↑	Device ID (Connected To...)	Registration Status (Connected To...)	Description
No Connections found for this Customer Asset. Select Add (+).			

Connected Device Attributes

Device ID	DYNSSIMDEVICE1337
Registration Status	🔒 -----

Connected Device

This makes the Customer Asset a connected device giving us more advanced monitoring capabilities and access to more data points in Dynamics with the device properly tied to IoT Hub.

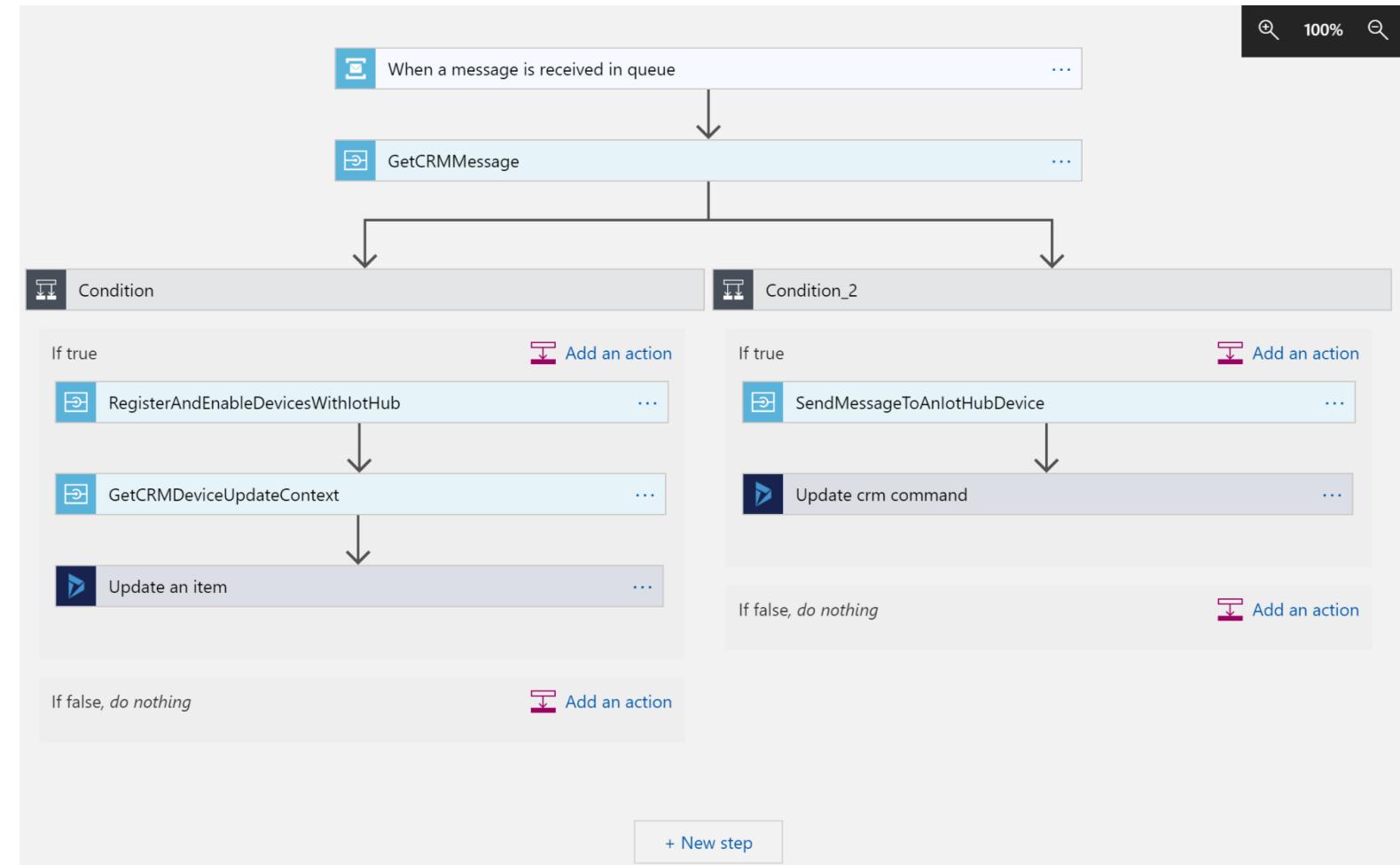
The screenshot shows the 'Customer Asset' record for 'Thermostat Simulator'. The record is divided into several sections:

- GENERAL**:
 - Name: Thermostat Simulator
 - Account: (empty)
 - Parent Asset: (empty)
 - Master Asset: (locked)
 - Product: (empty)
 - Work Order Product: (locked)
 - Owner: Greg Degruy
- Connected Devices**:
 - Connected To: Thermostat S... (Device ID: DYNSIMDEVICE1337, Status: Registered)
 - Device ID (Connected To): DYNSIMDEVICE1337
 - Registration Status (Connected To...): Registered
 - Description: (empty)
- Connected Device Attributes**:
 - Device ID: DYNSIMDEVICE1337
 - Registration Status: Registered

CRM-To-IoT Logic App

The CRM-To-IoT Logic App handles the heavy lifting for

1. Capturing the create event for this new device
2. Queueing the message
3. Identifying it as a device create message
4. Taking the necessary steps to register and enable the device(s) with the IoT Hub sending the completed registration message back to Dynamics



Thermostat Simulator

Now the new Dynamics connected device accessible in our Thermostat Simulator.

Got back to the Thermostat Simulator web app and select the newly registered device (*you will need to refresh the page*).

Optionally, if you visit your IoT Hub you'll see the device information present there as well.

The screenshot shows a web-based interface for managing a connected device. At the top, there's a navigation bar with tabs: 'Field Service IoT' (selected), 'Thermometer', 'Connection', and 'Reboot'. To the right of the tabs, it says 'Connection Status: Connected'. Below the navigation is a large image of a digital wall-mounted thermostat with a blue display showing '25.3 °C' and '18.0 °C'. A hand is pointing at the device. To the right of the image is a control panel. It includes a 'Device ID' dropdown menu with options: 'Select a device', 'AZ3166', 'DYNSSIMDEVICE1337', and 'SIMDEVICE1337'. A blue arrow points upwards from this dropdown towards the 'Temperature' gauge. The 'Temperature' gauge is green and shows '65°F'. The 'Humidity' gauge is blue and shows '40%'. Below the gauges, there are sections for 'Messages Received:' and 'Messages Sent:', each with a long green progress bar.

Field Service IoT Thermometer Connection Reboot

Connection Status: Connected

Device ID

Select a device
AZ3166
DYNSSIMDEVICE1337
SIMDEVICE1337

Refresh

Humidity 40%

Temperature 65°F

Messages Received:

Messages Sent:

Threshold Temperature

Turn the temperature past the 70 degree threshold again if it's not already.

Field Service IoT Thermometer Connection Reboot

Connection Status: Connected

Device ID: DYN5IMDEVICE133 Refresh

Humidity: 40%

Temperature: 83°F

Messages Received:

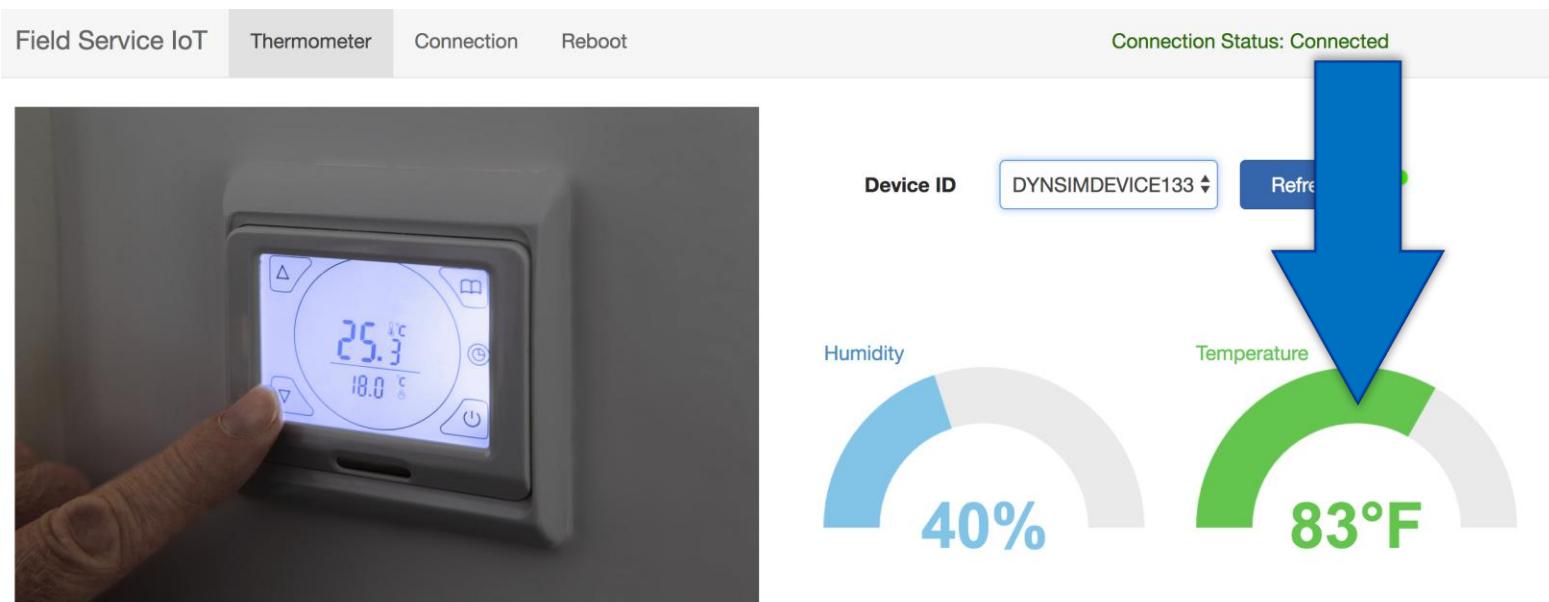
CURRENT STATUS --> Temperature: 83 Humi

CURRENT STATUS --> Temperature: 83 Humidity: 40

Messages Sent:

CURRENT STATUS --> Temperature: 83 Humi

CURRENT STATUS --> Temperature: 83 Humidity: 40

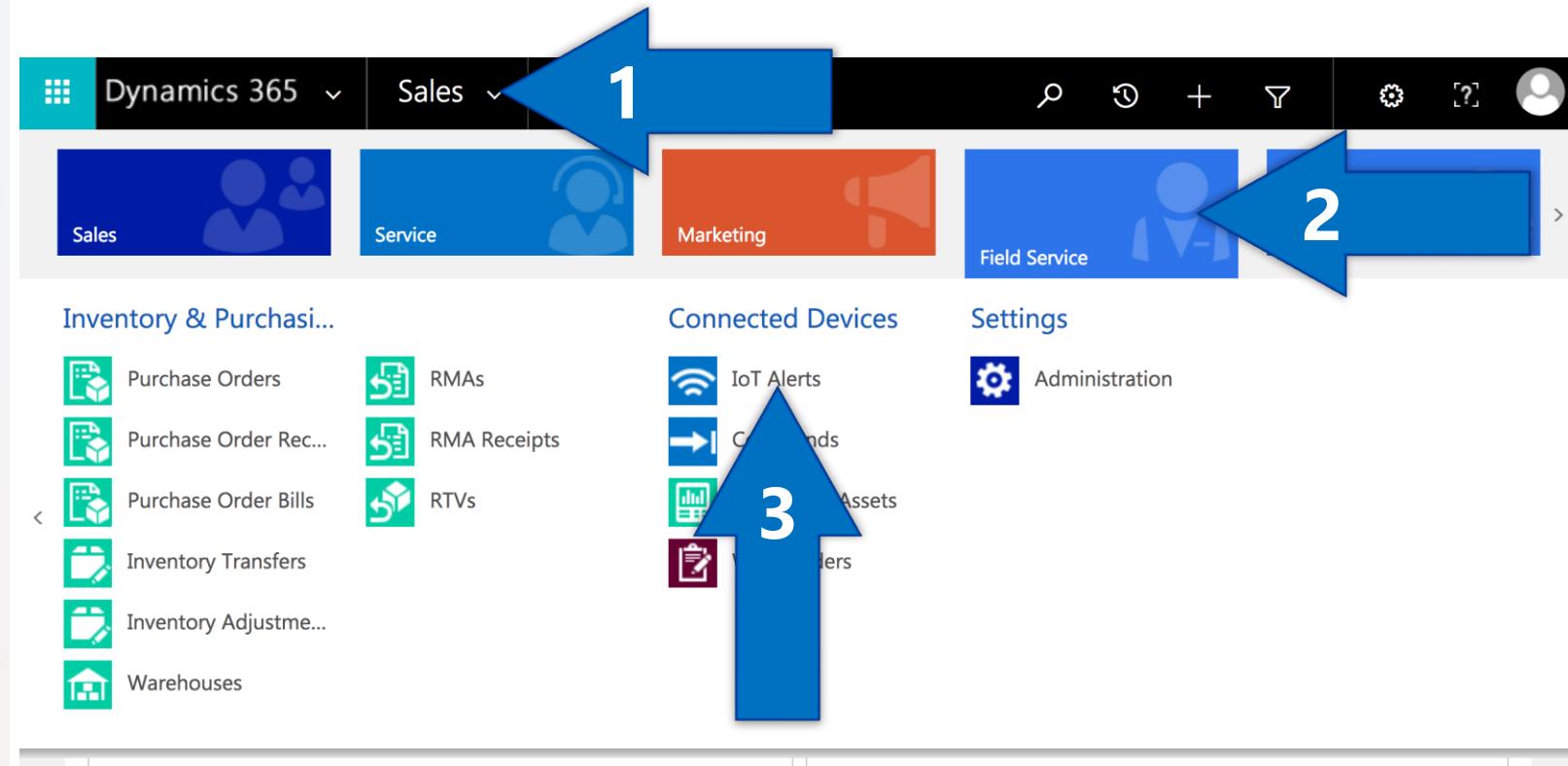


Dynamics 365

In your browser go back to Dynamics 365 at your organization URL or just click on the tabs it's in if you haven't closed it.

The URL should look something like this
<https://{{YOUR ORGANIZATION NAME HERE}}.crm.dynamics.com/main.aspx>

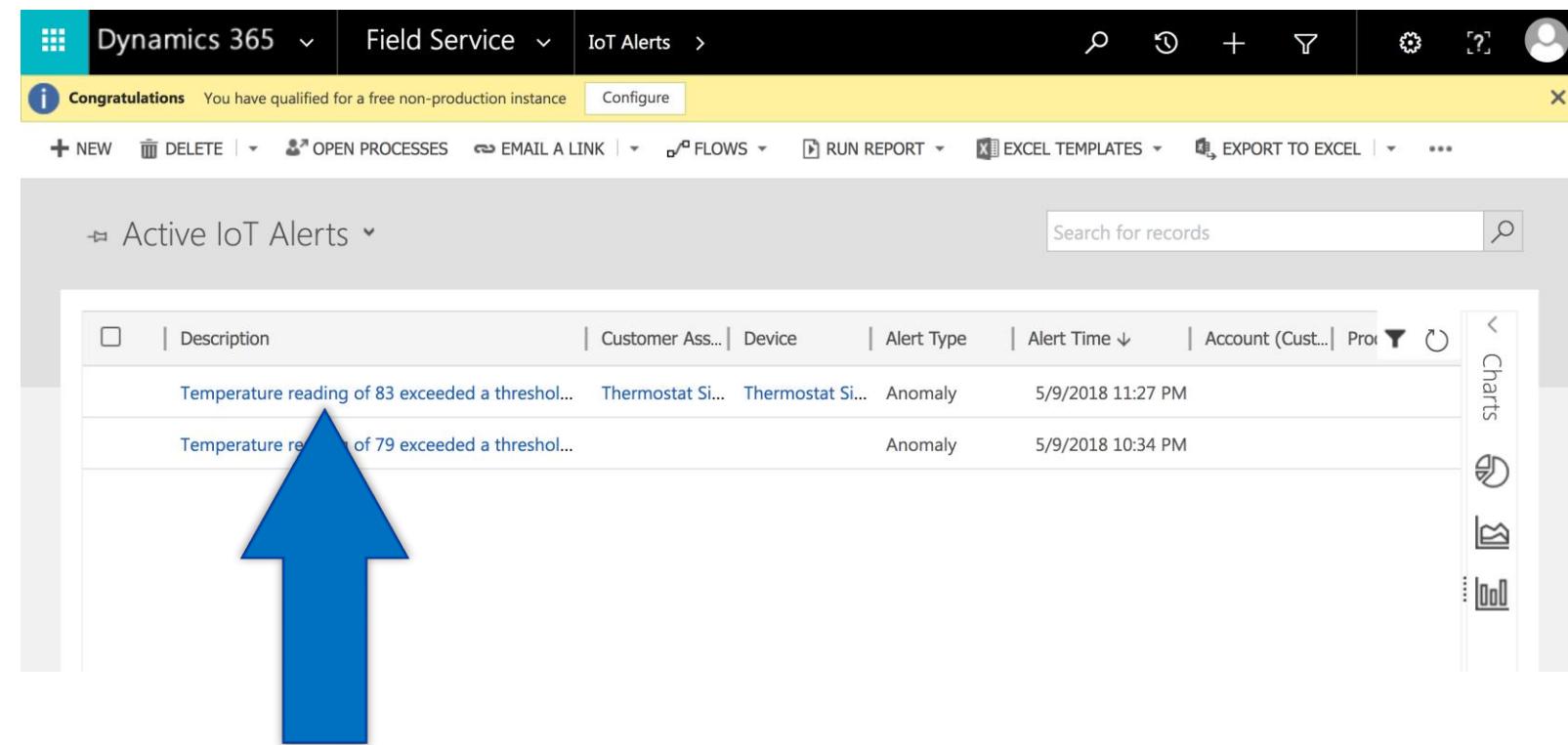
- `1` On the navigation bar click on the drop down next to Sales.
- `2` The Sitemap will appear, click Field Service.
- `3` Click on IoT Alerts.



Basic IoT Alert

Nice! A new complete Active IoT Alert has been captured.

Optionally, if you visit the IoT-To-CRM logic you'll also notice a new Succeeded Run has been completed. If you click it into you can see run details step by step in the logic app as well as the data piped through each step.



A screenshot of the Dynamics 365 Field Service IoT Alerts page. The top navigation bar shows 'Dynamics 365', 'Field Service', and 'IoT Alerts'. A yellow banner at the top says 'Congratulations' and 'You have qualified for a free non-production instance'. Below the banner is a toolbar with buttons for NEW, DELETE, OPEN PROCESSES, EMAIL A LINK, FLOWS, RUN REPORT, EXCEL TEMPLATES, and EXPORT TO EXCEL. The main area is titled 'Active IoT Alerts' and contains a table with two rows of data. A large blue arrow points upwards from the bottom towards the first row of the table. The table columns are: Description, Customer Ass..., Device, Alert Type, Alert Time, and Account (Cust...). The first row shows: 'Temperature reading of 83 exceeded a threshold...', 'Thermostat Si...', 'Thermostat Si...', 'Anomaly', '5/9/2018 11:27 PM'. The second row shows: 'Temperature reading of 79 exceeded a threshold...', 'Anomaly', '5/9/2018 10:34 PM'. The right side of the screen features a vertical ribbon with icons for Charts, Graphs, and Tables.

Description	Customer Ass...	Device	Alert Type	Alert Time	Account (Cust...)
Temperature reading of 83 exceeded a threshold...	Thermostat Si...	Thermostat Si...	Anomaly	5/9/2018 11:27 PM	
Temperature reading of 79 exceeded a threshold...			Anomaly	5/9/2018 10:34 PM	

Complete IoT Alert Information

Now this new IoT Alert Entry has the complete Customer Asset information we expect and is ready to be filed as a case, schedule and dispatch of a technician to respond to the Anomaly.

IOT ALERT : INFORMATION

Temperature reading of 83 exceeded a threshold of 70

* Owner
Greg Degruy

Created (Active for 5 minutes) ➔ **Create Case** ➔ **Create Work Order** ➔ **Schedule Work Order** ➔ **Close Work Order**

✓ Device Thermostat Simulator
 ✓ *Description Temperature reading of
 ✓ Alert Time 5/9/2018 11:27 PM

CFS - IoT Alert Process Flow (Active for 5 minutes) [Next Stage](#) [^](#)

General

*Description	Temperature reading of 83 exceeded a threshold of 70
Alert Type	Anomaly
Alert Token	342decb1-1750-4715-b9c8-6915b2fdc3b3
Alert Time	5/9/2018 11:27 PM
Alert URL	-----
Alert Data	{"deviceid":"DYNSSIMDEVICE1337","readingtype":"Temperature","reading":83.0,"eventtoken":"342decb1-1750-4715-b9c8-6915b2fdc3b3","threshold":70.0,"ruleoutput":"AlarmTemp","time":"2018-05-10T06:27"}

ASSISTANT

Enter a note



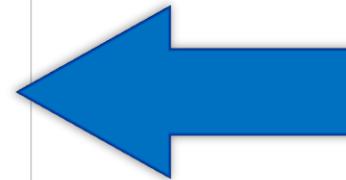
There aren't any notes to show. To get started, enter a note.

NOTES

Connected Device Readings

Add a Power BI tile for the connected device.





CUSTOMER ASSET

Customer Asset	Thermostat Simulator
Device	Thermostat Simulator
Device ID	DYNSSIMDEVICE1337

Completed Basic CFS Deployment



In the coming labs we'll begin to walk through how to work with real IoT Devices with Connected Field Service

To Save Cost Stop the following services if you do not plan to continue the other labs.



Thank you for your time in learning more about CFS and completing this tutorial.



API App Services

- Queue Message Parser
- IoT Hub
- CRM Helper



Web App Service

- Thermostat Simulator