



PSI3541 2023

SISTEMAS EMBARCADOS DISTRIBUIDOS

AULA 05 14/04/2023

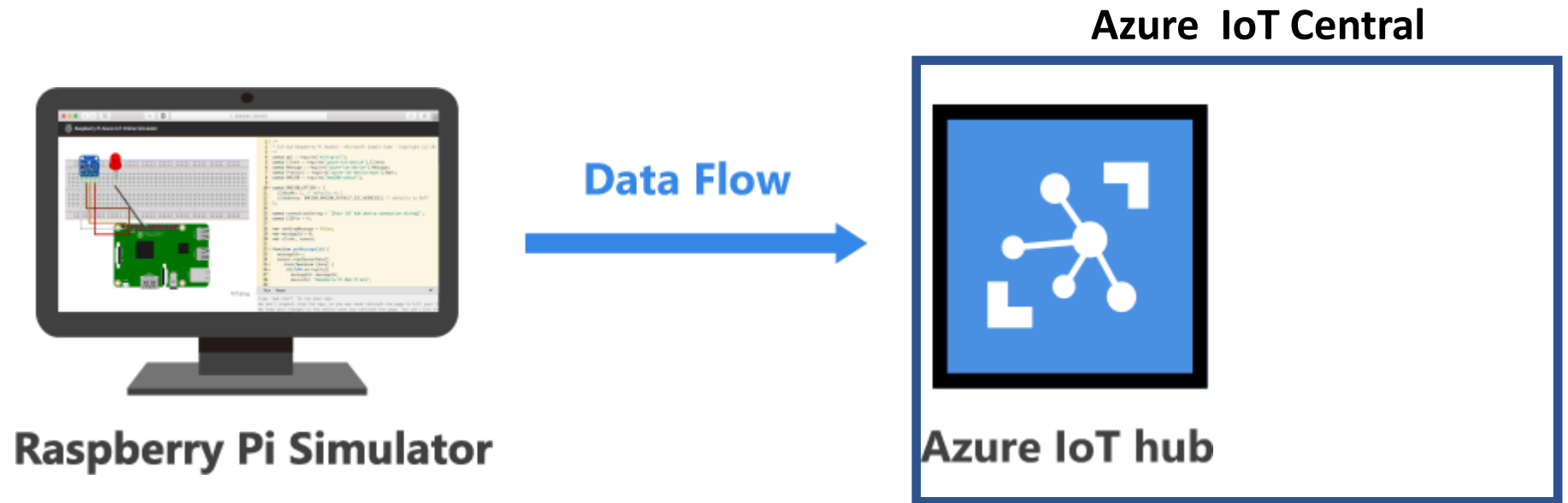
ATIVIDADE 5.1 CONECTAR SIMULADOR RASPBERRY PI AO IOT CENTRAL

PROF. SERGIO TAKEO KOFUJI - KOFUJI@USP.BR

OBJETIVOS

- Aprender a conectar um novo dispositivo no Azure IoT Central
- Criar um Device Template Novo, incluindo novas “capabilities” e “views”
- Conectar o Simulador Raspberry Pi ao Azure IoT Central
- Verificar o funcionamento

Vamos Conectar o Simulador Raspberry Pi ao Azure IoT Central



Entre no AZURE CLOUD

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Primeiramente, verifique os seus gastos...

Microsoft Azure

Search resources, services, and docs (G+)

stkofuji@gmail.com
DEFAULT DIRECTORY (STKOFUJIG...)

Azure services

- Create a resource
- Cost Management ...
- All resources
- IoT Central Applications
- Subscriptions
- Resource groups
- App Services
- Virtual machines
- Quickstart Center
- More services

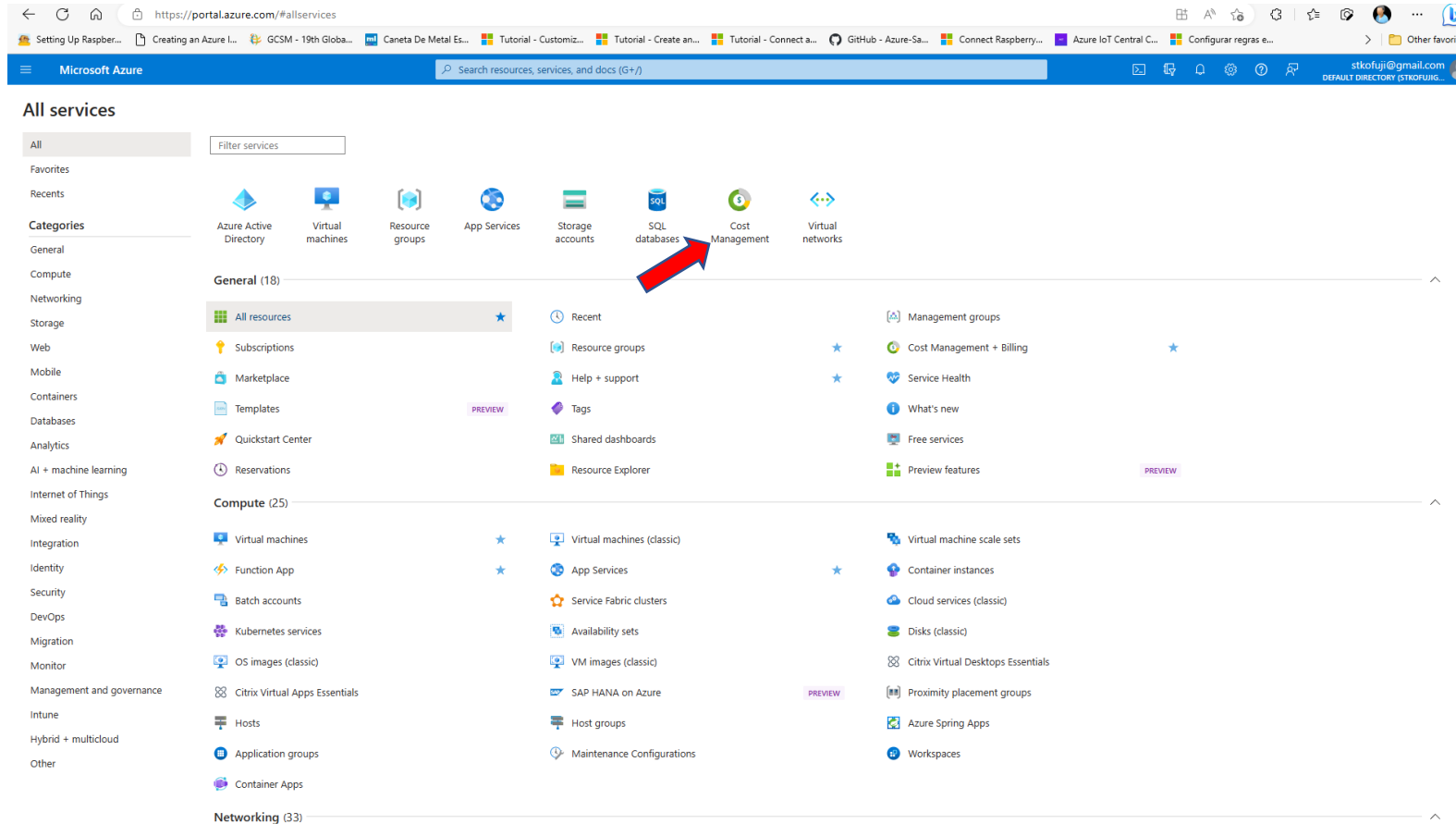
Resources

Recent Favorite

Name	Type	Last Viewed
No resources have been viewed recently		

[View all resources](#)

Vá para Gerenciamento de Custos



The screenshot displays the Microsoft Azure portal interface. At the top, the browser address bar shows the URL <https://portal.azure.com/#allservices>. The page title is "All services". On the left, there is a navigation sidebar with categories like "General", "Compute", "Networking", etc. The main content area shows a grid of service tiles. A red arrow points to the "Cost Management" tile, which is located in the top row of the "General" category. Below the "Cost Management" tile, there is a "Recent" section with items like "Resource groups", "Help + support", and "Tags". The "Compute" section lists various services like "Virtual machines", "Function App", and "App Services". The "Networking" section is partially visible at the bottom.

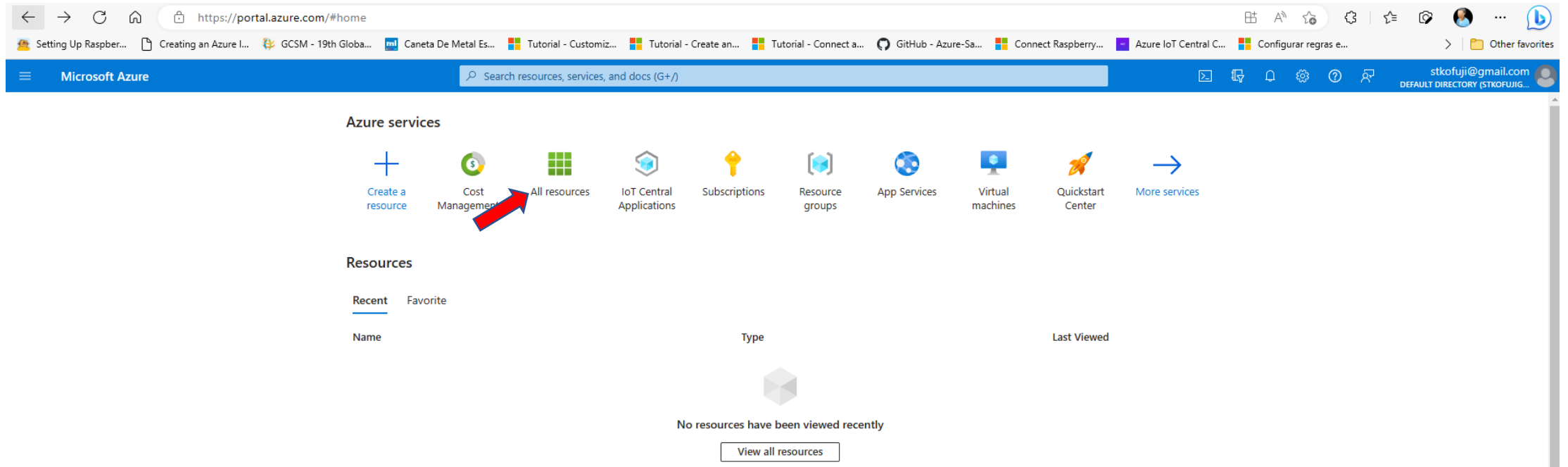
Consulte o balanço de gastos!!!

The screenshot displays the Microsoft Azure Billing Overview page for user sergio kofuji. The page is organized into several sections:

- Amount due:** Shows R\$0.00 with a green checkmark indicating "No payment needed". A "View invoices" button is present.
- Upcoming invoices:** Available on 5/9/2023. Billing period: 4/1/2023 - 4/30/2023. Pre-tax total so far: R\$0.00.
- Invoices over time:** A line chart showing total amount over time, with a value of R\$0.00 as of 03/23.
- Spending rate and forecast:** Shows "No charges reported this month" with a "View details" button.
- This month's top products by charges:** Shows "No charges reported this month".
- Billing alerts (1):** Includes a notification to "Review and accept the updated terms" with a "View alerts" button.
- Shortcuts:** Includes links for "Download usage and prices", "Manage payment methods", "View Azure subscriptions", "Share monthly invoice by email", "View your support plan", and "Give feedback".
- Credits remaining:** Shows R\$492.40, with 4.34% of total credit used. A red arrow points to this section. A progress bar shows "Used" (blue) and "Amount remaining" (grey). A "View credits" button is at the bottom.

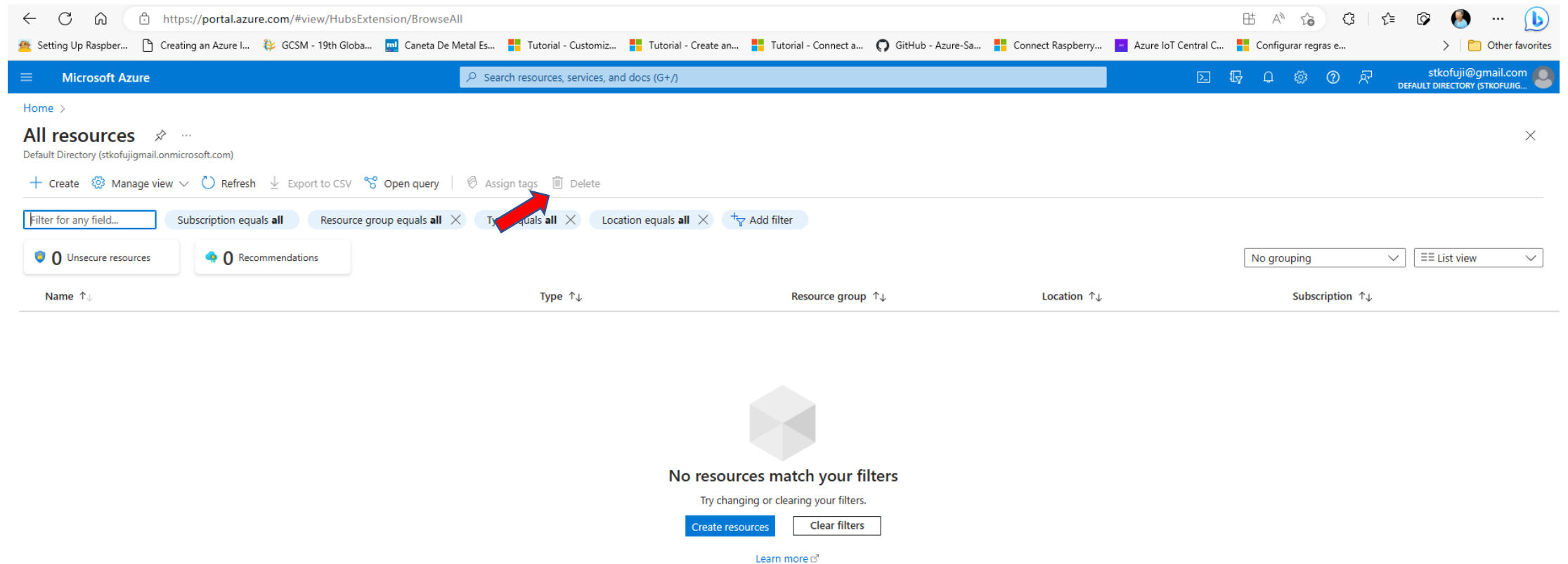
The left sidebar contains navigation options such as Overview, Access control (IAM), Billing scopes, Cost Management, Billing, and Products + services.

Verifique os Recursos atualmente alocados...



The screenshot shows the Microsoft Azure portal interface. At the top, there is a navigation bar with the Microsoft Azure logo, a search bar, and user information (stkofuji@gmail.com). Below the navigation bar, the 'Azure services' section is displayed, featuring a grid of icons for various services: Create a resource, Cost Management, All resources (highlighted with a red arrow), IoT Central Applications, Subscriptions, Resource groups, App Services, Virtual machines, Quickstart Center, and More services. Below the 'Azure services' section, the 'Resources' section is visible, with tabs for 'Recent' and 'Favorite'. The 'Recent' tab is active, but it shows 'No resources have been viewed recently' and a 'View all resources' button.

Caso haja Recursos não usados, remova-os!!!



The screenshot shows the Microsoft Azure portal interface. At the top, there is a navigation bar with the Microsoft Azure logo and a search bar. Below the navigation bar, the page title is "All resources" and the user is identified as "Default Directory (stkofujigmail.onmicrosoft.com)".

The main content area displays a message: "No resources match your filters. Try changing or clearing your filters." Below this message are two buttons: "Create resources" and "Clear filters". A "Learn more" link is also present.

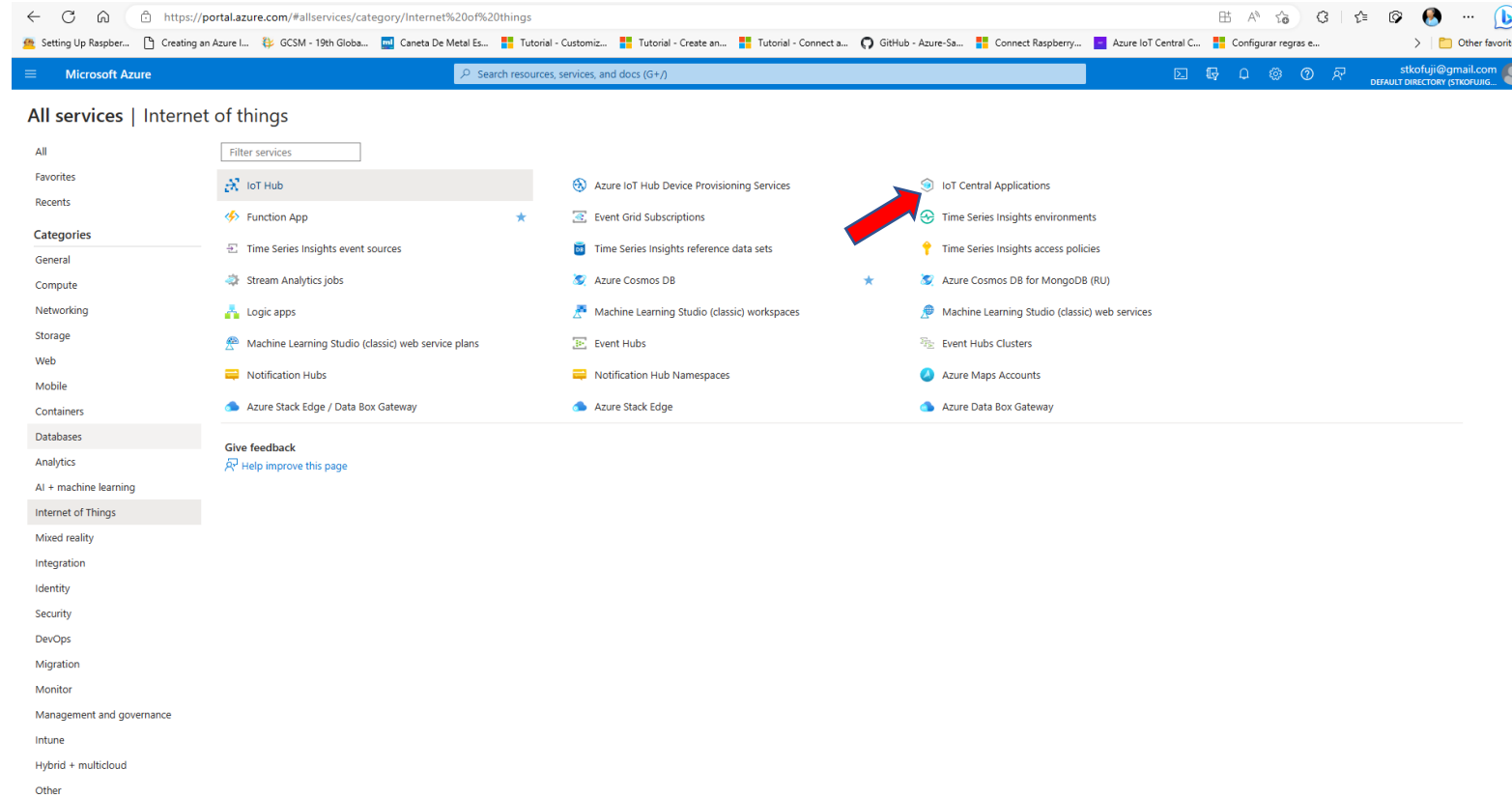
The filter bar at the top of the main content area shows several filters: "Subscription equals all", "Resource group equals all", "Type equals all", and "Location equals all". A red arrow points to the "Type equals all" filter. There are also buttons for "Create", "Manage view", "Refresh", "Export to CSV", "Open query", "Assign tags", and "Delete".

At the bottom of the page, there are columns for "Name", "Type", "Resource group", "Location", and "Subscription", each with a sort icon (up and down arrows).

Selezione Internet of Things

The screenshot displays the Microsoft Azure portal interface. At the top, the browser address bar shows the URL <https://portal.azure.com/#allservices>. The page title is "All services". On the left, a navigation menu lists various categories, with "Internet of Things" highlighted by a red arrow. The main content area shows a grid of service tiles under the "General (18)" section, including "All resources", "Subscriptions", "Marketplace", "Templates", "Quickstart Center", "Reservations", "Recent", "Resource groups", "Help + support", "Tags", "Shared dashboards", "Resource Explorer", "Management groups", "Cost Management + Billing", "Service Health", "What's new", "Free services", and "Preview features". Below this, the "Compute (25)" section lists services like "Virtual machines", "Function App", "Batch accounts", "Kubernetes services", "OS images (classic)", "Citrix Virtual Apps Essentials", "Hosts", "Application groups", "Container Apps", "Virtual machines (classic)", "App Services", "Service Fabric clusters", "Availability sets", "VM images (classic)", "SAP HANA on Azure", "Host groups", "Maintenance Configurations", "Virtual machine scale sets", "Container instances", "Cloud services (classic)", "Disks (classic)", "Citrix Virtual Desktops Essentials", "Proximity placement groups", "Azure Spring Apps", and "Workspaces". The "Networking (33)" section is partially visible at the bottom.

Selezione IoT Central



The screenshot shows the Microsoft Azure portal interface. The browser address bar displays the URL `https://portal.azure.com/#allservices/category/Internet%20of%20things`. The page title is "All services | Internet of things". On the left, a navigation pane lists various categories, with "Internet of Things" selected. The main content area shows a grid of services under the "Internet of things" category. A red arrow points to the "IoT Central Applications" service. Below the service list, there are links for "Give feedback" and "Help improve this page".

Service Name	Icon
IoT Hub	IoT Hub icon
Function App	Function App icon
Time Series Insights event sources	Time Series Insights icon
Stream Analytics jobs	Stream Analytics icon
Logic apps	Logic Apps icon
Machine Learning Studio (classic) web service plans	Machine Learning Studio icon
Notification Hubs	Notification Hubs icon
Azure Stack Edge / Data Box Gateway	Azure Stack Edge icon
Azure IoT Hub Device Provisioning Services	Azure IoT Hub icon
Event Grid Subscriptions	Event Grid icon
Time Series Insights reference data sets	Time Series Insights icon
Azure Cosmos DB	Azure Cosmos DB icon
Machine Learning Studio (classic) workspaces	Machine Learning Studio icon
Event Hubs	Event Hubs icon
Notification Hub Namespaces	Notification Hub icon
Azure Stack Edge	Azure Stack Edge icon
IoT Central Applications	IoT Central Applications icon
Time Series Insights environments	Time Series Insights icon
Time Series Insights access policies	Time Series Insights icon
Azure Cosmos DB for MongoDB (RU)	Azure Cosmos DB icon
Machine Learning Studio (classic) web services	Machine Learning Studio icon
Event Hubs Clusters	Event Hubs icon
Azure Maps Accounts	Azure Maps icon
Azure Data Box Gateway	Azure Data Box Gateway icon

VAMOS CRIAR UMA APLICAÇÃO IOT CENTRAL

The screenshot shows the Microsoft Azure portal interface. At the top, the browser address bar displays the URL: <https://portal.azure.com/#view/HubsExtension/BrowseResource/resourceType/Microsoft.IoTCentral%2FIoTApps>. The page title is "IoT Central Applications" under the "Default Directory (stkofujigmail.onmicrosoft.com)".

Below the title, there are navigation options: "+ Create", "Manage view", "Refresh", "Export to CSV", "Open query", and "Assign tags". A filter bar shows "Filter for any field..." and active filters: "Subscription equals all", "Resource group equals all", and "Location equals all".

The main content area shows "Showing 0 to 0 of 0 records." and sorting options: "No grouping" and "List view".

At the bottom, a message states: "No iot central applications to display. Try changing or clearing your filters." A blue button labeled "Create iot central application" is highlighted with a red arrow. A "Learn more" link is also visible.

Criar a Aplicação IoT Central

The screenshot shows the Microsoft Azure portal interface for creating an IoT Central application. The browser address bar displays `https://portal.azure.com/#create/Microsoft.IoTCentral`. The page title is "IoT Central Application".

Navigation tabs include "Basics", "Tags", and "Review + create". The "Review + create" tab is active, and a red arrow points to the "Review + create" button at the bottom left.

The "Project details" section includes:

- Subscription: Azure for Students
- Resource group: (New) iotcentralraspberrysim

The "Instance details" section includes:

- Resource name: myiotcentralraspsim81151
- Application URL: myiotcentralraspsim81151 (azureiotcentral.com)
- Template: Custom application
- Region: East US 2
- Pricing plan: Standard 2

At the bottom, there are navigation buttons: "Review + create" (highlighted with a red arrow), "< Previous", and "Next: Tags >". A "Give feedback" link is also visible in the bottom right corner.

Verifique o Resumo e crie o Aplicação!

The screenshot shows the Microsoft Azure portal interface for creating an IoT Central Application. The browser address bar indicates the URL: <https://portal.azure.com/#create/Microsoft.IoTCentral>. The page title is "IoT Central Application". A green banner at the top indicates "Validation Passed". Below this, there are tabs for "Basics", "Tags", and "Review + create". The "Review + create" tab is active, showing the "TERMS" section with a disclaimer. Below the terms, the "Basics" section displays the following configuration details:

Subscription	Azure for Students
Resource group	iotcentralraspberrysim
Resource name	myiotcentralraspsim81151
Application URL	myiotcentralraspsim81151
Template	Custom application
Region	East US 2
Pricing plan	Standard 2

At the bottom of the page, there are three buttons: "Create", "< Previous", and "Next". A red arrow points to the "Create" button. In the bottom right corner, there are links for "Give feedback" and "Download a template for automation".

Vá para o Recurso criado

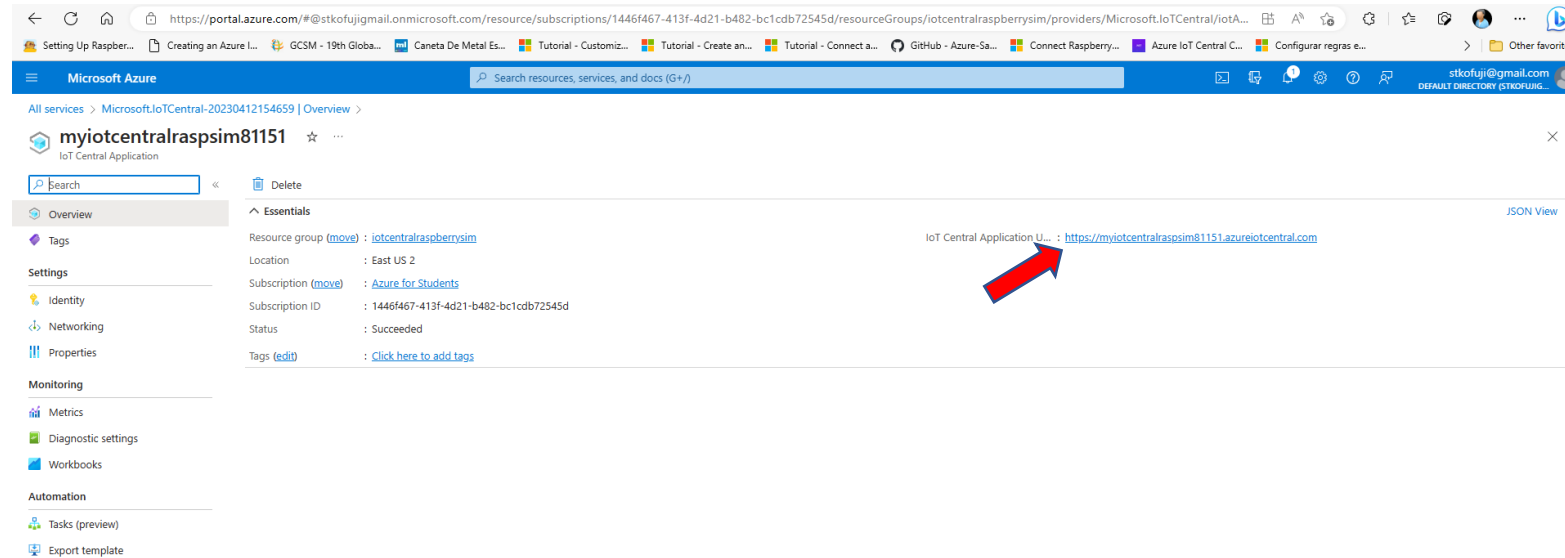
The screenshot displays the Microsoft Azure portal interface. At the top, the browser address bar shows the URL: <https://portal.azure.com/#view/HubsExtension/DeploymentDetailsBlade/~/overview/id/%2Fsubscriptions%2F1446467-413f-4d21-b482-bc1cdb72545d%2FresourceGroups%2Fiotcentralraspberrysim%2F...>. The page title is "Microsoft IoT Central-20230412154659 | Overview".

The main content area features a navigation pane on the left with options: Overview (selected), Inputs, Outputs, and Template. The central panel displays a success message: "Your deployment is complete". Below this message, there are deployment details: "Deployment name : Microsoft.IoTCentral-20230412154659", "Subscription : Azure for Students", and "Resource group : iotcentralraspberrysim". To the right of these details, the start time is "4/12/2023, 3:50:36 PM" and the correlation ID is "df47cd4b-8e3c-471d-8ff6-92176f23f9e0".

Under the "Next steps" section, a blue button labeled "Go to resource" is highlighted with a red arrow. Below this button is a "Give feedback" link with the text "Tell us about your experience with deployment".

A notification banner at the top right states "Deployment succeeded" and provides a link to "Go to resource group". The right sidebar contains several informational cards: "Cost management" (Get notified to stay within your budget), "Microsoft Defender for Cloud" (Secure your apps and infrastructure), and "Free Microsoft tutorials" (Start learning today).

Vá para a aplicação IoT Central



The screenshot shows the Microsoft Azure portal interface. The browser address bar displays the URL: <https://portal.azure.com/#@stkofujigmail.onmicrosoft.com/resource/subscriptions/1446f467-413f-4d21-b482-bc1cdb72545d/resourceGroups/iotcentralraspberrysim/providers/Microsoft.IoTCentral/IoT...>

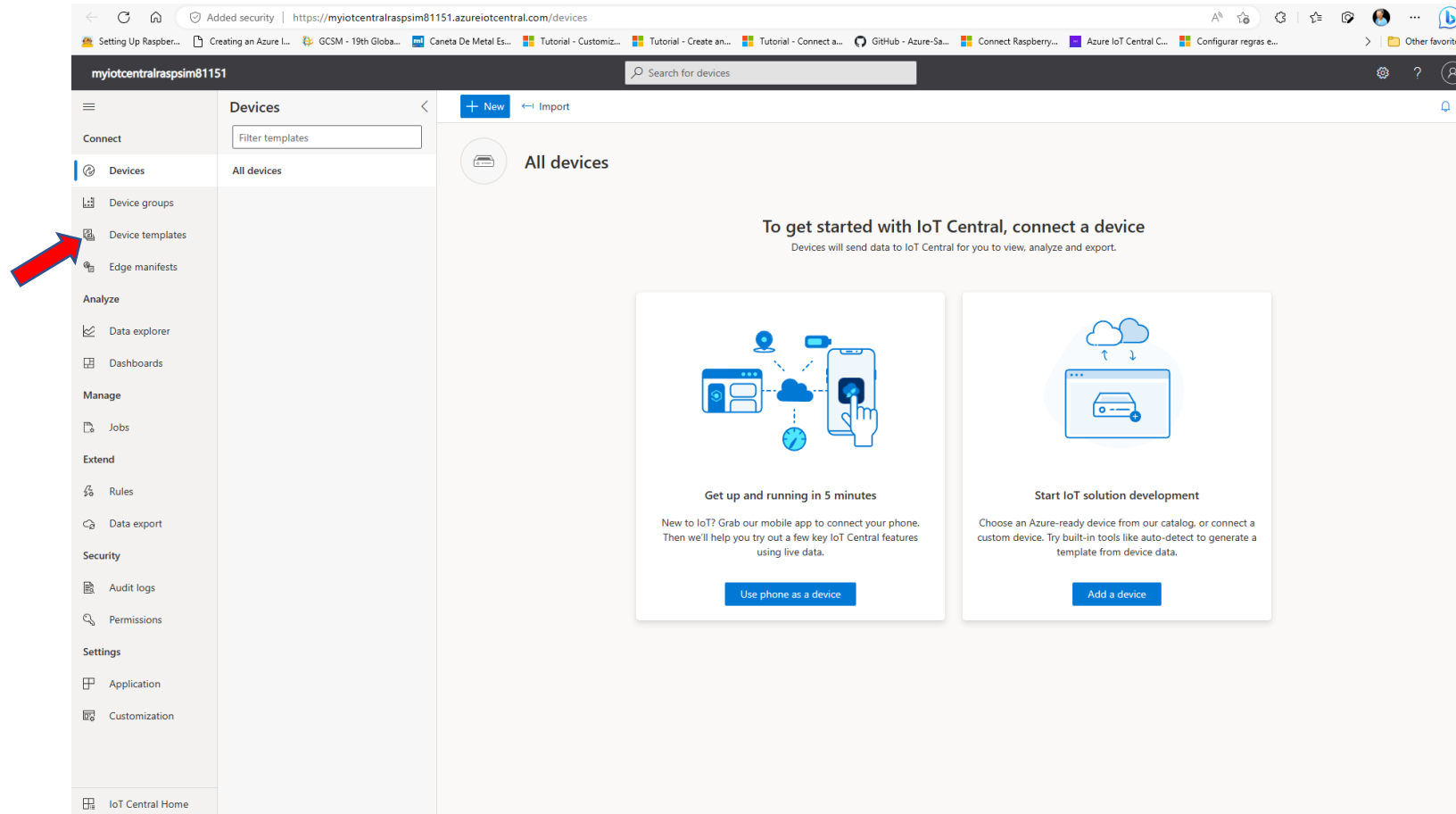
The page title is "myiotcentralraspsim81151" (IoT Central Application). The left sidebar contains navigation options: Overview, Tags, Settings (Identity, Networking, Properties), Monitoring (Metrics, Diagnostic settings, Workbooks), and Automation (Tasks (preview), Export template).

The main content area shows the "Essentials" section with the following details:

- Resource group (move): [iotcentralraspberrysim](#)
- Location: East US 2
- Subscription (move): [Azure for Students](#)
- Subscription ID: 1446f467-413f-4d21-b482-bc1cdb72545d
- Status: Succeeded
- Tags (edit): [Click here to add tags](#)

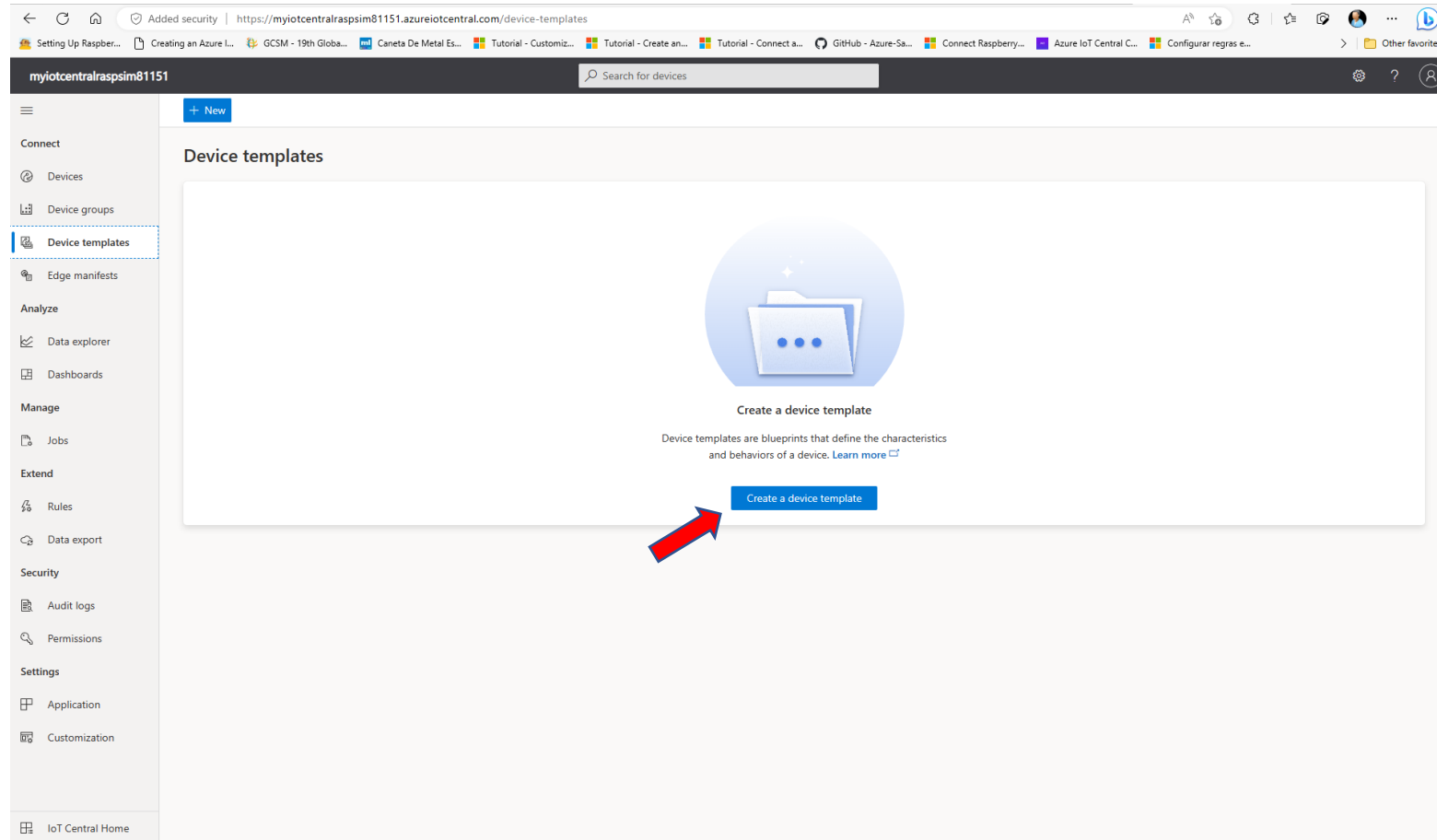
A red arrow points to the URL for the IoT Central Application: <https://myiotcentralraspsim81151.azureiotcentral.com>. A "JSON View" link is also visible in the top right corner of the Essentials section.

Vamos criar um Device Template



The screenshot displays the Azure IoT Central web interface. The browser address bar shows the URL `https://myiotcentralraspsim81151.azureiotcentral.com/devices`. The left-hand navigation pane is visible, with the 'Device templates' option highlighted by a red arrow. The main content area is titled 'All devices' and features a central heading: 'To get started with IoT Central, connect a device'. Below this heading, there are two primary action cards: 'Get up and running in 5 minutes' (with a 'Use phone as a device' button) and 'Start IoT solution development' (with an 'Add a device' button). The navigation pane includes sections for Connect, Analyze, Manage, Extend, Security, and Settings.

Vamos criar o Template



The screenshot shows the Azure IoT Central web interface. The browser address bar displays the URL `https://myiotcentralraspsim81151.azureiotcentral.com/device-templates`. The page title is "Device templates". On the left sidebar, the "Device templates" menu item is selected. The main content area features a large blue folder icon with the text "Create a device template" and a subtext: "Device templates are blueprints that define the characteristics and behaviors of a device. [Learn more](#)". A red arrow points to a blue button labeled "Create a device template" at the bottom of this section.

Vamos criar um Template de Dispositivo

The screenshot shows the Azure IoT Central interface for creating a new device template. The page is titled "Create new device template" and includes a "Select type" section with two options: "IoT device" and "Azure IoT Edge". Below this, there is a "Featured device templates" section with four cards: "Cascade-500", "Cascade-500W", "IoT Plug and Play mobile", and "Minew EB Asset Tag". A "Next: Customize" button is located at the bottom of the featured templates section. Two red arrows point to the "IoT device" option and the "Next: Customize" button.

myiotcentralraspsim81151

Search for devices

Device templates > Create new device template

Select type

A device template is like a blueprint. It defines the characteristics and behaviors of devices that connect to your application.

Create a custom device template

- IoT device**
Import a capability model or build capabilities from scratch.
- Azure IoT Edge**
Create a template that features Azure IoT Edge and gateway scenarios.

Featured device templates

- Azure IoT Central**
Cascade-500
The Rigado Cascade-500 IoT gateway balances flexible connectivity with edge computing power in a secure and cost-effective customizable package. Packed...
- Azure IoT Central**
Cascade-500W
The Rigado Cascade-500W IoT gateway balances flexible connectivity with edge computing power in a secure and cost-effective customizable package. Packed...
- Azure IoT Central**
IoT Plug and Play mobile
The IoT Plug and Play phone app lets you quickly get started exploring Azure IoT capabilities without the need to configure a dedicated IoT device.
- Azure IoT Central**
Minew EB Asset Tag
The Minew EB is a wireless Bluetooth beacon with up to 5 year battery life Ultra-thin CR2032 replaceable battery 36*24*3.4mm

Next: Customize

Nomeie e Crie o Dispositivo

The screenshot shows the Azure IoT Central interface for creating a new device template. The browser address bar indicates the URL: `https://myiotcentralraspsim81151.azureiotcentral.com/device-templates/new/customize`. The left sidebar contains navigation options such as 'Connect', 'Devices', 'Device groups', 'Device templates', 'Edge manifests', 'Analyze', 'Manage', 'Extend', 'Security', and 'Settings'. The main content area is titled 'Device templates > Create new device template' and is in the 'Customize' step. A form titled 'Customize' contains a 'Device template name*' field with the value 'raspberry-sim' and a checkbox labeled 'This is a gateway device. Learn more.' A red arrow points to the 'Device template name' input field. At the bottom of the form, there are two buttons: 'Previous' and 'Next: Review'. A red arrow points to the 'Next: Review' button.

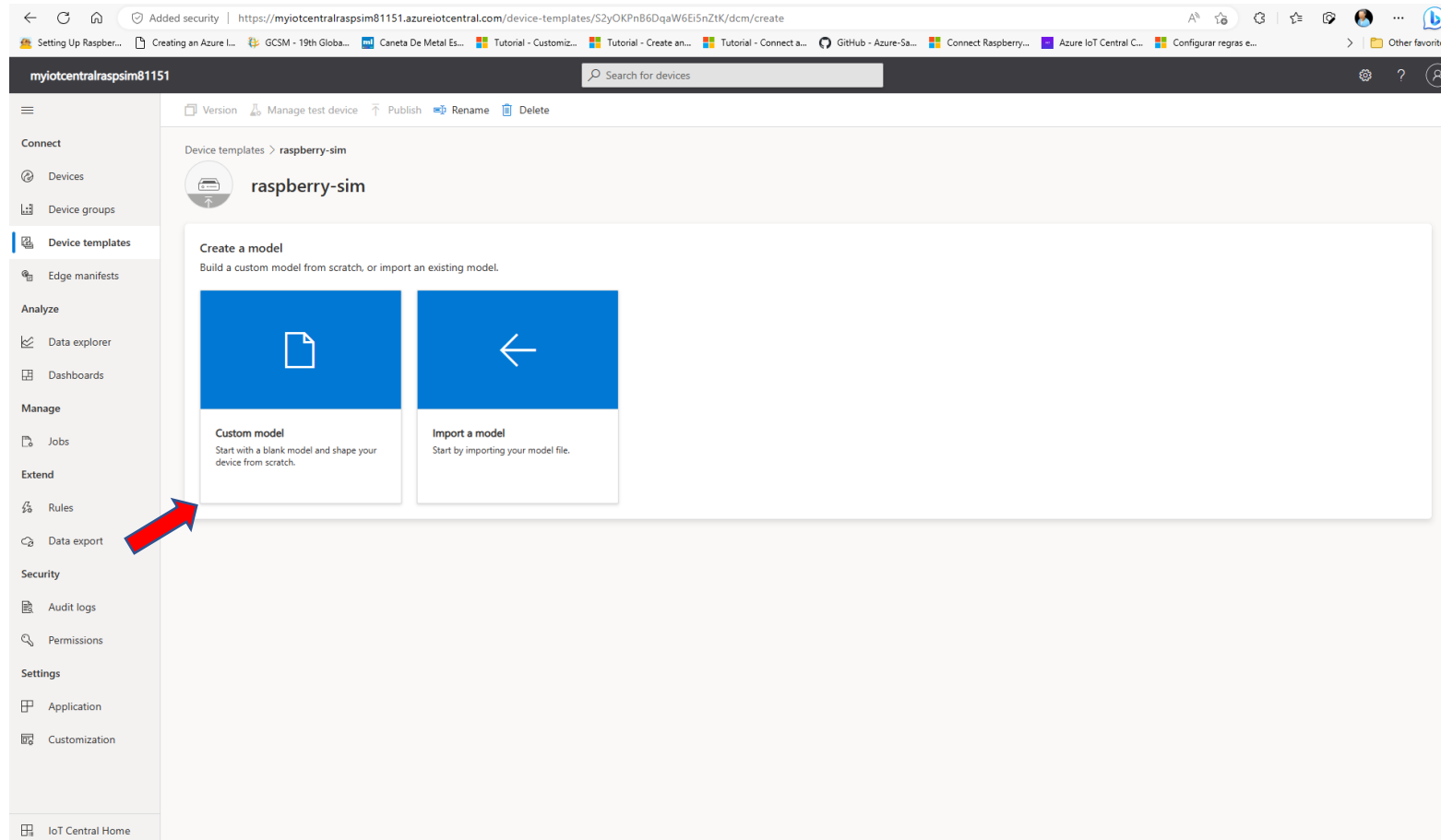
Revise e Crie o Dispositivo

The screenshot shows the 'Review' step in the 'Create new device template' wizard. The breadcrumb navigation is 'Device templates > Create new device template'. The 'Review' section contains a 'Basic info' box with the following details:

Device template type	IoT device
Device template name	raspberry-sim

At the bottom of the wizard, there are two buttons: 'Previous' and 'Create'. A red arrow points to the 'Create' button.

Vamos criar o modelo do dispositivo



The screenshot shows the Azure IoT Central console interface. The browser address bar displays the URL: <https://myiotcentralraspsim81151.azureiotcentral.com/device-templates/S2yOKPnB6DqaW6Ei5nZtK/dcm/create>. The page title is "myiotcentralraspsim81151". The left sidebar contains a navigation menu with categories: Connect (Devices, Device groups), Device templates (highlighted), Edge manifests, Analyze (Data explorer, Dashboards), Manage (Jobs), Extend (Rules, Data export), Security (Audit logs, Permissions), and Settings (Application, Customization). The main content area shows the "Device templates > raspberry-sim" page. Under the heading "Create a model", there is a sub-heading "Build a custom model from scratch, or import an existing model." Two options are presented in blue boxes: "Custom model" (Start with a blank model and shape your device from scratch.) and "Import a model" (Start by importing your model file.). A red arrow points to the "Custom model" option.

Adicione as “Capabilities”

The screenshot displays the Azure IoT Central web interface. The browser address bar shows the URL: `https://myiotcentralraspsim81151.azureiotcentral.com/device-templates/S2yOKPnB6DqaW6Ei5nZtK/dcm/mxBlagVZa6Lwq5TP4kHkA`. The page title is `myiotcentralraspsim81151`. The left sidebar contains navigation options: Connect (Devices, Device groups, Device templates, Edge manifests), Analyze (Data explorer, Dashboards), Manage (Jobs), Extend (Rules, Data export), Security (Audit logs, Permissions), Settings (Application, Customization), and IoT Central Home.

The main content area shows the configuration for the `raspberry-sim` device model. The breadcrumb path is `Device templates > raspberry-sim > Model > raspberry-sim`. The device model is in a `Draft` state. Below the breadcrumb, there is a list of capabilities: `raspberry-sim` (selected), `Raw data`, and `Views`. A red arrow points to the `+ Add capability` button located below the list.

The main configuration panel for the `raspberry-sim` model includes the following elements:

- Buttons: `Version`, `Manage test device`, `Publish`, `Rename`, `Delete`
- Device model details: `raspberry-sim`, `Application updated: Never`, `Interfaces published: Never`
- Model configuration: `raspberry-sim` (Root), `Draft`
- Instructions: `Add capabilities specific to this device model. Learn more`
- Actions: `Save`, `+ Add capability`, `Edit identity`, `Export`, `Delete`, `...`, `Edit DTDL`

Preencha com os dados da “capability” e SALVE!!!

The screenshot shows the Azure IoT Central console interface for a device model named 'raspberry-sim'. The left sidebar contains navigation options: Connect, Devices, Device groups, Device templates (selected), Edge manifests, Analyze, Data explorer, Dashboards, Manage, Jobs, Extend, Rules, Data export, Security, Audit logs, Permissions, and Settings. The main area displays the 'raspberry-sim' model configuration. A red arrow points to the 'Save' button in the top right of the configuration panel. Another red arrow points to the '+ Add capability' button at the bottom of the panel. The configuration form includes the following fields:

Display name	Name *	Capability type *	Semantic type
temperature	temperature	Telemetry	Temperature

Additional configuration options include:

- Schema *: Double
- Color: (Color picker icon)
- Min value: -20
- Max value: 60
- Decimal places: (empty)
- Unit: Degree celsius
- Display unit: C
- Comment: (empty)
- Description: (empty)

Acrescente um novo “capability” e SALVE!

The screenshot shows the Azure IoT Central console interface. The browser address bar displays the URL: `https://myiotcentralraspsim81151.azureiotcentral.com/device-templates/S2yOKPnB6DqaW6Ei5nZtK/dcm/nx8laGVZa6Lwq5TP4kHkA`. The page title is `myiotcentralraspsim81151`. The left sidebar contains navigation options: Connect, Devices, Device groups, Device templates (selected), Edge manifests, Analyze, Data explorer, Dashboards, Manage, Jobs, Extend, Rules, Data export, Security, Audit logs, Permissions, and Settings. The main content area shows the configuration for a device model named `raspberry-sim`. The breadcrumb path is `Device templates > raspberry-sim > Model > raspberry-sim`. The device model is in a `Draft` state. A red arrow points to the `Save` button in the top right of the configuration panel. The configuration panel includes a table of capabilities and a schema definition section.

Display name	Name *	Capability type *	Semantic type
temperature	temperature	Telemetry	Temperature
humidity	humidity	Telemetry	Humidity

Schema *

Double

Color

Min value 0

Max value 100

Decimal places

Unit Percent

Display unit %

Comment

Description

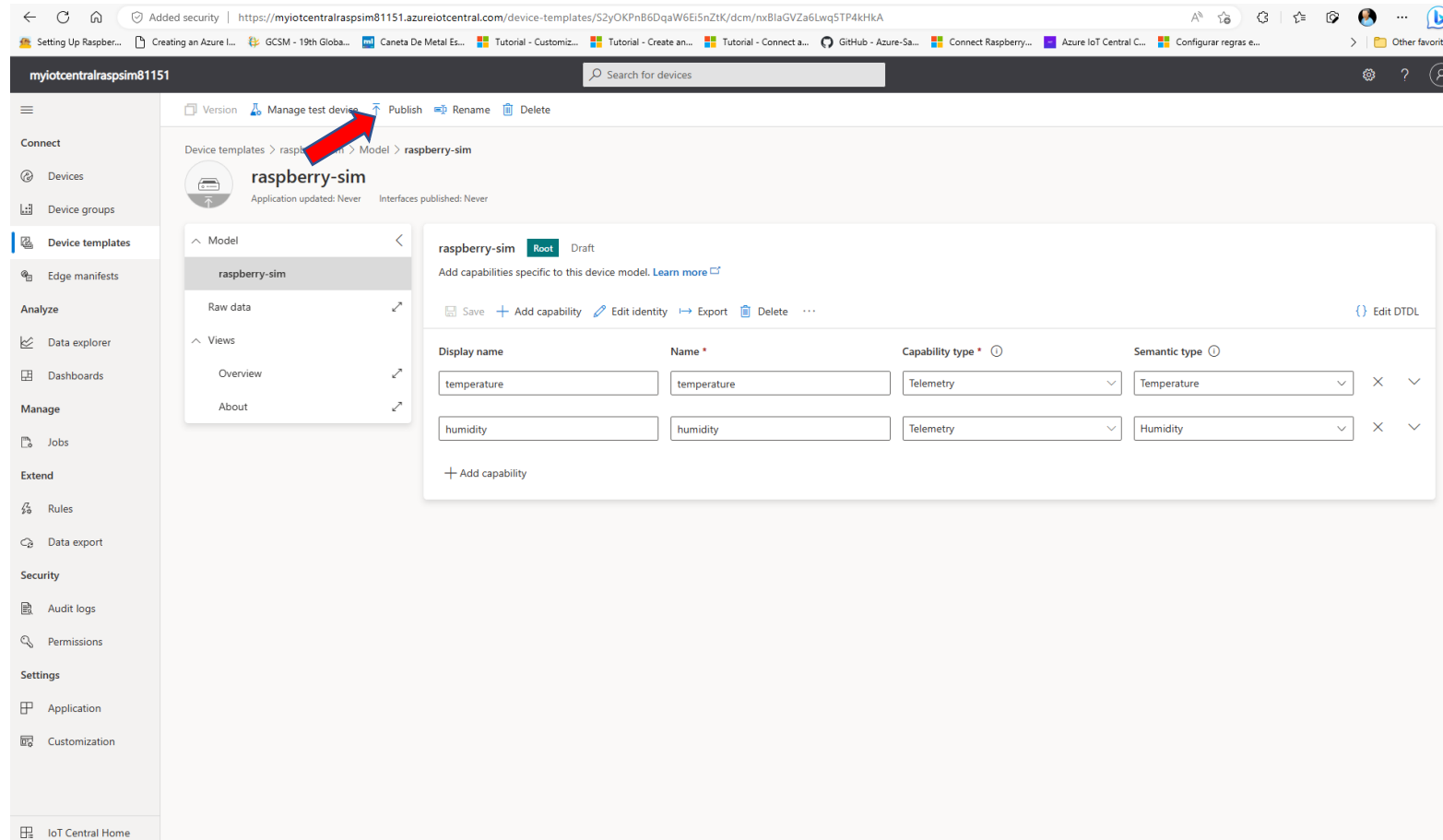
Vamos criar as “VIEWS”

The screenshot shows the Azure IoT Central interface for a device template named 'raspberry-sim'. The left sidebar contains navigation options: Connect (Devices, Device groups, Device templates, Edge manifests), Analyze (Data explorer, Dashboards), Manage (Jobs), Extend (Rules, Data export), Security (Audit logs, Permissions), and Settings (Application, Customization). The main content area is titled 'raspberry-sim' and shows a 'Model' list with 'raspberry-sim', 'Raw data', and 'Views'. A 'Select to add a new view' dialog is open, displaying three options: 'Editing device and cloud data', 'Visualizing the device', and 'Generate default views'. A red arrow points to the 'Generate default views' option, which is described as: 'Generate default device views to quickly begin displaying device information within an intuitive dashboard experience'.

Gere as “VIEWS”

The screenshot displays the Azure IoT Central web interface for a device template named 'raspberry-sim'. The breadcrumb navigation shows 'Device templates > raspberry-sim > Views > Generate'. The left sidebar contains various management and analysis tools. The main content area is titled 'raspberry-sim' and shows a list of views: 'raspberry-sim', 'Raw data', and 'Views'. A configuration panel on the right, titled 'Select the applicable views to be generated.', contains three toggle switches: 'Commands' (Off), 'Overview' (On), and 'About' (On). A blue button labeled 'Generate default dashboard view(s)' is located at the bottom of this panel, with a red arrow pointing to it.

Publique o Template!!!



The screenshot shows the Azure IoT Central console interface. The browser address bar displays the URL: `https://myiotcentralraspsim81151.azureiotcentral.com/device-templates/S2yOKPnB6DqaW6Ei5nZtK/dcm/nxBlaGVZa6Lwq5TP4kHkA`. The page title is "myiotcentralraspsim81151". The left sidebar contains navigation options: Connect (Devices, Device groups), Device templates (selected), Edge manifests, Analyze (Data explorer, Dashboards), Manage (Jobs), Extend (Rules, Data export), Security (Audit logs, Permissions), and Settings (Application, Customization). The main content area shows the "raspberry-sim" device template. A red arrow points to the "Publish" button in the top navigation bar. Below the template name, there are options for "Model", "Raw data", and "Views". The "Model" section is expanded, showing a table of capabilities:

Display name	Name *	Capability type *	Semantic type		
temperature	temperature	Telemetry	Temperature	X	V
humidity	humidity	Telemetry	Humidity	X	V

Below the table is a "+ Add capability" button. The top right of the main content area shows "raspberry-sim" with "Root" and "Draft" buttons, and a "Publish" button highlighted by a red arrow. Other buttons include "Version", "Manage test devices", "Rename", and "Delete".

Selezione o Template e adicione o dispositivo

The screenshot displays the Azure IoT Central interface for a specific instance. The left-hand navigation pane is visible, with the 'Devices' section selected. Under 'Device groups', the 'raspberry-sim' option is highlighted with a red arrow. The main content area features a heading 'To get started with IoT Central, connect a device' and two primary action cards. The first card, 'Get up and running in 5 minutes', includes a 'Use phone as a device' button. The second card, 'Start IoT solution development', includes an 'Add a device' button, which is also highlighted with a red arrow. The interface includes a search bar at the top and various navigation icons in the sidebar.

Crie o Dispositivo

The screenshot shows the Azure IoT Central interface for a device named 'raspberry-sim'. A modal dialog box titled 'Create a new device' is open, allowing the user to configure a new device. The dialog includes the following fields and options:

- Device name ***: A text input field containing 'raspberry-sim - 66pb6h3vdk'.
- Device ID ***: A text input field containing '66pb6h3vdk'.
- Organization ***: A dropdown menu showing 'myiotcentralraspsim81151'.
- Device template ***: A dropdown menu showing 'raspberry-sim'.
- Simulate this device?**: A section with a radio button set to 'No'. The text below reads: 'A simulated device generates telemetry that enables you to test the behavior of your application before you connect a real device.'
- Azure IoT Edge device?**: A section with a radio button set to 'No'. The text below reads: 'Azure IoT Edge moves cloud analytics and custom business logic from the cloud to your devices.'

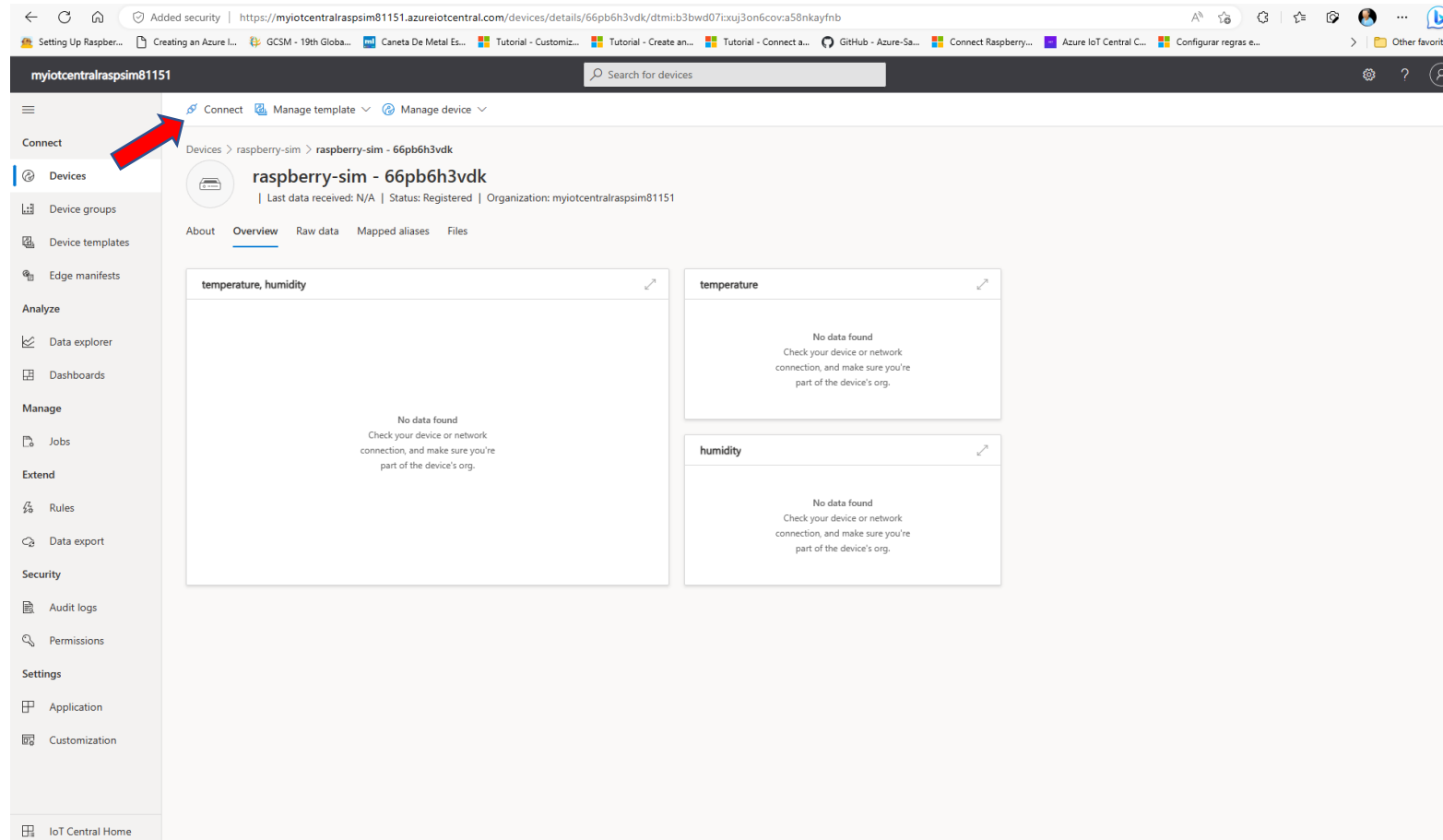
At the bottom of the dialog, there are two buttons: 'Create' (highlighted with a red arrow) and 'Cancel'.

Selezione o Dispositivo

The screenshot shows the Azure IoT Central portal interface. The browser address bar displays the URL: `https://myiotcentralraspsim81151.azureiotcentral.com/devices/templates/dtmib3bwd07if17c73yyij`. The page title is `myiotcentralraspsim81151`. The left sidebar contains navigation options: Connect, Devices, Device groups, Device templates, Edge manifests, Analyze, Data explorer, Dashboards, Manage, Jobs, Extend, Rules, Data export, Security, Audit logs, Permissions, Settings, Application, Customization, and IoT Central Home. The main content area is titled "Devices" and shows a search bar for "raspberry-sim". Below the search bar, there is a table of devices. A red arrow points to the first device in the table.

Device name	Device ID	Device status	Organization	Simulated
raspberry-sim - 66pb6h3v...	66pb6h3vdk	Registered	myiotcentralraspsim81151	No

Conectar o dispositivo “REAL” (simulador Rasp. Pi)



The screenshot displays the Azure IoT Central interface for a device named "raspberry-sim - 66pb6h3vdk". The page is titled "raspberry-sim - 66pb6h3vdk" and shows the device's status as "Registered". The main content area contains three data panels: "temperature, humidity", "temperature", and "humidity". Each panel displays "No data found" and a message: "Check your device or network connection, and make sure you're part of the device's org." A red arrow points to the "Connect" button in the top navigation bar.

myiotcentralraspsim81151

Search for devices

Connect Manage template Manage device

Devices > raspberr... > raspberr... - 66pb6h3vdk

raspberry-sim - 66pb6h3vdk

Last data received: N/A | Status: Registered | Organization: myiotcentralraspsim81151

About Overview Raw data Mapped aliases Files

temperature, humidity

temperature

humidity

No data found
Check your device or network connection, and make sure you're part of the device's org.

No data found
Check your device or network connection, and make sure you're part of the device's org.

No data found
Check your device or network connection, and make sure you're part of the device's org.

IoT Central Home

Copie o ID Scope, Device ID, P. Key

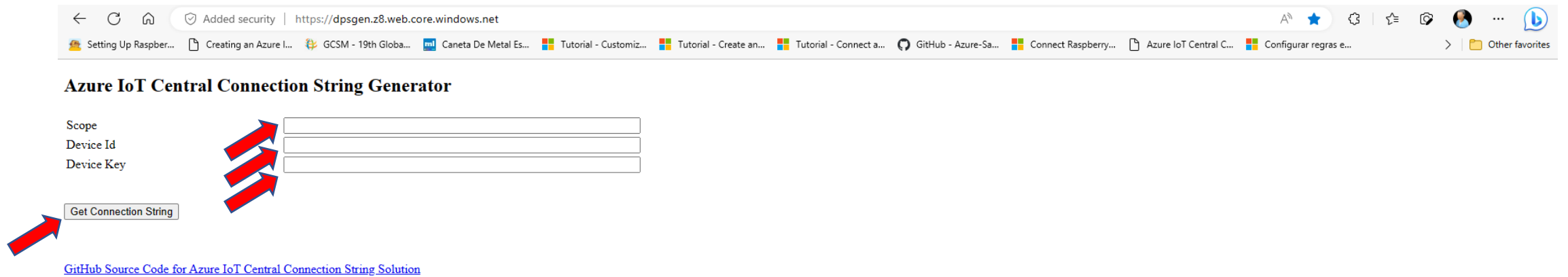
The screenshot shows the Azure IoT Central console interface. A modal dialog titled "Device connection groups" is open, displaying the configuration for a device named "raspberry-sim - 66pb6h3vdk". The dialog includes the following fields and options:

- ID scope:** 0ne009BD636
- Device ID:** 66pb6h3vdk
- Authentication type:** Shared access signature (SAS)
- Key:** QR code
- Primary key:** Ndy9jM5leYdi4YZLz8Y1shuGSPat0TZkUybz9UPIA=
- Secondary key:** KH6vhcv/Plctu5trJdd8LzsAv61En2k81YhAtm2lqs4=

Red arrows point to the ID scope, Device ID, and Primary key fields, indicating the information to be copied. The background shows the device's overview page with a "temperature, humidity" sensor and a "No data found" message.

Gere o string de conexão

<https://dpsgen.z8.web.core.windows.net/>



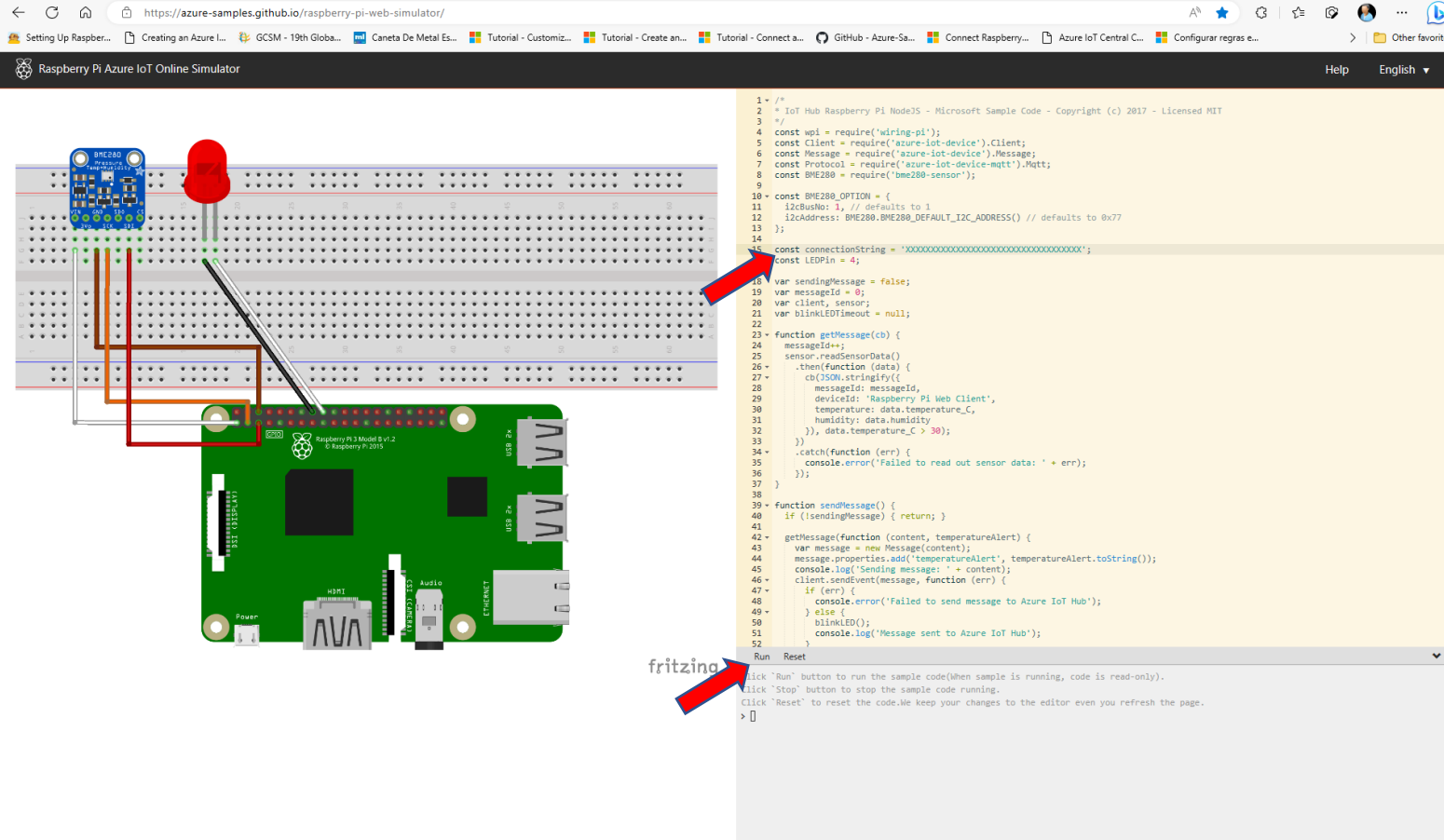
The screenshot shows a web browser window with the URL <https://dpsgen.z8.web.core.windows.net/>. The page title is "Azure IoT Central Connection String Generator". It features three input fields labeled "Scope", "Device Id", and "Device Key". A "Get Connection String" button is located below the input fields. A red arrow points to the button, and three red arrows point to the input fields. Below the form, there is a link to the "GitHub Source Code for Azure IoT Central Connection String Solution".

Scope
Device Id
Device Key

Get Connection String

[GitHub Source Code for Azure IoT Central Connection String Solution](#)

Entre no Simulador Raspberry Pi



The image displays a web browser window titled "Raspberry Pi Azure IoT Online Simulator". The browser address bar shows the URL <https://azure-samples.github.io/raspberry-pi-web-simulator/>. The simulator interface is split into two main sections: a visual representation of a Raspberry Pi 3 Model B v1.2 connected to a breadboard, and a code editor on the right.

The breadboard section shows a BME280 sensor module connected to the Raspberry Pi. A red LED is also connected to the breadboard. The code editor on the right contains JavaScript code for an IoT Hub Raspberry Pi NodeJS sample. The code includes comments, variable declarations for the sensor and client, and functions for reading sensor data and sending messages to the Azure IoT Hub. A red arrow points to the `const LEDPin = 4;` line in the code. Another red arrow points to the "Run" button in the simulator's control panel at the bottom.

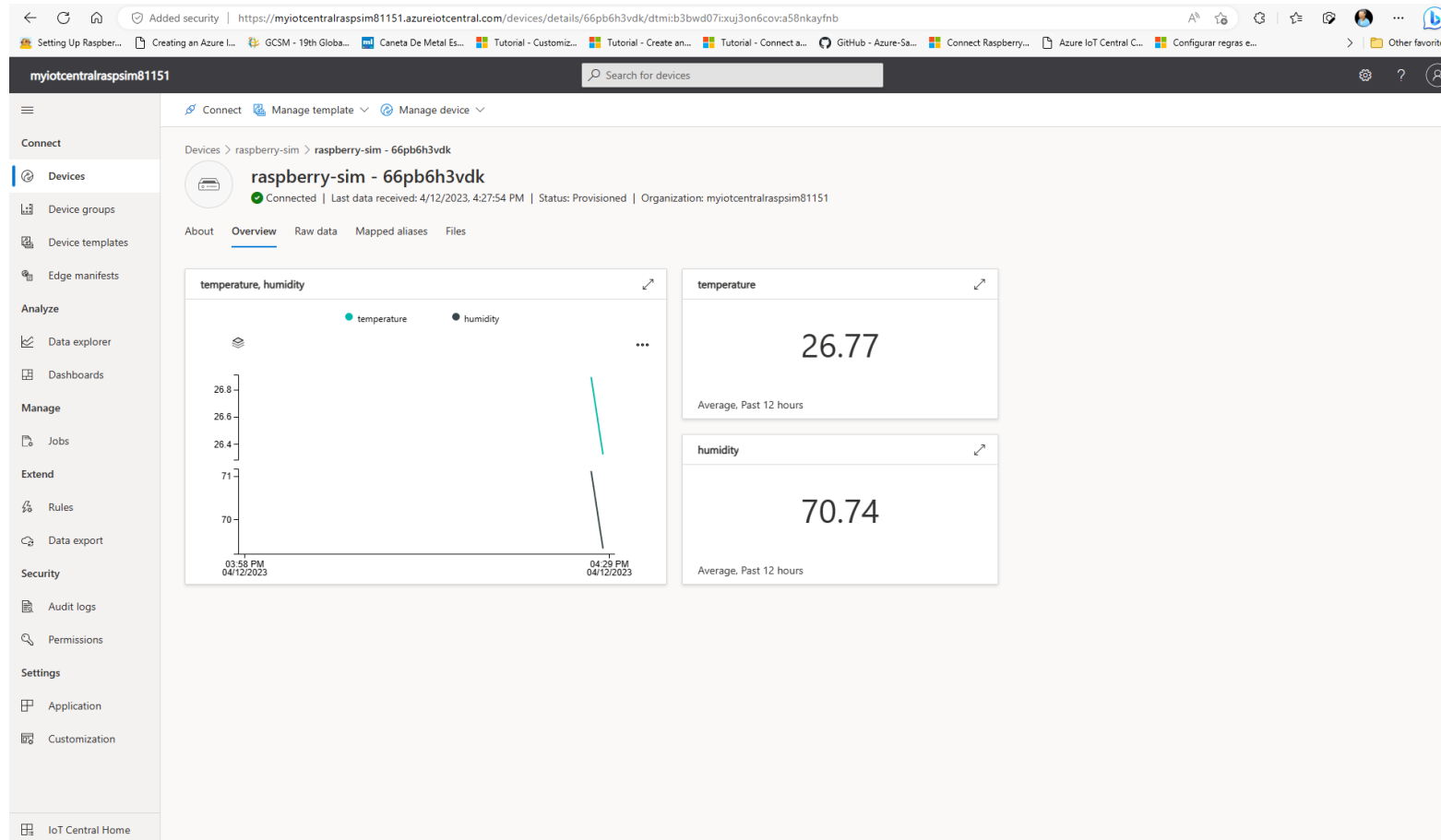
`1 /*
2 * IoT Hub Raspberry Pi NodeJS - Microsoft Sample Code - Copyright (c) 2017 - Licensed MIT
3 */
4 const wpi = require('wiring-pi');
5 const Client = require('azure-iot-device').Client;
6 const Message = require('azure-iot-device').Message;
7 const Protocol = require('azure-iot-device-mqtt').Mqtt;
8 const BME280 = require('bme280-sensor');
9
10 const BME280_OPTION = {
11 i2cBusno: 1, // defaults to 1
12 i2cAddress: BME280.BME280_DEFAULT_I2C_ADDRESS() // defaults to 0x77
13 };
14
15 const connectionString = 'XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX';
16 const LEDPin = 4;
17
18 var sendingMessage = false;
19 var messageId = 0;
20 var client, sensor;
21 var blinkLEDTIMEOUT = null;
22
23 function getMessage(cb) {
24 messageId++;
25 sensor.readSensorData()
26 .then(function (data) {
27 cb(JSON.stringify({
28 messageId: messageId,
29 deviceId: 'Raspberry Pi Web Client',
30 temperature: data.temperature_C,
31 humidity: data.humidity
32 })), data.temperature_C > 30);
33 })
34 .catch(function (err) {
35 console.error('Failed to read out sensor data: ' + err);
36 });
37 }
38
39 function sendMessage() {
40 if (!sendingMessage) { return; }
41
42 getMessage(function (content, temperatureAlert) {
43 var message = new Message(content);
44 message.properties.add('temperatureAlert', temperatureAlert.toString());
45 console.log('Sending message: ' + content);
46 client.sendEvent(message, function (err) {
47 if (err) {
48 console.error('Failed to send message to Azure IoT Hub');
49 } else {
50 blinkLED();
51 console.log('Message sent to Azure IoT Hub');
52 }
53 })
54 }
55 }
56 }
57 }
58 }
59 }
60 }
61 }
62 }
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66 }
67 }
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92 }
93 }
94 }
95 }
96 }
97 }
98 }
99 }
100 }`

Run Reset

Click "Run" button to run the sample code (when sample is running, code is read-only).
Click "Stop" button to stop the sample code running.
Click "Reset" to reset the code. We keep your changes to the editor even you refresh the page.

<https://azure-samples.github.io/raspberry-pi-web-simulator/>

Verifique o funcionamento no Device Explorer



DÚVIDAS?

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