

Microsoft

Exam Questions AZ-220

Microsoft Azure IoT Developer



NEW QUESTION 1

- (Exam Topic 1)

You need to enable telemetry message tracing through the entire IoT solution. What should you do?

- A. Monitor device lifecycle events.
- B. Upload IoT device logs by using the File upload feature.
- C. Enable the DeviceTelemetry diagnostic log and stream the log data to an Azure event hub.
- D. Implement distributed tracing.

Answer: D

Explanation:

IoT Hub is one of the first Azure services to support distributed tracing. As more Azure services support distributed tracing, you'll be able to trace IoT messages throughout the Azure services involved in your solution.

Note:

Enabling distributed tracing for IoT Hub gives you the ability to:

Precisely monitor the flow of each message through IoT Hub using trace context. This trace context includes correlation IDs that allow you to correlate events from one component with events from another component. It can be applied for a subset or all IoT device messages using device twin.

Automatically log the trace context to Azure Monitor diagnostic logs.

Measure and understand message flow and latency from devices to IoT Hub and routing endpoints. Start considering how you want to implement distributed tracing for the non-Azure services in your IoT solution.

Reference:

<https://docs.microsoft.com/en-us/azure/iot-hub/iot-hub-distributed-tracing>

NEW QUESTION 2

- (Exam Topic 1)

What should you do to identify the cause of the connectivity issues?

- A. Send cloud-to-device messages to the IoT devices.
- B. Use the heartbeat pattern to send messages from the IoT devices to iotHub1.
- C. Monitor the connection status of the device twin by using an Azure function.
- D. Enable the collection of the Connections diagnostics logs and set up alerts for the connected devices count metric.

Answer: D

Explanation:

Scenario: You discover connectivity issues between the IoT gateway devices and iotHub1, which cause IoT devices to lose connectivity and messages.

To log device connection events and errors, turn on diagnostics for IoT Hub. We recommend turning on these logs as early as possible, because if diagnostic logs aren't enabled, when device disconnects occur, you won't have any information to troubleshoot the problem with.

Step 1:

*1. Sign in to the Azure portal.

*2. Browse to your IoT hub.

*3. Select Diagnostics settings.

*4. Select Turn on diagnostics.

*5. Enable Connections logs to be collected.

*6. For easier analysis, turn on Send to Log Analytics (see pricing).

Step 2:

Set up alerts for device disconnect at scale

To get alerts when devices disconnect, configure alerts on the Connected devices (preview) metric. Reference:

<https://docs.microsoft.com/bs-cyrl-ba/azure/iot-hub/iot-hub-troubleshoot-connectivity>

NEW QUESTION 3

- (Exam Topic 3)

You need to install the Azure IoT Edge runtime on a new device that runs Windows 10 IoT Enterprise. Which four actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Step 1: From Azure IoT Hub, create an IoT Edge Device

Step 2: Deploy-IoTEdge

The Deploy-IoTEdge command checks that your Windows machine is on a supported version, turns on the containers feature, and then downloads the moby runtime and the IoT Edge runtime. The command defaults to using Windows containers.

```
{Invoke-WebRequest -useb https://aka.ms/iotedge-win} | Invoke-Expression; ` Deploy-IoTEdge
```

Step 3: Initialize-IoTEdge

The Initialize-IoTEdge command configures the IoT Edge runtime on your machine. The command defaults to manual provisioning with Windows containers.

```
{Invoke-WebRequest -useb https://aka.ms/iotedge Step 4: Enter the IoT Edge device connection string.
```

When prompted, provide the device connection string that you retrieved in step 1. The device connection string associates the physical device with a device ID in IoT Hub.

Reference:

<https://docs.microsoft.com/en-us/azure/iot-edge/module-composition>

NEW QUESTION 4

- (Exam Topic 3)

You have an Azure IoT solution that includes several Azure IoT hubs.

A new alerting feature was recently added to the IoT devices. The feature uses a new device twin reported property named alertCondition.

You need to send alerts to an Azure Service Bus queue named MessageAlerts. The alerts must include alertCondition and the name of the IoT hub.

Which two actions should you perform? Each Answer presents part of the solution. NOTE: Each correct selection is worth one point.

- A. Configure File upload for each IoT hu
- B. Configure the device to send a file to an Azure Storage container that contains the device name and status message.
- C. Add the following message enrichments: Name = iotHubNameValue = \$twin.tag.location Endpoint = MessageAlert
- D. Create an IoT Hub routing rule that has a data source of Device Twin Change Events and select the endpoint for MessageAlerts.
- E. Add the following message enrichments: Name = iotHubName Value = \$iothubnameEndpoint = MessageAlert
- F. Create an IoT Hub routing rule that has a data source of Device Telemetry Messages and select the endpoint for MessageAlerts.

Answer: BD

Explanation:

B: Message enrichments is the ability of the IoT Hub to stamp messages with additional information before the messages are sent to the designated endpoint. One reason to use message enrichments is to include data that can be used to simplify downstream processing. For example, enriching device telemetry messages with

a device twin tag can reduce load on customers to make device twin API calls for this information. D: Applying enrichments

The messages can come from any data source supported by IoT Hub message routing, including the following examples:

-->device twin change notifications -- changes in the device twin device telemetry, such as temperature or pressure

device life-cycle events, such as when the device is created or deleted Reference:

<https://docs.microsoft.com/en-us/azure/iot-hub/iot-hub-message-enrichments-overview>

NEW QUESTION 5

- (Exam Topic 3)

You have 10 IoT devices that connect to an Azure IoT hub named Hub1.

From Azure Cloud Shell, you run `az iot hub monitor-events --hub-name Hub1` and receive the following error message: "az iot hub: 'monitor-events' is not in the 'az iot hub' command group. See 'az iot hub

--help'."

You need to ensure that you can run the command successfully. What should you run first?

- A. `az iot hub monitor-feedback --hub-name Hub1`
- B. `az iot hub generate-sas-token --hub-name Hub1`
- C. `az iot hub configuration list --hub-name Hub1`
- D. `az extension add -name azure-cli-iot-ext`

Answer: D

Explanation:

Execute `az extension add --name azure-cli-iot-ext` once and try again.

In order to read the telemetry from your hub by CLI, you have to enable IoT Extension with the following commands:

Add: `az extension add --name azure-cli-iot-ext` Reference:

<https://github.com/MicrosoftDocs/azure-docs/issues/20843>

NEW QUESTION 6

- (Exam Topic 3)

You have an Azure IoT hub.

You plan to attach three types of IoT devices as shown in the following table.

You need to select the appropriate communication protocol for each device.

What should you select? To answer, drag the appropriate protocols to the correct devices. Each protocol may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: AMQP

Use AMQP on field and cloud gateways to take advantage of connection multiplexing across devices. Box 2: MQTT

MQTT is used on all devices that do not require to connect multiple devices (each with its own per-device credentials) over the same TLS connection.

Box 3: HTTPS

Use HTTPS for devices that cannot support other protocols.

<https://docs.microsoft.com/en-us/azure/iot-hub/iot-hub-devguide-protocols>

NEW QUESTION 7

- (Exam Topic 3)

You have an Azure IoT Central application.

You need to connect an IoT device to the application.

Which two settings do you require in IoT Central to configure the device? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

- A. Group SAS Primary Key
- B. the IoT hub name
- C. Scope ID
- D. Application Name
- E. Device ID

Answer: CE

Explanation:

In your Azure IoT Central application, add a real device to the device template

*1. On the Devices page, select the Environmental sensor device template.

*2. Select + New.

*3. Make sure that Simulated is Off. Then select Create.

Click on the device name, and then select Connect. Make a note of the device connection information on the Device Connection page - ID scope, Device ID, and Primary key. You need these values when you create your device code:

Reference:

<https://docs.microsoft.com/bs-cyrl-ba/azure/iot-central/core/tutorial-connect-device-python>

NEW QUESTION 8

- (Exam Topic 3)

Your company is creating a new camera security system that will use Azure IoT Hub. You plan to use an Azure IoT Edge device that will run Ubuntu Server 18.04.

You need to configure the IoT Edge device.

Which three actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Step 1: Run the following commands Install the container runtime.

Azure IoT Edge relies on an OCI-compatible container runtime. For production scenarios, we recommended that you use the Moby-based engine provided below.

The Moby engine is the only container engine officially supported with Azure IoT Edge. Docker CE/EE container images are compatible with the Moby runtime.

Install the Moby engine.

```
sudo apt-get install moby-engine
```

Install the Moby command-line interface (CLI). The CLI is useful for development but optional for production deployments.

```
sudo apt-get install moby-cli
```

Install the security daemon. The package is installed at /etc/iotedge/. `sudo apt-get install iotedge`

Step 2: From IoT Hub, create an IoT Edge device registry entry.

Note: In your IoT Hub in the Azure portal, IoT Edge devices are created and managed separately from IOT devices that are not edge enabled.

Sign in to the Azure portal and navigate to your IoT hub.

In the left pane, select IoT Edge from the menu.

Select Add an IoT Edge device.

Provide a descriptive device ID. Use the default settings to auto-generate authentication keys and connect the new device to your hub.

Select Save.

Retrieve the connection string in the Azure portal

- *1. When you're ready to set up your device, you need the connection string that links your physical device with its identity in the IoT hub.
- *2. From the IoT Edge page in the portal, click on the device ID from the list of IoT Edge devices.
- *3. Copy the value of either Primary Connection String or Secondary Connection String.

Step 3: Add the connection string to..

To manually provision a device, you need to provide it with a device connection string that you can create by registering a new device in your IoT hub.

Open the configuration file.

```
sudo nano /etc/iotedgedge/config.yaml
```

Find the provisioning configurations of the file and uncomment the Manual provisioning configuration section. Update the value of device_connection_string with the connection string from your IoT Edge device.

Save and close the file.

After entering the provisioning information in the configuration file, restart the daemon: `sudo systemctl restart iotedgedge`

Reference:

<https://docs.microsoft.com/en-us/azure/iot-edge/how-to-install-iot-edge-linux>

NEW QUESTION 9

- (Exam Topic 3)

You have an Azure IoT solution that includes a standard tier Azure IoT hub and an IoT device. The device sends one 100-KB device-to-cloud message every hour. You need to calculate the total daily message consumption of the device. What is the total daily message consumption of the device?

- A. 24
- B. 600
- C. 2,400
- D. 4,800

Answer: B

Explanation:

100 KB * 24 is around 2,400 bytes.

The 100 KB message is divided into 4 KB blocks, and it is billed for 25 messages. 25 times 24 is 600

Note: The maximum message size for messages sent from a device to the cloud is 256 KB. These messages are metered in 4 KB blocks for the paid tiers so for instance if the device sends a 16 KB message via the paid tiers it will be billed as 4 messages.

Reference:

<https://azure.microsoft.com/en-us/pricing/details/iot-hub/>

NEW QUESTION 10

- (Exam Topic 3)

You plan to deploy an Azure IoT hub. The IoT hub must support the following:

Three Azure IoT Edge devices, 2,500 IoT devices

Each IoT device will send a 6 KB message every five seconds.

You need to size the IoT hub to support the devices. The solution must minimize costs. What should you choose?

- A. one unit of the S1 tier
- B. one unit of the B2 tier
- C. one unit of the B1 tier
- D. one unit of the S3 tier

Answer: D

Explanation:

2500 * 6 KB * 12 = 180,000 KB/minute = 180 MB/Minute.

B3, S3 can handle up to 814 MB/minute per unit. Incorrect Answers:

A, C: B1, S1 can only handle up to 1111 KB/minute per unit B: B2, S2 can only handle up to 16 MB/minute per unit.

Reference:

<https://docs.microsoft.com/en-us/azure/iot-hub/iot-hub-scaling>

NEW QUESTION 10

- (Exam Topic 3)

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this question, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You have an Azure IoT solution that includes an Azure IoT hub, a Device Provisioning Service instance, and 1,000 connected IoT devices.

All the IoT devices are provisioned automatically by using one enrollment group. You need to temporarily disable the IoT devices from connecting to the IoT hub.

Solution: From the Device Provisioning Service, you disable the enrollment group, and you disable device entries in the identity registry of the IoT hub to which the IoT devices are provisioned.

Does the solution meet the goal?

- A. Yes
- B. No

Answer: A

Explanation:

You may find it necessary to deprovision devices that were previously auto-provisioned through the Device Provisioning Service.

In general, deprovisioning a device involves two steps:

*1. Disenroll the device from your provisioning service, to prevent future auto-provisioning. Depending on whether you want to revoke access temporarily or permanently, you may want to either disable or delete an enrollment entry.

*2. Deregister the device from your IoT Hub, to prevent future communications and data transfer. Again, you can temporarily disable or permanently delete the device's entry in the identity registry for the IoT Hub where it was provisioned.

Reference:

<https://docs.microsoft.com/bs-latn-ba/azure/iot-dps/how-to-unprovision-devices>

NEW QUESTION 11

- (Exam Topic 3)

You have 100 devices that connect to an Azure IoT hub.

You need to be notified about failed local logins to a subnet of the devices.

Which three actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Step 1: Enable Azure Security Center for IoT

Security alerts, such as failed local IoT hub logins, are stored in AzureSecurityOfThings.SecurityAlert table in the Log Analytics workspace configured for the Azure Security Center for IoT solution.

Step 2: Select a device security group Update a device security group..

Step 3: Create a custom alert rule by creating a custom alert rule Reference:

<https://docs.microsoft.com/bs-latn-ba/azure/asc-for-iot/how-to-security-data-access> <https://docs.microsoft.com/en-us/rest/api/securitycenter/devicesecuritygroups/createorupdate>

NEW QUESTION 15

- (Exam Topic 3)

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this question, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You have devices that connect to an Azure IoT hub. Each device has a fixed GPS location that includes latitude and longitude.

You discover that a device entry in the identity registry of the IoT hub is missing the GPS location.

You need to configure the GPS location for the device entry. The solution must prevent the changes from being propagated to the physical device.

Solution: You use an Azure policy to apply tags to a resource group. Does the solution meet the goal?

- A. Yes
- B. No

Answer: B

Explanation:

Instead add the desired properties to the device twin.

Note: Device Twins are used to synchronize state between an IoT solution's cloud service and its devices. Each device's twin exposes a set of desired properties and reported properties. The cloud service populates the desired properties with values it wishes to send to the device. When a device connects it requests and/or subscribes for its desired properties and acts on them.

Reference:

<https://azure.microsoft.com/sv-se/blog/deep-dive-into-azure-iot-hub-notifications-and-device-twin/>

NEW QUESTION 17

- (Exam Topic 3)

You have an Azure IoT hub that uses a Device Provisioning Service instance.

You create a new individual device enrollment that uses symmetric key attestation.

Which detail from the enrollment is required to auto provision the device by using the Device Provisioning Service?

- A. the registration ID of the enrollment

- B. the primary key of the enrollment
- C. the device identity of the IoT hub
- D. the hostname of the IoT hub

Answer: C

Explanation:

An enrollment is the record of devices or groups of devices that may register through auto-provisioning. The enrollment record contains information about the device or group of devices, including:

the attestation mechanism used by the device

the optional initial desired configuration desired IoT hub the desired device ID

Note: Azure IoT auto-provisioning can be broken into three phases:

*1. Service configuration - a one-time configuration of the Azure IoT Hub and IoT Hub Device Provisioning Service instances, establishing them and creating linkage between them.

*2. Device enrollment - the process of making the Device Provisioning Service instance aware of the devices that will attempt to register in the future. Enrollment is accomplished by configuring device identity information in the provisioning service, as either an "individual enrollment" for a single device, or a "group enrollment" for multiple devices.

*3. Device registration and configuration Reference:

<https://docs.microsoft.com/en-us/azure/iot-dps/concepts-service#enrollment>

NEW QUESTION 21

- (Exam Topic 3)

You have an instance of Azure Time Series Insights and an Azure IoT hub that receives streaming telemetry from IoT devices.

You need to configure Time Series Insights to receive telemetry from the devices.

Which three actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Step 1: Create a dedicated consumer group.. Add a consumer group to your IoT hub.

Applications use consumer groups to pull data from Azure IoT Hub. To reliably read data from your IoT hub, provide a dedicated consumer group that's used only by this Time Series Insights environment.

Step 2: Add a new Time Series Insights event source. Add a new event source

Sign in to the Azure portal.

In the left menu, select All resources. Select your Time Series Insights environment.

Under Settings, select Event Sources, and then select Add.

In the New event source pane, for Event source name, enter a name that's unique to this Time Series Insights environment. For example, enter event-stream.

Step 3: Configure the Time Series event source to connect to an existing IOT hub Step 4: For Source, select IoT Hub.

Step 5: Select a value for Import option:

If you already have an IoT hub in one of your subscriptions, select Use IoT Hub from available subscriptions. This option is the easiest approach.

Reference:

<https://docs.microsoft.com/en-us/azure/time-series-insights/time-series-insights-how-to-add-an-event-source-iot>

NEW QUESTION 25

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