

Microsoft

Exam Questions AZ-220

Microsoft Azure IoT Developer



NEW QUESTION 1

- (Exam Topic 1)

You create a new IoT device named device1 on iothub1. Device1 has a primary key of Uihuih76hbHb. How should you complete the device connection string? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: iothub1

The Azure IoT hub is named iothub1.

Box 2: azure-devices.net

The format of the device connection string looks like:

HostName={YourIoTHubName}.azure-devices.net;DeviceId=MyNodeDevice;SharedAccessKey={YourShared Box 1: device1

Device1 has a primary key of Uihuih76hbHb. Reference:

<https://docs.microsoft.com/en-us/azure/iot-hub/quickstart-control-device-dotnet>

NEW QUESTION 2

- (Exam Topic 3)

You have an Azure IoT solution that includes an Azure IoT hub, 100 Azure IoT Edge devices, and 500 leaf devices.

You need to perform a key rotation across the devices.

Which three types of entities should you update? Each Answer presents part of the solution. NOTE: Each correct selection is worth one point.

- A. the \$edgeHub module identity
- B. the \$edgeAgent module identity
- C. the leaf module identities
- D. the IoT Edge device identities
- E. the iothubowner policy credentials
- F. the leaf device identities

Answer: ADF

Explanation:

To get authorization to connect to IoT Hub, devices and services must send security tokens signed with either a shared access or symmetric key. These keys are stored with a device identity in the identity registry.

An IoT Hub identity registry can be accessed like a dictionary, by using the deviceId or moduleId as the key. Reference:

<https://docs.microsoft.com/bs-latn-ba/azure/iot-dps/how-to-control-access> <https://docs.microsoft.com/en-us/azure/iot-hub/iot-hub-devguide-identity-registry>

NEW QUESTION 3

- (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 = IoT Hub Name Value = \$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 = IoT Hub Name Value = \$iothubname Endpoint = 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 enrichment 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 enrichment 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 4

- (Exam Topic 3)

You have an Azure IoT solution that includes an Azure IoT hub and 100 Azure IoT Edge devices.

You plan to deploy the IoT Edge devices to external networks. The firewalls of the external networks only allow traffic on port 80 and port 443.

You need to ensure that the devices can connect to the IoT hub. The solution must minimize costs. What should you do?

- A. Configure the devices for extended offline operations.
- B. Configure the upstream protocol of the devices to use MQTT over WebSocket.
- C. Connect the external networks to the IoT solution by using ExpressRoute.
- D. Configure the devices to use an HTTPS proxy.

Answer: B

Explanation:

MQTT over WebSockets uses port 443. Reference:

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

NEW QUESTION 5

- (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/en-us/azure/iot-central/core/tutorial-connect-device-python>

NEW QUESTION 6

- (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 add tags to the device twin. 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 7

- (Exam Topic 3)

You have three Azure IoT hubs named Hub1, Hub2, and Hub3, a Device Provisioning Service instance, and an IoT device named Device1.

Each IoT hub is deployed to a separate Azure region. Device enrollment uses the Lowest latency allocation policy.

The Device Provisioning Service uses the Lowest latency allocation policy. Device1 is auto-provisioned to

Hub1 by using the Device Provisioning Service. Device1 regularly moves between regions.

You need to ensure that Device1 always connects to the IoT hub that has the lowest latency. What should you do?

A. Configure device attestation that uses X.509 certificates.

B. Implement device certificate rolling.

C. Disenroll and reenroll Device1.

D. Configure the re-provisioning policy.

Answer: D

Explanation:

Automated re-provisioning support.

Microsoft added first-class support for device re-provisioning which allows devices to be reassigned to a different IoT solution sometime after the initial solution assignment. Re-provisioning support is available in two options:

Factory reset, in which the device twin data for the new IoT hub is populated from the enrollment list instead of the old IoT hub. This is common for factory reset scenarios as well as leased device scenarios. Migration, in which device twin data is moved from the old IoT hub to the new IoT hub. This is common for scenarios in which a device is moving between geographies.

Reference:

<https://azure.microsoft.com/en-us/blog/new-year-newly-available-iot-hub-device-provisioning-service-features/>

NEW QUESTION 8

- (Exam Topic 3)

You are troubleshooting an Azure IoT hub.

You discover that some telemetry messages are dropped before they reach downstream processing. You suspect that IoT Hub throttling is the root cause.

Which log in the Diagnostics settings of the IoT hub should you use to capture the throttling error events?

A. Routes

B. DeviceTelemetry

C. Connections

D. C2DCommands

Answer: B

Explanation:

The device telemetry category tracks errors that occur at the IoT hub and are related to the telemetry pipeline. This category includes errors that occur when sending telemetry events (such as throttling) and receiving telemetry events (such as unauthorized reader). This category cannot catch errors caused by code running on the device itself.

Note: The metric d2c.telemetry.ingress.sendThrottle is the number of throttling errors due to device throughput throttles.

Reference:

<https://docs.microsoft.com/en-us/azure/iot-hub/iot-hub-monitor-resource-health>

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:

$2500 \times 6 \text{ KB} \times 12 = 180,000 \text{ KB/minute} = 180 \text{ MB/Minute}$.

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)

You have 1,000 devices that connect to a standard tier Azure IoT hub.

All the devices are commissioned and send telemetry events to the built-in IoT Hub endpoint. You configure message enrichment on the events endpoint and set the enrichment value to \$twin.tags.ipV4.

When you inspect messages on the events endpoint, you discover that all the messages are stamped with a string of "\$twin.tags.ipV4".

What are two possible causes of the issue? Each Answer presents a complete solution. NOTE: Each correct selection is worth one point.

- A. The ipV4 tag is a restricted twin property that is unavailable for message enrichment.
- B. A standard tier IoT hub does not support device twin properties in message enrichments.
- C. The device sending the message has no device twin.
- D. Message enrichment cannot be added to messages going to a built-in endpoint.
- E. The device twin path used for the value of the enrichment does not exist.
- F. The device twin property value used for message enrichment is set to "\$twin.tags.ipV4".

Answer: CE

Explanation:

In some cases, if you are applying an enrichment with a value set to a tag or property in the device twin, the value will be stamped as a string value. For example, if an enrichment value is set to \$twin.tags.field, the messages will be stamped with the string "\$twin.tags.field" rather than the value of that field from the twin.

This happens in the following cases:

(C) Your IoT Hub is in the standard tier, but the device sending the message has no device twin.

(E) Your IoT Hub is in the standard tier, but the device twin path used for the value of the enrichment does not exist. For example, if the enrichment value is set to \$twin.tags.location, and the device twin does not have a location property under tags, the message is stamped with the string "\$twin.tags.location".

Your IoT Hub is in the basic tier. Basic tier IoT hubs do not support device twins. Reference:

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

NEW QUESTION 14

- (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 15

- (Exam Topic 3)

You have an Azure IoT hub.

You plan to deploy 1,000 IoT devices by using automatic device management. The device twin is shown below.

You need to configure automatic device management for the deployment.

Which target Condition and Device Twin Path should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: tags.engine.warpDriveType='VM105a'

Use tags to target twins. Before you create a configuration, you must specify which devices or modules you want to affect. Azure IoT Hub identifies devices and using tags in the device twin, and identifies modules using tags in the module twin.

Box 2: properties.desired.warpOperating

The twin path, which is the path to the JSON section within the twin desired properties that will be set. For example, you could set the twin path to properties.desired.chiller-water and then provide the following

JSON content:

```
{
  "temperature": 66,
  "pressure": 28
}
```

Reference:

<https://docs.microsoft.com/en-us/azure/iot-hub/iot-hub-automatic-device-management>

NEW QUESTION 18

- (Exam Topic 3)

You have 10,000 IoT devices that connect to an Azure IoT hub. The devices do not support over-the-air (OTA) updates.

You need to decommission 1,000 devices. The solution must prevent connections and autoenrollment for the decommissioned devices.

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

- A. Update the connectionState device twin property on all the devices.
- B. Blacklist the X.509 root certification authority (CA) certificate for the enrollment group.
- C. Delete the enrollment entry for the devices.
- D. Remove the identity certificate from the hardware security module (HSM) of the devices.
- E. Delete the device identity from the device registry of the IoT hub.

Answer: BC

Explanation:

B: X.509 certificates are typically arranged in a certificate chain of trust. If a certificate at any stage in a chain becomes compromised, trust is broken. The certificate must be blacklisted to prevent Device Provisioning Service from provisioning devices downstream in any chain that contains that certificate.

C: Individual enrollments apply to a single device and can use either X.509 certificates or SAS tokens (in a real or virtual TPM) as the attestation mechanism. (Devices that use SAS tokens as their attestation mechanism can be provisioned only through an individual enrollment.) To blacklist a device that has an individual enrollment, you can either disable or delete its enrollment entry.

To blacklist a device that has an individual enrollment, you can either disable or delete its enrollment entry. Reference:

<https://docs.microsoft.com/en-us/azure/iot-dps/how-to-revoke-device-access-portal>

NEW QUESTION 22

- (Exam Topic 3)

You have an Azure IoT Edge device.

You need to modify the credentials used to access the container registry. What should you modify?

- A. the @edgeHub module twin
- B. the IoT Edge module
- C. the \$edgeAgent module twin
- D. the Azure IoT Hub device twin

Answer: C

Explanation:

The module twin for the IoT Edge agent is called \$edgeAgent and coordinates the communications between the IoT Edge agent running on a device and IoT Hub. The desired properties are set when applying a deployment manifest on a specific device as part of a single-device or at-scale deployment.

These properties include: runtime.settings.registryCredentials.{registryId}.username runtime.settings.registryCredentials.{registryId}.password

Reference:

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

NEW QUESTION 24

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