

Practice Exam Questions



AZ-220

Microsoft Azure IoT Developer



EXAMAIDES

PASS YOUR EXAM AT FIRST TRY

Total Question: 88 QAs

Implement the IoT solution infrastructure

Case Study

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Overview

A company named Contoso, Ltd. is creating a building monitoring system that will monitor the temperature, humidity, and light level at various points in a building's internal structure.

Contoso will test the system at a single building located in the United Kingdom. The building has 25 floors. Each floor has 15 rooms.

Existing Environment. Current State of Development

Contoso produces a set of Bluetooth sensors that read the temperature and humidity. The sensors connect to IoT gateway devices that relay the data.

All the IoT gateway devices connect to an Azure IoT hub named iothub1.

Existing Environment. Device Twin

You plan to implement device twins by using the following JSON sample.

```

{
  "deviceId": "device_n",
  "etag": "AAAAAAAAAAQ=",
  "deviceEtag": "NDcwMTU4Mzk=",
  "status": "enabled",
  "statusUpdateTime": "0001-01-01T00:00:00Z",
  "connectionState": "Disconnected",
  "lastActivityTime": "0001-01-01T00:00:00Z",
  "cloudToDeviceMessageCount": 0,
  "authenticationType": "sas",
  "x509Thumbprint": {
    "primaryThumbprint": null,
    "secondaryThumbprint": null
  },
  "version": 11,
  "properties": {
    "desired": {
      "fanSpeed": 70,
      "$metadata": {
        "$lastUpdated": "2019-10-16T09:43:42.2944169Z",
        "$lastUpdatedVersion": 4,
        "fanSpeed": {
          "$lastUpdated": "2019-10-16T09:43:42.2944169Z",
          "$lastUpdatedVersion": 4
        }
      }
    },
    "$version": 4
  },
  "reported": {
    "fanSpeed": 80,
    "$metadata": {
      "$lastUpdated": "2019-10-16T09:43:42.4035171Z",
      "fanSpeed": {
        "$lastUpdated": "2019-10-16T09:43:42.4035171Z"
      }
    }
  },
  "$version": 7
}
},
"capabilities": {
  "iotEdge": false
}
}

```

Existing Environment. Azure Stream Analytics

Each room will have between three to five sensors that will generate readings that are sent to a single IoT gateway device. The IoT gateway device will forward all the readings to iotHub1 at intervals of between 10 and 60 seconds.

You plan to use a gateway pattern so that each IoT gateway device will have its own IoT Hub device identity.

You draft the following query, which is missing the `GROUP BY` clause.

```
SELECT
    AVG(temperature),
    System.TimeStamp() AS AsaTime
FROM
    Iothub
```

You plan to use a 30-second period to calculate the average temperature reading of the sensors.

You plan to minimize latency between the condition reported by the sensors and the corresponding alert issued by the Stream Analytics job.

Existing Environment. Device Messages

The IoT gateway devices will send messages that contain the following JSON data whenever the temperature exceeds a specified threshold.

```
{
  "event": {
    "payload": "Temperature = 26.23 Humidity = 78.70597746416186 Button = 0",
    "properties": {
      "application": {
        "level": "critical"
      }
    }
  }
}
```

The `level` property will be used to route the messages to an Azure Service Bus queue endpoint named `criticalep`.

Existing Environment. Issues

You discover connectivity issues between the IoT gateway devices and `iothub1`, which cause IoT devices to lose connectivity and messages.

Requirements. Planned Changes

Contoso plans to make the following changes:

- Use Stream Analytics to process and view data.
- Use Azure Time Series Insights to visualize data.
- Implement a system to sync device statuses and required settings.
- Add extra information to messages by using message enrichment.
- Create a notification system to send an alert if a condition exceeds a specified threshold.
- Implement a system to identify what causes the intermittent connection issues and lost messages.

Requirements. Technical Requirements

Contoso must meet the following technical requirements:

- Use the built-in functions of IoT Hub whenever possible.
- Minimize hardware and software costs whenever possible.
- Minimize administrative effort to provision devices at scale.
- Implement a system to trace message flow to and from `iothub1`.
- Minimize the amount of custom coding required to implement the planned changes.
- Prevent read operations from being negatively affected when you implement additional services.

Question No: 1
HOTSPOT

You create a new IoT device named device1 on iothub1. The primary key value assigned to device1 is 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.

Hot Area:

Answer Area

HostName=

azure-devices.net
criticalep
device1
iothub1
tracestate

 .

azure-devices.net
criticalep
device1
iothub1
tracestate

 ; DeviceId=

azure-devices.net
criticalep
device1
iothub1
tracestate

 :SharedAccessKey=Uihuih76hbHb

Correct Answer:

Answer Area

HostName=

azure-devices.net
criticalep
device1
iothub1
tracestate

 .

azure-devices.net
criticalep
device1
iothub1
tracestate

 ; DeviceId=

azure-devices.net
criticalep
device1
iothub1
tracestate

 :SharedAccessKey=Uihuih76hbHb

Implement the IoT solution infrastructure

Question No: 1

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 section, 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 the 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

Correct Answer: A

Question No: 2

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You need to temporarily disable the IoT devices from the connecting to the IoT hub.

Solution: You delete the enrollment group from the Device Provisioning Service.

Does the solution meet the goal?

- A. Yes
- B. No

Correct Answer: B

Question No: 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.

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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 the connecting to the IoT hub.

Solution: From the IoT hub, you change the credentials for the shared access policy of the IoT devices.

Does the solution meet the goal?

- A. Yes
- B. No

Correct Answer: B

Question No: 4
HOTSPOT

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.

```

{
  "deviceId": "ContosoHyperDriveEngine1",
  "etag": "AAAAAAAAAAw=",
  "deviceEtag": "MTYyNDk20kw",
  "status": "enabled",
  "statusUpdateTime": "0001-01-01t00:00:00Z",
  "connectionTime": "Disconnected",
  "lastActivityTime": "0001-01-01T00:00:00Z",
  "cloudToDeviceMessageCount": 0,
  "authenticationType": "sas",
  "x509Thumbprint": {
    "primaryThumbprint": null,
    "secondaryThumbprint": null
  },
  "version": 13,
  "tags": {
    "engine": {
      "warpCorVersion": "1.2.65b",
      "warpDriveType": "WM105a"
    }
  },
  "properties": {
    "desired": {
      "$metadata": {
        "$lastUpdated": "2019-10-17T18:43:33.7599556Z"
      },
      "version": 1
    },
    "reported": {
      "$metadata": {
        "$lastUpdated": "2019-10-17T18:43:33.7599556Z"
      },
      "version": 1
    }
  }
}

```

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.

Hot Area:

Answer Area

Target Condition:

	▼
properties.desired.warpDriveType='WM105a'	
properties.reported.warpDriveType='WM105a'	
tags.engine.warpDriveType='WM105a'	

Device Twin Path:

	▼
properties.desired.warpOperating	
properties.reported.warpOperating	
properties.warpOperating	

Correct Answer:

Answer Area

Target Condition:

	▼
properties.desired.warpDriveType='WM105a'	
properties.reported.warpDriveType='WM105a'	
tags.engine.warpDriveType='WM105a'	

Device Twin Path:

	▼
properties.desired.warpOperating	
properties.reported.warpOperating	
properties.warpOperating	

Question No: 5

You plan to deploy a standard tier Azure IoT hub.

You need to perform an over-the-air (OTA) update on devices that will connect to the IoT hub by using scheduled jobs.

What should you use?

- A. a device-to-cloud message
- B. the device twin reported properties
- C. a cloud-to-device message
- D. a direct method

Correct Answer: D

Question No: 6

You have an IoT device that gathers data in a CSV file named Sensors.csv.

You deploy an Azure IoT hub that is accessible at ContosoHub.azure-devices.net.

You need to ensure that Sensors.csv is uploaded to the IoT hub.

Which two actions should you perform? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

- A. Upload Sensors.csv by using the IoT Hub REST API.
- B. From the Azure subscription, select the IoT hub, select **Message routing**, and then configure a route to storage.
- C. From the Azure subscription, select the IoT hub, select **File upload**, and then configure a storage container.
- D. Configure the device to use a GET request to ContosoHub.azure-devices.net/devices/ContosoDevice1/files/notifications.

Correct Answer: AC

Question No: 7

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 spend 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

Correct Answer: D

Question No: 8

DRAG DROP

You deploy an Azure IoT hub.

You need to demonstrate that the IoT hub can receive messages from a 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.

Select and Place:

Actions

Get a service primary key for the IoT hub.

Configure the Device Provisioning Service on the IoT hub.

Configure the device connection string on a device client.

Register a device in IoT Hub.

Trigger a new send event from a device client.

Answer Area**Correct Answer:****Actions**

Get a service primary key for the IoT hub.

Configure the Device Provisioning Service on the IoT hub.

Configure the device connection string on a device client.

Register a device in IoT Hub.

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Answer Area

Register a device in IoT Hub.

Configure the device connection string on a device client.

Trigger a new send event from a device client.

**Question No: 9****DRAG DROP**

You have an Azure IoT hub.

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

Name	Specification	Note
Transparent Field Gateway Device	High-power device with a fast processor and 4 GB of RAM	Will connect to multiple devices, each with its own credentials, by using the same TLS connection.
Low Resource Device	Low resource specifications, battery-operated, and 512 KB of RAM	Will connect directly to an IoT hub and will NOT connect to any other devices. Will use cloud-to-device messages.
Limited Sensor Device	Extremely low-power device with a limited microcontroller (MCU) and 256 KB of RAM	Will NOT support the Azure SDK. Messages must be as small as possible.

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.

Select and Place:

Protocols

AMQP

HTTPS

MQTT

Answer Area

Device

Protocol

Transparent Field Gateway Device: Protocol

Low Resource Device: Protocol

Limited Sensor Device: Protocol

Correct Answer:

Protocols

AMQP

HTTPS

MQTT

Answer Area

Device

Protocol

Transparent Field Gateway Device: AMQP

Low Resource Device: MQTT

Limited Sensor Device: HTTPS

Question No: 10

You create an Azure IoT hub by running the following command.

```
az iot hub create --resource-group MyResourceGroup --name MyIotHub --sku B1 --location westus --partition-count 4
```

What does MyIotHub support?

- A. Device Provisioning Service
- B. cloud-to-device messaging
- C. Azure IoT Edge
- D. device twins

Correct Answer: A

Question No: 11

You have an existing Azure IoT hub.

You need to connect physical IoT devices to the IoT hub.

You are connecting the devices through a firewall that allows only port 443 and port 80.

Which three communication protocols can you use? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

- A. MQTT over WebSocket
- B. AMQP
- C. AMQP over WebSocket
- D. MQTT
- E. HTTPS

Correct Answer: ACE

Question No: 12

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 upstream protocol of the devices to use MQTT over TCP.
- 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. Integrate cellular communication hardware onto the devices and avoid the use of the external networks.

Correct Answer: B

Question No: 13

You have 100 devices that connect to an Azure IoT hub named Hub1. The devices connect by using a symmetric key.

You deploy an IoT hub named Hub2.

You need to migrate 10 devices from Hub1 to Hub2. The solution must ensure that the devices retain the existing symmetric key.

What should you do?

- A. Add a desired property to the device twin of Hub2. Update the endpoint of the 10 devices to use Hub2.
- B. Add a desired property to the device twin of Hub1. Recreate the device identity on Hub2.
- C. Recreate the device identity on Hub2. Update the endpoint of the 10 devices to use Hub2.
- D. Disable the 10 devices on Hub1. Update the endpoint of the 10 devices to use Hub2.

Correct Answer: B

Provision and manage devices

Case Study

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  "authenticationType": "sas",
  "x509Thumbprint": {
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    "secondaryThumbprint": null
  },
  "version": 11,
  "properties": {
    "desired": {
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      "$metadata": {
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      }
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    "$metadata": {
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Existing Environment. Azure Stream Analytics

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