Exam Alert: Monitor, Troubleshoot, and Optimize Azure Solutions

PREPARING FOR THE EXAM

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Objectives for the Exam

Monitor, Troubleshoot, and Optimize

15-20%

Integrate Caching and Content Delivery within Solutions

Instrument Solutions to Support Monitoring and Logging

Integrate Caching and Content Delivery within Solutions

Configure cache and expiration policies for Azure Redis Cache

Implement secure and optimized application cache patterns including data sizing, connections, encryption, and expiration

Instrument Solutions to Support Monitoring and Logging

Configure an app or service to use Application Insights

Analyze and troubleshoot solutions by using Azure Monitor

Implement Application Insights web tests and alerts

Review Caching and Content Delivery

Areas of Focus

Azure Redis Cache Overview

Service Tiers

Encryption Configuration

Data Deletion

Additional Configuration

"**Azure Cache for Redis** is a fully managed, in-memory cache that enables high-performance and scalable architectures. Use it to create cloud or hybrid deployments that handle millions of requests per second at sub-millisecond latency."

Microsoft Azure Documentation

Common Azure Cache for Redis Use Cases

User session storage for distributed apps

Database caching

Content caching

Distributed transactions

Message broker

Cache Tier Considerations

Cache Size

Network Performance

Number of Client Connections

Azure Cache for Redis Tiers

Basic

Standard

Premium

Enterprise

Enterprise Flash

Encryption for Azure Redis Cache

Azure Redis Cache uses encryption by default

Supported encryption:

- TLS 1.0 (soon to be deprecated)
- TLS 1.1 (soon to be deprecated)
- TLS 1.2

Encryption can be disabled via the portal or API

Removing Items from Azure Redis Cache

Scheduled Deletion
(TTL)

Manual Deletion

Eviction

Eviction Policy Options

volatile-lru (default)

allkeys-lru

noeviction

volatile-random

allkeys-random

volatile-ttl

Configuration Best Practices

Set the `maxmemory-reserved` **setting**

Reuse client connections whenever possible

Utilize Redis pipelining

Store smaller values

Review Monitoring and Logging

Areas of Focus

Enabling App Service Logging

Transient Faults

Configuring Docker Containers

Web Test Alerts

```
# Configuring Web Server Logging to the Filesystem
az webapp log config --name sampleWebApp
--resource-group sampleResourceGroup
--web-server-logging filesystem

# Configuring App Logging to Azure Blob Storage (Windows Only)
az webapp log config --name sampleWebApp
--resource-group sampleResourceGroup
--application-logging azureblobstorage
```

Configuring Web App Logging

Azure App Service

```
# Configuring Container Logging to the File System (Linux Only)
az webapp log config --name sampleWebApp
--resource-group sampleResourceGroup
--docker-container-logging filesystem
```

Configuring Web App Logging for Docker

Azure App Service

```
# Tail logs from App Service app
az webapp log tail --name sampleWebApp
--resource-group sampleResourceGroup

# Tail and Filter logs from an App Service app
az webapp log tail --name sampleWebApp
--resource-group sampleResourceGroup --filter Error
```

Live Log Tracing for a Web App

Azure App Service

Transient Fault

Any fault that is likely self-correcting and is caused by a temporary loss of connection or unavailability of a service that an application is dependent upon.

Dealing with Transient Faults

Applications should log transient faults

A retry strategy should be in place where needed

Retry logic is already built into most SDK interactions

Implement architectural pattens that help with transient faults

- Retry pattern
- Circuit Breaker pattern

Docker Environment Variables for App Service

WEBSITES_CONTAINER_START_TIME_LIMIT
This will set the amount of time the platform will wait before it restarts your container.

WEBSITES_ENABLE_APP_SERVICE_STORAGE
If this value is not set or if it is set to `true`, the `/home` directory will be shared across container instances and files will persist.

WEBSITE_WEBDEPLOY_USE_SCM
If you want to deploy your container-based web application using WebDeploy/MSDeploy, this value must be set to `false`.

Application Insights Web Test

You can utilize Application Insights to monitor the availability and responsiveness of web applications that have been deployed on the platform. This monitoring is configurable with multiple test types for web applications.

Web Test Types

URL Ping - ping a single URL to test for availability

Multi-step Web - sequence of web requests to validate more complex scenarios

Custom - you can create a custom app to track availability for Application Insights

Example Scenarios

Scenario 1

Sylvia is using Azure Redis Cache for an internal web application

She is using the default settings for a standard tier cache

She is noticing that some keys are never expiring from the cache

Some keys remain in the cache even though they are older and rarely used

What should she set the cache eviction policy for to remedy this?

Scenario 2

Edward is deploying a web application using Azure App Service

Due to previous downtime, he wants to be notified if the site isn't available

He wants to check that the home page returns a 200 status

What type of web test should he configure for Application Insights?

Scenario 3

Cindy has deployed a container-based app using App Services

She is attempting to access her logs from the command line

She finds that currently there aren't any web server logs that she can access

What Azure CLI command should she run to enable logging for the container?

Azure CLI

```
> az

  --name myWebApp

  --resource-group myResourceGroup

  --docker-container-logging
```

Scenario 4

William's company will be implementing a cache for application content

They plan to use Azure Redis Cache

William estimates 50 GB for the cache

The cache needs to have replication and failover

The application will leverage Azure Private Link for the cache connection

What is the most cost-effective pricing tier for this set of requirements?

Scenario 5

Oscar's is creating a container-based application on App Service

App Service is having trouble launching his container fully

Oscar expects that the service is not waiting long enough before evaluation

How can Oscar enable this behavior on Web App for Containers?

Scenario 6

James's company is using Azure Redis Cache for a complex data set

Currently the cache is using the default configuration for the Premium tier

James is noticing keys are being deleted based on when they were last used

How should James configure eviction to use remaining TTL instead?

Scenario Answers

Scenario 1

Sylvia is using Azure Redis Cache for an internal web application

She is using the default settings for a standard tier cache

She is noticing that some keys are never expiring from the cache

Some keys remain in the cache even though they are older and rarely used

What should she set the cache eviction policy for to remedy this?

Solution: Set the eviction policy to `allkeys-lru`

Scenario 2

Edward is deploying a web application using App Services

Due to previous downtime, he wants to be notified if the site isn't available

He wants to check that the home page returns a 200 status

What type of web test should he configure for Application Insights?

Solution: Utilize a URL Ping web test for Application Insights

Scenario 3

Cindy has deployed a container-based app using App Services

She is attempting to access her logs from the command line

She finds that currently there aren't any web server logs that she can access

What Azure CLI command should she run to enable logging for the container?

Azure CLI

```
> az webapp log config
    --name myWebApp
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William estimates 50 GB for the cache

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What is the most cost-effective pricing tier for this set of requirements?

Solution: He should utilize the Standard tier

Scenario 5

Oscar's is creating a container-based application on App Service

App Service is having trouble launching his container fully

Oscar expects that the service is not waiting long enough before evaluation

How can Oscar enable this behavior on Web App for Containers?

Solution: He should set the env variable `WEBSITES_CONTAINER_START_TIME_LIMIT` to the needed start time value

Scenario 6

James's company is using Azure Redis Cache for a complex data set

Currently the cache is using the default configuration for the Premium tier

James is noticing keys are being deleted based on when they were last used

How should James configure eviction to use remaining TTL instead?

Solution: He should utilize the `volatile-ttl` eviction policy