

# Exam Alert: Monitor, Troubleshoot, and Optimize Azure Solutions

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## PREPARING FOR THE EXAM



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# Objectives for the Exam

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# Monitor, Troubleshoot, and Optimize

**10-15%**

**Integrate Caching and Content  
Delivery within Solutions**

**Instrument Solutions to Support  
Monitoring and Logging**

# Integrate Caching and Content Delivery within Solutions

**Develop code to implement CDNs in solutions**

**Configure cache and expiration policies for FrontDoor, CDNs, or Redis caches**

**Store and retrieve data in Azure Redis cache**

# Instrument Solutions to Support Monitoring and Logging

**Configure instrumentation in an app or service by using Application Insights**

**Analyze log data and troubleshoot solutions by using Azure Monitor**

**Implement Application Insights Web Test and Alerts**

**Implement code that handles transient faults**

# Review Caching and Content Delivery

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# Areas of Focus

**Azure CDN**

**Azure Front Door**

**Azure Cache for Redis**

# Global Use Cases

**Azure CDN**

**Azure Front Door**



# Supported Azure CDN Networks



Microsoft

Akamai

Verizon

**Object requested from a  
POP location**

**If object does not exist, it  
is fetched from origin**

**Object is cached at the  
POP location**

**Object is removed from  
the location after TTL**

## Azure CDN Delivery Process

# Azure CDN Caching Config

**Azure CDN supports two approaches for configuring caching**

- Global Caching Rule (overrides HTTP cache headers)
- Custom Caching Rules (overrides Global Caching Rule)

**Global Caching Rules define:**

- Cache behavior
- Expiration duration
- Query string caching behavior

**Custom Caching Rules can set custom behavior and duration by path pattern**

# Azure CDN Cache Behavior

## **Bypass Cache**

Don't cache anything  
and ignore cache  
headers

## **Override**

Ignores cache  
duration in headers,  
uses config value

## **Set if Missing**

Uses the config value  
if duration header is  
missing

# Azure CDN Query String Handling

**Ignore query strings** - query string only used on initial fetch from origin (*default*)

**Bypass caching** - asset not cached at the POP, query string always passed to origin

**Cache every unique URL** - URL with query string used to set cache value

**“Azure Front Door** is an Application Delivery Network (ADN) as a service, offering various layer 7 load-balancing capabilities for your applications. It provides dynamic site acceleration (DSA) along with global load balancing with near real-time failover.”

**Microsoft Azure Documentation**

# Azure Front Door Compression

**Azure Front Door supports dynamic compression at the edge**

**The following compression types are supported:**

- GZip
- Brotli (*takes precedence*)

**This only works for supported MIME types from a fixed list maintained by Microsoft**

**Dynamic compression only works for files from 1 KB to 8 MB in size**

# Azure Front Door Cache Purge Types

## **Single Path**

Purge an asset by using the full path to the asset

## **Wildcard Purge**

Purge all assets in a folder and its subfolders

## **Root Domain**

Purges all cached assets in the root domain



**“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**

# Azure Cache for Redis Tiers

**Basic**

**Standard**

**Premium**

**Enterprise**

**Enterprise  
Flash**

**User session storage for  
distributed apps  
Database caching  
Content caching  
Distributed transactions**

Common Azure Cache for  
Redis Use Cases

# Review Monitoring and Logging

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# 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**

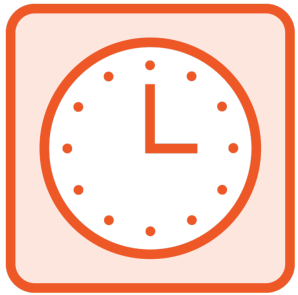
**A retry strategy should be in place where needed**

**Retry logic is already built into most SDK interactions**

**Implement architectural patterns that help with transient faults**

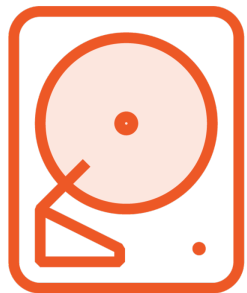
- Retry pattern
- Circuit Breaker pattern

# 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

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# Scenario 1



**Sylvia has deployed media content globally using Azure CDN**

**She has configured both global and custom cache rules**

**In addition, the requests may have a max-age CacheControl header set**

**How long will the cache be based on the following configuration?**

# Scenario 1 Configuration

## Request

**Client requests the following path:** /videos/video1.mp4?quality=medium  
**Headers:** Cache-Control: max-age=1800

## Global Cache Rules

**Caching Behavior:** Override  
**Cache Expiration Duration:** 1 hour  
**Query String Caching Behavior:** Ignore query strings

## Custom Cache Rules

### Rule 1

**Match Condition:** Path Value: /videos/\*  
**Caching Behavior:** Override  
**Duration:** 45 minutes

### Rule 2

**Match Condition:** Extension Value: mp4  
**Caching Behavior:** Override  
**Duration:** 90 minutes



## 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?**

> az

--name myWebApp

--resource-group myResourceGroup

--docker-container-logging

# Scenario 4



**William's company uses Azure CDN for storing media assets**

**They leverage query strings to pass marketing campaign ID's for analytics**

**William is tasked with configuring the caching rules for the CDN**

**What configuration value should William use for Query String Caching Behavior?**

# 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 uses Azure Front Door for a public web application**

**James worked with his team to optimize all images included in the application**

**James has uploaded all of the optimized images to the origin**

**Given the following configuration, which cache purge type should he use?**

# Scenario 6 Configuration



`/documents`

**Stores PDF and Word documents that users can download**



`/api`

**Root for the path that provides access to the app API**



`/images`

**Houses the images used in the web application**



`/login`

**Serves the login page for the application**



`/static`

**Serves static JS and CSS used by the application**

# Scenario Answers

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# Scenario 1



**Sylvia has deployed media content globally using Azure CDN**

**She has configured both global and custom cache rules**

**In addition, the requests may have a max-age CacheControl header set**

**How long will the cache be based on the following configuration?**

# Scenario 1 Configuration

## Request

Client requests the following path: /videos/video1.mp4?quality=medium

Headers: Cache-Control: max-age=1800

4

## Global Cache Rules

Caching Behavior: Override

3

Cache Expiration Duration: 1 hour

Query String Caching Behavior: Ignore query strings

### Rule 1

1

Match Condition: Path Value: /videos/\*

Caching Behavior: Override

Duration: 45 minutes

### Rule 2

2

Match Condition: Extension Value: mp4

Caching Behavior: Override

Duration: 90 minutes

## Custom Cache Rules

## 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?**

```
> az webapp log config
```

```
--name myWebApp
```

```
--resource-group myResourceGroup
```

```
--docker-container-logging filesystem
```

## Scenario 4



**William's company uses Azure CDN for storing media assets**

**They leverage query strings to pass marketing campaign ID's for analytics**

**William is tasked with configuring the caching rules for the CDN**

**What configuration value should William use for Query String Caching Behavior?**

**Solution:** He should utilize the Ignore query strings setting

# 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 uses Azure Front Door for a public web application**

**James worked with his team to optimize all images included in the application**

**James has uploaded all of the optimized images to the origin**

**Given the following configuration, which cache purge type should he use?**



# Scenario 6 Configuration



`/documents`

**Stores PDF and Word documents that users can download**



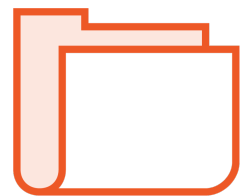
`/api`

**Root for the path that provides access to the app API**



`/images` **Wildcard Purge** `/images/*`

**Houses the images used in the web application**



`/login`

**Serves the login page for the application**



`/static`

**Serves static JS and CSS used by the application**