**ICON Application Upgrade:**

The issue Client is facing with the current Application hosted Architecture is that the application response is becoming increasingly slow during peak business hours, the client is looking for a solution to upgrade it’s application’s infrastructure so that the application’s response remains same during the peak business hours as the non-peak business hours response is.

**Current infrastructure:**

1. App service plan for production website is S2

(Standard Plan)

1. Database instance in an Icon shared Database infrastructure.
2. 1 VM with exposed Endpoint which application access.
3. Classic Blob storage used to upload files from the production website.

Proposed Infrastructure:

1. Website to be hosted in App service Plan P2 for Production and Staging Website.

(Premium Plan). To include Azure app service autoscaling feature so that in peak business hours the application will be able to scale horizontally and cool down once the peak business hours are over.

1. Use of separate Azure SQL database server for Production and stagging applications to isolate the client’s databases.
2. To make the database operations more optimized we are going to use a in memory Redis Cache, We are using Azure Cache for Redis service for the in memory Cache.

Azure Cache for Redis is fully managed service that is provided by Azure so we don’t have to worry about the autoscaling, Reliability and availability of the Redis Cache as all of this is the responsibility of Azure Cloud.

We are using Redis cache in this solution so that in the peak hours when the application’s query operations for the Database increases drastically and hence the database response becomes slow that affects the overall performance of the application is taken care off.

When we use Redis Cache so the most queried contents of the database will be cached in the Redis Cache hence it will be more faster and less load will be applied to the SQL database itself.

1. In order to make the website response better and faster during peak hours we are going to implement autoscaling feature in the azure app service because of which when the load is increased on the website during peak hours the application will be able to scale out horizontally to the maximum instances of the application without the need for manual intervention, and once the load is decreased during off-peak hours the application will be able to scale in horizontally to the minimum instances of the application running. Hence the application performance will remain constant and will not degrade in Peak business hours.
2. We are going to replace the Classic Blob storage with the Azure Standard Blob storage.
3. We Will create a Virtual machine in the same virtual network which website will access through an exposed endpoint.

**Upgraded Application Architecture Diagram**

Diagram

Description automatically generated

Note: we will follow the same application architecture for production and stagging environment