Application: DDAS Web Application

Recommendations provided by Clarity Information Technologies, developers of DDAS Web Application.

11 Feb, 2019.

Revision: 04 May, 2019.

# Problem

*The users reported*

*We have received multiple cases/issues from users facing different issues and unfortunately, we are unable to identify the specific reason or defined timing. Listed below are the issues observed by team on different instances.*

*1. Tool works very slow and lag in Tools response*

*2. Batch files are not getting uploaded*

*3. Among list of records uploaded, only few reflects which other vanishes or it duplicates the records.*

# Investigations:

## Earlier proposal (submitted on 11 Feb, 2019):

Application freeze (slow page load) was reported regularly since Jan 2019, for a certain period and the application performance recovered automatically after a period ranging from 30 to 120 mins.

Clarity Team carried out the following:

1. Application code review (Process Deadlock and Memory Leak)
2. Application Performance
3. Server CPU and Memory Utilization monitoring

The Application code was reviewed, however we could not identify any section of the application which could cause periodic application freeze for a brief period and recover by iteself.

The application freeze was reported by the DDAS Team and the Clarity team tried to co relate this with Server metrics.

On one occasion Clarity Team noticed that the server cpu and memory utilization was 90% when the application freeze was noticed, normally the server cpu/ram utilization stays within 60%. The application has one operation called Batch Upload which is memory and cpu intensive. We attributed the possible cause for freeze due to the server not able to handle the load when multiple users triggered the Batch Upload operation.

Therefore we suggested the following three alternate recommendations. Please refer to Annexure 1 for details.

1. Nightly Batch Upload
2. Server Upgrade.
3. Scan process on a separate server.

The recommendation 1 was not suitable for the DDAS team as this required a change in their working process.

The recommendation 2 was discussed with the ICON IT team.

The recommendation 3 is far more expensive than 1 and 2 and was not discussed further.

Regarding recommendation 1, ICON IT team brought out the following points.

1. Server Health Monitor readings available with ICON IT team did not indicate hight cpu and mem usage.
2. It is not possible to accept the recommendation 2 without conclusively proving that the issue will be resolved by upgrading the server.

## Investigations continued

We then agreed to carry out further investigation as follows:

1. The application was modified to log user-wise process time for each Web API Call on the server.
2. DDAS Team was required to log the time period when the application freeze was noticed
3. Clarity Team checked the Server Task Manager (CPU and Memory Utilization) at regular intervals and when the DDAS Team reported the application freeze.

Our investigations are limited to the application behavior and does not cover external causes such as Server and ICON network.

The ‘user-wise process log’ on the server did not indicate any significant abnormality. We could not relate the DDAS Team’s log’s period of application freeze to the user-wise process time.

The DDAS team reported application freeze on several occasions. Clarity team logged into ICON network within 15 – 30 minutes of received this information to check the application performance and server CPU/memory utilization.

On most of the occasions we found that the application was working normally and the CPU utilization was within the expected limits. The normal application performance was also confirmed by the DDAS Team. This indicated that the freeze was for a short period.

On three instances, we noticed that the server’s CPU and RAM had stayed at +90% for a period of 30 minutes and the application freeze was noticed by us for the same period.

All the observations in zip file are attached.

# Findings:

1. The application freeze is noticed since Jan 2019 though there was no change in user base, server configuration and application code.
2. The application freeze lasts between 15 minutes 180 minutes
3. The data collected by us could not relate to the time period of the freeze to any of the application’s operations.
4. We could record the application freeze only on three occasions and found that the server CPU/Memory usage was +90% on all the three occasions. There was no change in the users(increase) during the application freeze.

We have not been able to directly relate the DDAS application to ‘freeze’ issue. However the link to high CPU/Memory utilization and application freeze is significant.

ICON IT can explore other possibilities including server upgrade.

# Our Recomendations:

# We recommend that the server is upgraded to the following or better configuration.

|  |  |
| --- | --- |
| Processor | 1 x Quad Core (8 Thread) 3GHz 64-bit CPU or equivalent |
| RAM | 8 GB |
| Hard Disk | 80 GB HDD |
| Operating System | Windows Server 2016 Standard |

The above configuration is identical to the configuration used on ICON’s PRISM server.

# Annexure 1 – Recommendations by Clarity 11 Feb, 2019



# Annexure 2 – Compilation of DDAS Teams' logs and Clarity Observations

ApplicationPerformanceLogSummary.xlsx



The application performance recorded by the DDAS team is available in zip file:

# Annexure 3 – User-wise Process Log generated by the application on the server.

From: 20 April, 2019

To: 05 May, 2019

File format: CSV

No. of files: 26

