

Microsoft Office SharePoint Server Health Check

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EXECUTIVE SUMMARY

Organizations of all types face unforeseen obstacles when implementing new technologies to provide efficacy within their establishments and to reach their organizational goals. In order to resolve these problems, understanding the full technical scope of the issue becomes necessary before a resolution can be recommended. The EPC Microsoft Office SharePoint Server Health Check provides an in-depth analysis of current SharePoint products and technology implementations, which includes Microsoft Office SharePoint Server (MOSS), Microsoft Office Project Server (MOPS), and Microsoft Windows SharePoint Services (WSS). The Health Check ensures that current systems align with Microsoft-recommended best practices and recommendations based on EPC's experiences. This engagement uses a number of tools to collect data regarding the most critical aspects of the client's SharePoint environment, including configuration options, hot fix or service pack installations, and Office SharePoint Server-related code. This case study examines how a System Health Check can provide analysis of errors, point to recommendations, and the proper configuration settings needed for a SharePoint Environment to function optimally.

INTRODUCTION

In 2007, one of the largest interactive marketing service companies in the world sought a way to track time and to make projects more cost effective, so the decision was made to implement Microsoft Office Project Server 2007 to aide in achieving these goals. The environment was set up with 5 Virtualized Web Front Ends utilizing VMWARE and two physical clustered Databases. Each Web Front End Server and Database Server was set up to run the x64 Version of Windows Server 2003 Enterprise Edition. After utilizing Microsoft Office Project Server 2007 for over a year, they extended the functionality by employing a Custom Timesheet Solution to automatically submit timesheets through the Project Server 2007 Web Service for about 3,000 users. In addition, they also started to manage additional Intranet Sites on this environment for another 2,000 users.

UNEXPECTED PROBLEMS

The Custom Timesheet Solution was running on the system without any issue for about three months. As the environment grew in the amount of projects, resources, timesheets, and content, the Microsoft Office Project Server Environment began experiencing performance problems. Users complained that it was running slowly on Mondays and Fridays. Resources who tried to submit timesheets would get Timeout Errors and slow page loads when trying to

submit them during these high usage times. Project and Resource Managers complained that they would receive errors also when approving timesheets and publishing project plans.

THE EPC MICROSOFT OFFICE SHAREPOINT HEALTH CHECK

The Overall Scope was to do an in-depth review of the system and provide solutions and recommendations to resolve the performance problems of the Microsoft Office Project Server Environment. Upon initial examination, it was established that a Health Check needed to be executed on the environment to determine the cause of the performance problems. The first step of gathering information for the Health Check involved talking to the SharePoint Administrators and End Users to obtain a solid understanding of activities that occur during the times when users experienced the performance problems. Based on the information gathering, it was determined that Friday is the day that all 3,000 users are required to submit timesheets in the system. Similarly, Monday is the day when all Project Managers are required to approve timesheets and update project plans.

Then, the Network Load Balancing Settings and statistics for the Farm were looked at to verify that the load was being spread evenly across the environments. A custom diagnostic tool against the Web Front Ends was run to verify that the system met the hardware requirements to support the 3,000 Project Server Users and the additional 2,000 SharePoint Users. Performance reports gathered processor utilization, memory usage, latency, average request, and several other statistics that help troubleshoot performance problems. To verify that the environment configuration was correct, all the different settings for Central Administration were observed and looked at the configuration settings for Windows Server 2003, as well. To determine if the database was a potential cause of the issues, a SQL Profiler was run against the database to capture different transactions taking place.

RESOLUTION

After gathering and analyzing the information on the environment, the following problems were gathered as the main issues that affected performance negatively:

- The Database experienced a large amount of deadlocks exceeding the maximum amount allowed for a transaction on several of the tables. The SQL Server was receiving so many of them that it caused several processes to fail in the environment. Once the maximum deadlocks occurred for the transaction, it would throw an error back to Project Server. These deadlocks affected almost all processes that went through the Project Server Queue. A few of the processes that failed consistently due to SQL

deadlocks were project publishes, project workspace synchronizations, active directory synchronizations, and timesheet submissions. On Fridays, the database would receive over 100,000 transactions in less than an hour timeframe due to timesheets being submitted into Project Server at the same time. This was a direct effect of transactions generated by the Custom Timesheet Solution as well as Project Server. The review of the Database further revealed that the database tables were fragmented and needed to be re-indexed. To resolve these issues, a recommendation was made that several Maintenance Plans be set up on the Project Server Databases and that the Custom Timesheet Databases to re-build the indexes on nightly bases during the least utilized hours.

- Another issue that was identified as a main source of trouble was that requests were being queued by the Web Front End Servers during periods of high utilization and not enough threads were available to process the request. This problem occurs because ASP.NET limits the number of threads that can execute requests on a server. In the case of the Custom Timesheet Solution for Project Server, too many calls were being made to each Web Front End during the high usage times, so the Web Front Ends did not have enough threads to process the request. However, the processor ran at 40% utilization, and the system still had over 50% available memory still left. It was also discovered that worker processes on the Web Front Ends were being recycled before completing because they exceeded the maximum time allowed for processing. This was another direct effect of so many requests being sent to the Web Front Ends during these peak times. These issues were both discovered by the review of the performance reports. To resolve these issues, another recommendation was made that the following settings be modified in the Machine.Config file on each Web Front End Server to allow more threads and request to be processed at a time:

- *maxWorkerThreads*
- *minWorkerThreads*
- *maxIoThreads*
- *minFreeThreads*
- *minLocalRequestFreeThreads*
- *maxconnection*
- *executionTimeout*

POSITIVE IMPACT

As a result of the Health Check solutions provided, the End Users who were receiving slow load time on pages in the Microsoft Office Project Server environment were now able to open the pages with minimal load time. The databases no longer received the massive deadlocks that caused the Custom Timesheet application to fail when submitting timesheets, and the performance results have increased when Project Managers approve time and publish project plans. Moreover, this is now true for the environment during periods of low and high utilization, another direct effect of the changes made to the Machine Configuration file and the creation of Database Maintenance Jobs.