

SharePoint 2010 Technical Case Study:
Microsoft SharePoint Server 2010 Social Environment

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SharePoint 2010 Technical Case Study: SharePoint Server 2010 Social Environment

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**Applies to: SharePoint Server 2010**

Summary: This document describes a specific deployment of Microsoft® SharePoint® Server 2010, including:

* Technical case study environment specifications, such as hardware, farm topology and configuration.
* The workload, including the number, and types, of users or clients, and environment usage characteristics.
* Technical case study farm dataset, including database contents and search indexes.
* Health and performance data specific to the environment.

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# Prerequisite information

Before reading this document, it is important that you understand the key concepts behind Microsoft® SharePoint® Server 2010 capacity management. The following documentation will help you learn about the recommended approach to capacity management and provide context for helping you understand how to make effective use of the information in this document, as well as define the terms used throughout this document.

For more conceptual information about performance and capacity that that you might find valuable in understanding the context of the data in this technical case study, see the following documents:

* [Capacity management and sizing for SharePoint Server 2010](http://technet.microsoft.com/en-us/library/cc261700%28office.14%29.aspx)
* [SharePoint Server 2010 Capacity Management: Software Boundaries and Limits](http://technet.microsoft.com/en-us/library/cc262787%28office.14%29.aspx)

# Introduction

This white paper describes an actual SharePoint Server 2010 environment at Microsoft. Use this document to compare against your planned workload and usage characteristics. If your planned design is similar, you can use the deployment described here as a starting point for your own installation.

This document includes:

* **Specifications**, which include hardware, topology, and configuration.
* **Workload**, which is the demand on the farm, including the number of users, and the usage characteristics.
* **Dataset**, including database sizes.
* **Health and performance** data specific to the environment.

This document is part of a [series](http://technet.microsoft.com/en-us/library/cc261716%28office.14%29.aspx) of technical case studies about SharePoint environments at Microsoft.



The SharePoint environment described in this document is a production environment at a large, geographically distributed company. This environment hosts SharePoint My Sites that connect employees with each other and the information they need. Employees use this environment to present personal information such as areas of expertise, past projects, and colleagues to the wider organization. The environment also hosts personal sites and documents for viewing, editing, and collaboration. My Sites are integrated with Active Directory® Domain Services (AD DS) to provide a central location accessible from the browser and a variety of client applications.

As many as 72,000 unique users visit the environment on a busy day, generating up to 180 requests per second (RPS) during peak hours. Because this is an intranet site, all users are authenticated.

The information provided in this document reflects the enterprise social environment on a typical day.

# Specifications

This section provides detailed information about the hardware, software, topology, and configuration of the case study environment.

## Hardware

|  |  |
| --- | --- |
| Note |  |
| This environment is scaled to accommodate pre-release builds of SharePoint Server 2010 and other products. Hence, the hardware deployed has greater capacity than necessary to serve the demand typically experienced by this environment. This hardware is described only to provide additional context for this environment and serve as a starting point for similar environments. It is important to conduct your own capacity management based on your planned workload and usage characteristics. For more information on the capacity management process, see [Performance and capacity management](http://technet.microsoft.com/en-us/library/cc262971%28Office.14%29.aspx). |

#### Web Servers

There are three Web servers in the farm, each with identical hardware. Two serve content, and the third is a dedicated search crawl target.

|  |  |
| --- | --- |
| Web Server | WFE1-3 |
| Processor(s) | 2 quad core @ 2.33 GHz |
| RAM | 16 GB |
| OS | Windows Server® 2008, 64 bit |
| Size of the SharePoint drive | 400 GB |
| Number of NICs | 2 |
| NIC Speed | 1 Gigabit |
| Authentication | Windows NTLM |
| Load balancer type | Hardware load balancing |
| Software version | SharePoint Server 2010 (pre-release version) |
| Services running locally | Central Administration Microsoft SharePoint Foundation Incoming E-Mail Microsoft SharePoint Foundation Web Application Microsoft SharePoint Foundation Workflow Timer Service Search Query and Site Settings Service SharePoint Server Search |
| Services consumed from a federated services farm | User Profile ServiceWeb Analytics Web ServiceBusiness Data Connectivity ServiceManaged Metadata Web Service |

#### Application Server

There are two application servers in the farm, each with identical hardware.

|  |  |
| --- | --- |
| Web Server | APP1-2 |
| Processor(s) | 2 quad core @ 2.33 GHz |
| RAM | 16 GB |
| OS | Windows Server 2008, 64 bit |
| Size of the SharePoint drive | 400 GB |
| Number of NICs | 1 |
| NIC Speed | 1 Gigabit |
| Authentication | Windows NTLM |
| Load balancer type | Hardware load balancing |
| Software version | SharePoint Server 2010 (pre-release version) |
| Services running locally | Office Web AppsExcelPowerPointSecure StoreUsage and HealthState Service |

#### Database Servers

There is a SQL cluster with 2 database servers, each with identical hardware, one of the servers is active and the other is passive for redundancy.

|  |  |
| --- | --- |
| Database Server | DB1-2 |
| Processor(s) | 4 six core @ 2.4 GHz |
| RAM | 64 GB |
| OS | Windows Server 2008, 64-bit |
| Storage and geometry | (1.2 TB \* 6)Disk 1-4: SQL Data Disk 5: Logs Disk 6: TempDB  |
| Number of NICs | 2 |
| NIC Speed | 1 @ 100MB, 1 @ 1GB |
| Authentication | Windows NTLM |
| Software version | SQL Server® 2008 |

## Topology



## Configuration

The following table enumerates settings that were changed that affect performance or capacity in the environment.

|  |  |  |
| --- | --- | --- |
| Setting | Value | Notes |
| Usage Service |  |  |
| Trace Log – days to store log files (default: 14 days) | 5 days | The default is 14 days. Lowering this setting can save disk space on the server where the log files are stored. |
| QueryLoggingThreshold |  |  |
| Microsoft SharePoint Foundation Database – change *QueryLoggingThreshold* to 1 second | 1 second | The default is 5 seconds. Lowering this setting can save bandwidth and CPU on the database server. |
| Database Server – Default Instance |  |  |
| Max degree of parallelism | 1 | The default is 0. To ensure optimal performance, we strongly recommend that you set **max degree of parallelism** to 1 for database servers that host SharePoint Server 2010 databases. For more information about how to set **max degree of parallelism**, see [max degree of parallelism Option](http://go.microsoft.com/fwlink/?LinkId=189030). |

# Workload

This section describes the workload, which is the demand on the farm, including the number of users, and the usage characteristics.

|  |  |
| --- | --- |
| Workload Characteristics | Value |
| **Average Requests per Second (RPS)** | 64 |
| **Average RPS at peak time (11 AM-3 PM)** | 112 |
| **Total number of unique users per day** | 69,814 |
| **Average concurrent users** | 639 |
| **Maximum concurrent users** | 1186 |
| **Total # of requests per day** | 4,045,677 |

|  |  |  |
| --- | --- | --- |
| User Agent | Requests | Percentage of Total |
| Outlook Social Connector | 1,808,963 | 44.71% |
| Search (crawl) | 704,569 | 17.42% |
| DAV | 459,491 | 11.36% |
| OneNote | 266,687 | 6.59% |
| Outlook | 372,574 | 9.21% |
| Browser | 85,913 | 2.12% |
| Word | 38,556 | 0.95% |
| Excel | 30,021 | 0.74% |
| Office Web Apps | 20,314 | 0.50% |
| SharePoint Workspaces | 19,017 | 0.47% |

# Dataset

This section describes the case study farm dataset, including database sizes and search indexes.

|  |  |
| --- | --- |
| Dataset Characteristics | Value |
| Database size (combined) | 1.5 TB |
| BLOB size | 1.05 TB |
| Number of content databases | 64 |
| Number of Web applications | 1 |
| Number of site collections | 87,264 |
| Number of sites | 119,400 |
| Search index size (number of items) | 5.5 million |

# Health and Performance Data

This section provides health and performance data specific to the case study environment.

## General Counters

|  |  |
| --- | --- |
| Availability (uptime) | 99.61% |
| Failure Rate | 0.39% |
| Average memory used | 0.79 GB |
| Maximum memory used | 4.53 GB |
| Search crawl % of Traffic (Search client requests / total requests) | 17.42% |

In this document, latency is divided into four categories.  The 50th percentile latency is typically used to measure the server’s responsiveness. It means that half of the requests are served within that response time. The 95th percentile latency is typically used to measure server spikiness. It means that 95% of requests are served within that response time, and thus 5% of the requests experience slower response times.

## Database counters

|  |  |
| --- | --- |
| **Metric** | **Value** |
| Read/Write Ratio (IO Per Database) | 99.854 : 0.146 |
| Average Disk queue length | 8.702 |
| Disk Queue Length: Reads | 30.518 |
| Disk Queue Length: Writes | 4.277 |
| Disk Reads/sec | 760.886 |
| Disk Writes/sec | 180.644 |
| SQL Compilations/second | 3.129 |
| SQL Re-compilations/second | 0.032 |
| SQL Locks: Average Wait Time | 125 ms |
| SQL Locks: Lock Wait Time | 33.322 ms |
| SQL Locks: Deadlocks Per Second | 0 |
| SQL Latches: Average Wait Time | 0 ms |
| SQL Server: Buffer Cache Hit Ratio | 20.1% |