Windchill® ProductPoint® Server Hardware Sizing Guideline

December 2008

Introduction

This document is intended to help you determine the server requirements for a Windchill ProductPoint installation. Windchill ProductPoint is built on top of Microsoft's Windows SharePoint Services, a platform for building rich information sharing solutions. Since the usage and the complexity of the Pro/ENGINEER CAD data managed by Windchill ProductPoint varies greatly in size and complexity, each implementation will therefore be unique, and specific server and storage requirements will vary greatly. Use the concepts in this document as a guideline for determining Windchill ProductPoint hardware requirements

This document provides guidelines for how to size:

- Microsoft Windows SharePoint Services 3.0 (including both the Web Server and Database Server roles) for explicit use with Windchill ProductPoint 1.0.
- Windchill ProductPoint 1.0 capacity based on your current and anticipated Pro/ENGINEER data management needs.

This guide will not specifically address redundancy or high-availability and failover planning. But these, along with Backup and Restore should also be considered in your analysis.

Refer to the Directory of Online Information below for more information.

Overview of Server Topology and Configurations

SharePoint is a highly scalable environment and can be deployed into a *farm* consisting of a single hardware server or across multiple hardware servers distributing the load. Windows SharePoint Services 3.0 and Microsoft Office SharePoint Server 2007 utilize a three-tiered architecture consisting of specific roles for Web Front-End Servers (WFE), Application Servers, and Database Servers. Windchill ProductPoint is deployed on top of this SharePoint architecture, adding components to and extending each of these SharePoint Servers.

Web Front End Servers provide the interface to SharePoint and Windchill ProductPoint end-users. This interface is served by Internet Information Server (IIS) and MOSS (or WSS). SharePoint is installed on the WFE servers. A collection of SharePoint Servers (a.k.a. SharePoint Farm) may have one or more WFE servers. These servers incorporate high availability through the use of Windows Network Load Balancing (NLB) and/or a third-party web load balancing solution.

Application Servers run specific SharePoint services which typically are segregated to improve performance within the SharePoint Farm. Some examples of these services include Indexing, Search/Query, and/or Excel Services. These services can be resource intensive; therefore, dedicating a server (or servers) will off-load these taxing services from the WFE servers. SharePoint is installed on Application Servers. A SharePoint Farm may have zero or more Application Servers. High availability solutions for Application servers vary depending on the specific service offloaded.

Database Servers provide the database services for SharePoint to store information. Virtually all end-user SharePoint data, including most of the ProductPoint specific data, is stored in the Microsoft SQL Server. The database server must run one of the following –SQL Express, Workgroup, Standard, or Enterprise 2005. Support for SQL 2008 will be added post Windchill ProductPoint 1.0. Non-Microsoft database platforms are *not supported*. SharePoint itself is not typically installed on the database server(s) – only SharePoint's data goes to the database server(s). A SharePoint Farm may include one or more database servers. Database servers can achieve varying levels of high availability depending on the version of SQL. For example, SQL 2005 supports the use of mirroring and/or traditional Microsoft Cluster Services.

Note: In addition the SharePoint database, ProductPoint installs and utilizes an additional ProductPoint specific database for the management of structure relationships and transactional handling complex data sets**.** This additional ProductPoint database will always being installed on the same server as the SharePoint database.

In addition to the logical architecture of the SharePoint and ProductPoint servers, there are also other considerations that impact the topology of the server environment. Redundancy, high availability, the number of users, security compliance requirements, the complexity of CAD documents and structures, and the scope of intended use of SharePoint above and beyond ProductPoint, can all impact the hardware requirements.

The term *redundancy* is often misinterpreted to be synonymous with *availability*. While these concepts are related, they are not the same. Redundancy refers to the use of multiple servers in a load-balanced environment for any of several purposes, such as to improve farm performance, to scale out to accommodate additional users, and to improve availability.

Availability is a more specialized concept that refers to a multiple-server environment that is designed to accept connections and operate normally even when one or more of the servers in the farm are not operational. Therefore, availability implies redundancy, and additionally implies a failover mechanism and several other possible characteristics. A redundant system, however, might not be highly available.

Sizing Considerations

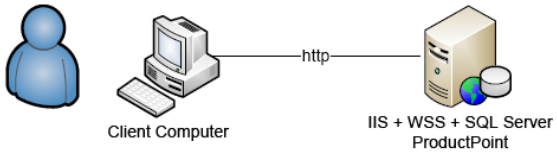
SharePoint is a highly scalable information sharing platform that can meet the needs of organizations of all sizes. SharePoint does a great job at managing individual files, typically the size of office documents, and managing the collaboration around those simple basic files.

Windchill ProductPoint 1.0 extends SharePoint, enabling the management of complex assembly structures consisting of very large CAD files. The performance and scalability issues in managing these very different types of data require different considerations. Where SharePoint is tuned to serve thousands of users performing many small and short interactions with the SharePoint servers, ProductPoint is tuned to serve fewer users interacting with the servers but each deal with hundreds and even thousands of very large files as single business transactions.

Many resources discuss the tuning and scaling of SharePoint in general. It is the purpose of this guide to focus on the tuning and scaling of ProductPoint specifically. In some customer environments it may be best to deploy SharePoint for the enterprise uses independently of Windchill ProductPoint for the product development users.

In all of the sizing models discuss below, it is assumed that a separate Domain Server is utilized and deployed on independent hardware from the SharePoint and Windchill ProductPoint hardware. Generally speaking an adequate minimum configured Domain Server would consist of a single 32 bit Windows Server 2003 operating system on a server with at least 2 GB RAM and a RAID array sized for your enterprise.

All-in-One Server Configuration



Applicability:

This solution is intended for test environments, or very small workgroup implementations of ProductPoint. “All-in-One” refers to all SharePoint services and SQL running on a single Windows Server 2003.

- < 50 general purpose, non-CAD users
- < 10 moderate to heavy Pro/ENGINEER users
  (4 for fewer concurrent users—see note3 below)
- < 200 parts per assembly
- < 25 product assemblies under active development
- < 2,000 catalog parts

Configuration:

- Windows Server 2003 64 bit
- 4 dual core or 2 quad core 2.5 GHz CPU’s with 2 MB L2 Cache each or better
- 4 GB RAM minimum (8 GB recommended)
- HDD 1 at 7200 RPM minimum for Windows OS and applications including SharePoint, ProductPoint and search indexes.
- HDD 2 at 7200 RPM minimum for SQL databases

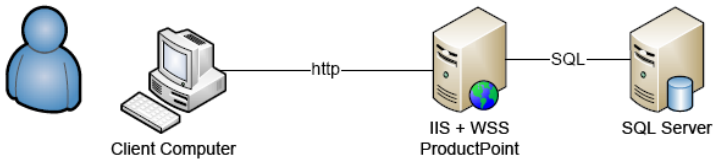
Note 1: SQL Express is supported but is limited (throttled) to use 1 CPU and 1 GB RAM. For performance and scalability, SQL Workgroup, Standard, or Enterprise editions are recommended for both the SharePoint content database server and the Windchill ProductPoint structure database. Refer to the Directory of Online Information below for more information on how to choose which SQL edition.

Note 2: The size of each hard drive and the number of hard drives are dependent on the total amount of data. The SQL database storage (disc space) should be sized 3x to 5x the amount of current and expected future storage for all CAD data managed on the file system. Index space calculated as 20%-40% of total content to be indexed.

Note 3: “Concurrent users” refers to the number of Pro/ENGINEER users that can concurrently be saving and/or retrieving Pro/ENGINEER files to the

server without significantly degrading overall server availability and performance.

Small Farm Configuration



Applicability:

Two (2) servers make up this farm topology. This solution provides for light to medium SharePoint user load, limited indexing of SharePoint and external data, very limited use of application services, e.g. Workflow, Excel Services, Project Server, etc.

- < 500 general purposes users
- < 25 moderate to heavy Pro/ENGINEER users
  (10 concurrent users—see note3 above)
- < 2000 parts per assembly
- < 50 product assemblies under active development
- < 10,000 catalog parts

Configuration:

Dedicated Web Front-End server

- 1 Windows Server 2003 64 bit
- 2 dual core or 1 quad core 2.5 GHz CPU's with 2 MB L2 Cache each or better
- 4 GB RAM
- HDD 1 at 7200 RPM minimum for Windows OS, SharePoint, IIS
- HDD 2 at 7200 RPM minimum for SharePoint index catalog

Note: Index space calculated as 20%-40% of total content to be indexed. RAID storage solutions are highly recommended for HDD uses.

Dedicated Database server

- 1 Windows Server 2003 64 bit
- 4 dual core or 2 quad core 2.5 GHz CPU's with 4 MB L2 Cache each or better (3.0 GHz CPUs or equivalent recommended)
- 8 GB RAM

- HDD 1 at 7200 RPM minimum for Windows OS
- HDD 2 at 7200 RPM minimum for temp DB (cache), transaction logs, search DB
- HDD 3 at 7200 RPM minimum for SQL content databases

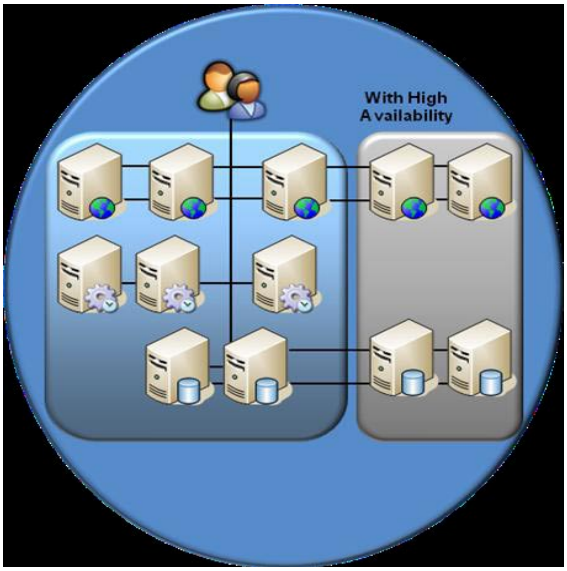
Note 1: SQL Standard or Enterprise edition required to achieve this scalability. Choose faster drives and higher spindle counts versus large drives. Keep databases, log files and temp DB all on separate LUNS whenever possible.

Medium and Large Farm Configuration

Applicability:

This topology adds a dedicated search server to the Web front-end server and database server, and supports multiple instances of all three types of servers.

Support for these server topologies will be targeted in later releases of Windchill ProductPoint. Windchill ProductPoint 1.0 does not provide the configuration support for this level of SharePoint scalability.



Directory of Online Information

- Estimate performance and capacity requirements for Windows SharePoint Services collaboration environments (Office SharePoint Server)
  http://technet.microsoft.com/en-us/library/cc261795.aspx
- Plan for redundancy (Windows SharePoint Services)
  http://technet.microsoft.com/en-us/library/cc288334.aspx

- SQL Server 2005 Editions Comparisons
  http://www.microsoft.com/sql/prodinfo/features/compare-features.mspx
- IBM's SharePoint sizing guide.
  https://www-304.ibm.com/jct09002c/partnerworld/wps/sizing/sizingguide/view.jsp?guide_id=sgq10264905180216002|30&data_guide_private=
- HP's SharePoint sizing guide.
  http://h71019.www7.hp.com/ActiveAnswers/cache/548230-0-0-225-121.html
- Dell's SharePoint sizing guide.
  http://www.dell.com/downloads/global/services/moss2007_sizing_guide.pdf