

Windchill® and Pro/INTRALINK® 8.0 Server Hardware Sizing Guidelines - Microsoft Windows Platform

March 2007

Introduction

This document is intended to help you determine the server requirements for a Windchill PDMLink, Windchill ProjectLink, Windchill Foundation & PDM, or Pro/INTRALINK 8.0 installation on the Microsoft Windows platform.

This document provides guidelines for how to size:

- Windchill PDMLink, Windchill ProjectLink, Windchill Foundation & PDM, and Pro/INTRALINK 8.0 servers
- CAD worker hardware
- Content cache server (also known as a replication server)

Note: Client hardware requirements for CAD users are dictated primarily by the CAD application (for example, Pro/ENGINEER) and are therefore not discussed in this document.

To determine acceptable system response for hundreds of users, these guidelines were developed using the deployment, maintenance, and optimization of Windchill and Pro/INTRALINK 8.0 at hundreds of PTC customers, as well as simulated multi-user load testing conducted with PTC's hardware partners.

Our hardware sizing methodology of weighted number of active users is flexible, allowing you to tailor the methodology to best represent your company's intended usage of Windchill or Pro/INTRALINK 8.0. Keep in mind that a margin of error in the final calculation is normal (particularly where peak loads are concerned).

Refer to the Directory of Online Information for more information.

Platform Support

For the latest platform support information, refer to the Windchill 8.0 Software Matrices, available at:

http://www.ptc.com/view?im_dbkey=26238

Sizing the Windchill PDMLink, Windchill ProjectLink, Windchill Foundation & PDM, and Pro/INTRALINK 8.0 Servers

This section outlines how to determine the CPU and RAM requirements for both the application tier and the database tier on the Microsoft Windows platform for a Windchill PDMLink, Windchill ProjectLink, Windchill Foundation & PDM, or Pro/INTRALINK 8.0 installation.

The hardware requirements are primarily a function of the:

- Number and percentage of active users
- Type of users, specifically:
 - CAD users
 - Non-CAD users

Server Sizing Definitions

Active User

A user who has logged on to, and actively used, the system at some point. An active user is also known as a concurrent user.

Named User

- A user who has the ability to log on the system
- Active users are a subset of the named user base

Concurrent Transactions

Transactions that occur simultaneously in the system as the result of a number of active users sending a request to the server at the same time.

CAD User

A user who primarily accesses the system in order to work with CAD data.

Non-CAD User

A user who primarily accesses the system in order to use core non-CAD functionality.

Step 1 - Calculating the Weighed Number of Active Users

W — Number of CAD users that the system needs to support

X — Number of Non-CAD users that the system needs to support

Y — Number of Active CAD users, calculated as $W \times 0.30$

- Thirty percent is a good starting point for specifying the percentage of active CAD users; if you have more accurate data on the working practices of your company, you can adjust this value to suit your needs.
- One approach for developing a basis for Y is to measure the number of checked-out Pro/ENGINEER licenses and divide that number by 10.
- Data from several of our customers has indicated that an engineer using Pro/ENGINEER for 4.5 hrs per day spends about 0.5 hrs of that time doing data management (Windchill PDMLink or Pro/INTRALINK) operations; therefore if $(0.5/4.5) = 0.11$, or about 10%, you can measure the average number of checked-out Pro/ENGINEER licenses and divide that number by 10 to estimate the number of CAD users working with Windchill PDMLink or Pro/INTRALINK at any one time.

Z — Number of Active Non-CAD users, calculated as $X \times 0.20$

Twenty percent is a good starting point for specifying the percentage of active non-CAD users; if you have more accurate data on the working practices of your company, you can adjust this value to suit your needs.

A — Weighted number of Active users, calculated as $(3 \times Y) + Z$

The value of 3 reflects the observation that CAD users tend to consume approximately three times more CPU resources than non-CAD users.

Step 2 – Determining the Recommended CPU and RAM for Your Server Platforms

This section outlines how to determine the number of CPUs and the amount of RAM required to support the corresponding number of weighted of active users, calculated in the previous section.

Windchill PDMLink, Windchill ProjectLink, Windchill Foundation & PDM, and Pro/INTRALINK 8.0 systems have two tiers:

- The application tier, which supports the Web server and method server
- The database tier, which supports the database, Oracle, or Microsoft SQL server

Note: For installations supporting large numbers of users, each tier is typically supported by separate hardware servers. If you want to have a monolithic environment, meaning you will use one server to support both the application tier and the database tier, add the number of CPUs and RAM determined for the application tier to the number of CPUs and RAM determined for the database tier.

Note: If a loadbalance cluster is implemented in the application tier, the recommended CPUs and RAM resources should be spread evenly across all slave servers in the cluster.

Application Server

After calculating the weighted number of active users using the formula in step one, use the following table to determine the required number of CPUs and amount of RAM in GB for the application tier.

Note: We recommend rounding up to the next row for any result that falls between two numbers in the table.

Application Server Sizing	
Windchill 8.0	
Weighted Number of Active Users	Windows (single core 3 GHz) CPUs/RAM (GB)
10	2/4
25	2/8
50	2/8
100	2/12
200	4/16
300	4/16
400	8/16
500	8/20
600	8/24
700	12/28
800	12/32
900	12/36
1000	16/40
1500	20/48

Application Server Sizing	
Windchill 8.0	
Weighted Number of Active Users	Windows (single core 3 GHz) CPUs/RAM (GB)
2000	28/48

Database Server

After calculating the weighted number of active users using the formula in step one, use the following table to determine the required number of CPUs and amount of RAM in GB for the database tier.

Note: We recommend rounding up to the next row for any result that falls between two numbers in the table.

Database Server Sizing	
Windchill 8.0	
Weighted Number of Active Users	Windows (single core 3 GHz) CPUs/RAM (GB)
10	1/2
25	1/2
50	2/4
100	2/4
200	4/8
300	4/8
400	8/8
500	8/12
600	8/12
700	8/12
800	12/12
900	16/16
1000	16/16
1500	16/16
2000	20/24

Windchill 8.0 Hardware Sizing Examples

Example 1: Medium Sized Company

A medium sized company needs a server or servers(s) to support 500 total users, 200 CAD users, and 300 non-CAD users.

W — CAD users that the system needs to support = **200**

X — Named non-CAD users that the system needs to support = **300**

Y — Active CAD users, calculated as $W \times 0.30 = 60$

Z — Active non-CAD users, calculated as $X \times 0.20 = 60$

A — Weighted number of active users, calculated as $3Y + Z = 240$

Application Tier Recommendation

For 240 weighed active users, the recommendation for the application tier is four CPUs at 3 GHz each, and 16 GB of RAM.

Application Server Sizing	
Windchill 8.0	
Weighted Number of Active Users	Windows (single core 3 GHz) CPUs/RAM (GB)
10	2/4
25	2/8
50	2/8
100	2/12
200	4/16
300	4/16
400	8/16

Database Tier Recommendation

For 240 weighed active users, the recommendation for the database tier is four CPUs at 3 GHz each, and 8 GB of RAM.

Database Server Sizing	
Windchill 8.0	
Weighted Number of Active Users	Windows (single core 3 GHz) CPUs/RAM (GB)
10	1/2
25	1/2
50	2/4
100	2/4
200	4/8
300	4/8
400	8/8

Example 2: Medium Sized Company with Higher Active User Percentages

In this example, we will use higher active user percentages, 40% for CAD users and 30% for non-CAD users, and observe the impact on the hardware recommendations.

A medium sized company needs a server or servers(s) to support 500 total users, 200 CAD users, and 300 non-CAD users + higher active user percentage:

W — CAD users that the system needs to support = **200**

X — Named non-CAD users that the system needs to support = **300**

Y — Active CAD users, calculated as $W \times 0.40 = 80$

Z — Active non-CAD users, calculated as $X \times 0.30 = 90$

A — Weighted number of active users, calculated as $3Y + Z = 330$

Application Tier Recommendation

For 330 weighed active users, the recommendation for the application tier is eight CPUs at 3 GHz each, and 16 GB of RAM.

Application Server Sizing	
Windchill 8.0	
Weighted Number of Active Users	Windows (single core 3 GHz) CPUs/RAM (GB)
10	2/4
25	2/8
50	2/8
100	2/12
200	4/16
300	4/16
400	8/16

Database Tier Recommendation

For 330 weighed active users, the recommendation for the database tier is eight CPUs at 3 GHz each, and 8 GB of RAM.

Database Server Sizing	
Windchill 8.0	
Weighted Number of Active Users	Windows (single core 3 GHz) CPUs/RAM (GB)
10	1/2
25	1/2
50	2/4
100	2/4
200	4/8
300	4/8
400	8/8

Example 3: Medium Sized Company with Heavier CAD User Load AND Higher Active User Percentages

In this example, let's size the system to support the load of CAD users working with larger datasets in addition to using higher active user percentages, 40% for CAD users and 30% for non-CAD users.

To factor in a Heavier CAD User Load, use “**4Y + Z**” instead of “**3Y + Z**” when:

Your users regularly average 3000+ parts, assemblies, drawings and/or family tables instances in their workspace on a regular basis

Your users regularly import or load data large datasets into your system as new data (e.g. you regularly receive very large assemblies from your customers or outsourced design manufacturers)

A medium sized company needs a server or servers(s) to support 500 total users, 200 CAD users, and 300 non-CAD users + higher active user percentage + heavier CAD user load:

W — CAD users that the system needs to support = **200**

X — Named non-CAD users that the system needs to support = **300**

Y — Active CAD users, calculated as $W \times 0.40 = \mathbf{80}$

Z — Active non-CAD users, calculated as $X \times 0.30 = \mathbf{90}$

A — Weighted number of active users, calculated as **4Y + Z = 410**

Application Tier Recommendation

For 410 weighed active users, the recommendation for the application tier is eight CPUs at 3 GHz each, and 20 GB of RAM.

Application Server Sizing	
Windchill 8.0	
Weighted Number of Active Users	Windows (single core 3 GHz) CPUs/RAM (GB)
10	2/4
25	2/8
50	2/8
100	2/12
200	4/16
300	4/16
400	8/16
500	8/20

Database Tier Recommendation

For 410 weighed active users, the recommendation for the database tier is eight CPUs at 3 GHz each, and 12 GB of RAM.

Database Server Sizing	
Windchill 8.0	
Weighted Number of Active Users	Windows (single core 3 GHz) CPUs/RAM (GB)
10	1/2
25	1/2
50	2/4
100	2/4
200	4/8
300	4/8
400	8/8
500	8/12

Sizing CAD Worker Hardware

To ensure that viewables can be generated for all CAD files, the recommended CAD worker hardware is the same size and type workstation of users (for example, power users) who open the largest assemblies that are expected to be published.

- Workstation class equipment is typically acceptable
- Using the same workstations as your power users allows you to leverage your existing workstation platforms and configurations

Minimum Recommended CAD Worker Hardware

On-demand Publishing

- One CPU and 2 GB RAM, minimum
- Check against the workstation requirements for loading the largest assembly; for example, if loading the largest assembly requires 3 GB to load, use 4 GB in the CAD worker

Batch Publishing

- Two CPUs and 4 GB RAM, minimum

- If larger requirements than 4 GB, use a 64-bit Windows version or UNIX workstation

Sizing a Content Cache Server

The minimum recommended content cache server hardware is:

- 1-2 CPU and 2-4 GB RAM
- Storage depends on how much data is replicated

Note: The content cache server is also known as the replication server.

Directory of Online Information

Windchill 8.0 Software Matrices

http://www.ptc.com/view?im_dbkey=26238

Oracle Software Assistant Compatibility Matrices

http://www.ptc.com/view?im_dbkey=33636

Product Development System Configuration Notes PDS 7.0 (includes reference architecture)

http://www.ptc.com/view?im_dbkey=37186

Windchill Performance Tuning Guide

http://www.ptc.com/view?im_dbkey=24289

TPI 132477 - Performance Tuning Recommendations for Client Systems and Windchill Servers that Manage CAD Models

http://www.ptc.com/cs/cs_26/howto/wmp11663/wmp11663.htm

PTC Customer Service Contact Support

http://www.ptc.com/cs/doc/cont_sup.htm

Knowledge Base

<http://www.ptc.com/appserver/cs/search/kdb.jsp?lang=en>

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