

Windchill® and Pro/INTRALINK® Server Hardware Sizing Guidelines - HP-UX Platform

July 2008

Introduction

This document is intended to help you determine the server requirements for a Windchill PDMLink, Windchill ProjectLink, or Pro/INTRALINK 9.0 installation on the HP-UX platform.

This document provides guidelines for how to size:

- Windchill PDMLink, Windchill ProjectLink, and Pro/INTRALINK 9.0 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 from simulated multi-user load tests for Windchill 9.0 M020 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 PDMLink, Windchill ProjectLink, or Pro/INTRALINK 9.0. 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 9.0 Software Matrices, available at:

http://www.ptc.com/view?im_dbkey=58031

Sizing the Windchill PDMLink, Windchill ProjectLink, and Pro/INTRALINK 9.0 Servers

This section outlines how to determine the CPU core and RAM requirements for both the application tier and the database tier on the HP-UX platform for a Windchill PDMLink, Windchill ProjectLink, or Pro/INTRALINK 9.0 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. Some companies could be higher—in the 40-50% range
- 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 core resources than non-CAD users.

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

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

Windchill PDMLink, Windchill ProjectLink, and Pro/INTRALINK 9.0 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 (Microsoft Windows platform only)

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 CPU cores and RAM determined for the application tier to the number of CPU cores and RAM determined for the database tier.

Note: The number of CPU cores and RAM (in GB) in the table is the total number required to support the corresponding weighted number of active users. If a load balance cluster is implemented in the application tier, then these resources should be spread evenly across all slave servers in the cluster. The cache master and background method server typically require an additional 2 to 4 cores, depending on publishing, workflow, and replication load

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 CPU cores and the amount of RAM in GB for the application tier.

Note: For smaller values of weighted active users, we recommend rounding up to the next row for any result that falls between 2 numbers in the table.

Note: For larger values of weighted active users, we recommend a linear extrapolation between rows in the table.

Note: Itanium CPU cores are not available as single core (or any odd number of core) configurations but we provide data for these configurations to account for virtualized server sizing.

Application Server Sizing		
Windchill 9.0		
Weighted Number of Active Users	Rx8640 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)	Rx6600 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)
10	1/4	1/4
25	1/8	1/8
50	2/8	2/8
100	2/12	2/12
200	2/16	2/16
300	3/16	3/16
400	4/16	4/16
500	5/20	5/20
600	6/24	6/24

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Application Server Sizing		
Windchill 9.0		
Weighted Number of Active Users	Rx8640 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)	Rx6600 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)
700	7/28	7/28
800	8/32	8/32
900	9/36	9/36
1000	10/40	10/40
1200	12/48	12/48
1500	15/60	15/60
2000	20/80	20/80
2500	25/100	25/100
3000	30/120	30/120
3500	35/140	35/140
4000	40/160	40/160
4500	45/180	45/180
5000	50/200	50/200
5500	55/220	55/220
6000	60/240	60/240
6500	65/260	65/260
7000	70/280	70/280
7500	75/300	75/300
8000	80/320	80/320
9000	90/360	90/360
10000	100/400	100/400

Database Server

After calculating the weighted number of active users with the formula in step one, use the following table to determine the required number of CPU cores 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.

Note: If you want to have a monolithic environment simply add the number of CPU cores and memory in the application tier to the number of CPU cores and memory in the database tier.

Database Server Sizing		
Windchill 9.0		
Weighted Number of Active Users	Rx8640 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)	Rx6600 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)
10	1/2	1/2
25	1/4	1/4
50	1/4	1/4
100	2/8	2/8
200	2/8	2/8
300	3/8	3/8
400	3/8	3/8
500	3/8	3/8
600	4/12	4/12
700	4/12	4/12
800	4/12	4/12
900	4/12	4/12
1000	5/16	5/16
1200	6/16	6/16
1500	8/16	8/16
2000	10/24	10/24
2500	12/24	12/24
3000	15/32	15/32
3500	18/32	18/32

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Database Server Sizing		
Windchill 9.0		
Weighted Number of Active Users	Rx8640 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)	Rx6600 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)
4000	21/32	21/32
4500	24/32	24/32
5000	27/32	27/32
5500	30/48	30/48
6000	33/48	33/48
6500	36/48	36/48
7000	39/48	39/48
7500	42/64	42/64
8000	45/64	45/64
9000	50/64	50/64
10000	55/80	55/80

Windchill 9.0 Hardware Sizing Example for 1200 Users (800 non-CAD & 400 CAD)

Example 1: Company with 1200 Users

A company needs a server to support 1200 total users, of which 800 are non-CAD users and 400 are CAD users

W — CAD users that the system needs to support = **400**

X — Named non-CAD users that the system needs to support = **800**

Y — Active CAD users, calculated as $W \times 0.30 = \mathbf{120}$

Z — Active non-CAD users, calculated as $X \times 0.20 = \mathbf{160}$

A — Weighted number of active users, calculated as $3Y + Z = \mathbf{520}$

Application Tier Recommendation

For 520 weighed active users, the recommendation for the application tier using the HP-UX Itanium platform is 6 CPU cores and 24 GB of RAM.

Application Server Sizing		
Windchill 9.0		
Weighted Number of Active Users	Rx8640 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)	Rx6600 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)
400	4/16	4/16
500	5/20	5/20
600	6/24	6/24
700	7/28	7/28
800	8/32	8/32

Database Tier Recommendation

For 520 weighed active users, the recommendation for the database tier using the HP-UX Itanium platform is 6 CPU cores and 24 GB of RAM.

Application Server Sizing		
Windchill 9.0		
Weighted Number of Active Users	Rx8640 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)	Rx6600 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)
400	3/8	3/8
500	3/8	3/8
600	4/12	4/12
700	4/12	4/12
800	4/12	4/12

Example 2: Company with 1200 Users with Higher Active User Percentages

This example uses higher active user percentages—40% for CAD users and 30% for non-CAD users—and observes the impact on the hardware recommendations.

W — CAD users that the system needs to support = **400**

X — Named non-CAD users that the system needs to support = **800**

Y — Active CAD users, calculated as $W \times 0.40 = \mathbf{160}$

Z — Active non-CAD users, calculated as $X \times 0.30 = \mathbf{240}$

A — Weighted number of active users, calculated as $3Y + Z = \mathbf{720}$

Application Tier Recommendation

For 720 weighed active users, the recommendation for the application tier using a HP-UX Itanium platform is 8 CPU cores and 32 GB of RAM.

Application Server Sizing		
Windchill 9.0		
Weighted Number of Active Users	Rx8640 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)	Rx6600 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)
600	6/24	6/24
700	7/28	7/28
800	8/32	8/32
900	9/36	9/36
1000	10/40	10/40

Database Tier Recommendation

For 720 weighed active users, the recommendation for the database tier using the HP-UX Itanium platform is 4 CPU cores and 12 GB of RAM.

Application Server Sizing		
Windchill 9.0		
Weighted Number of Active Users	Rx8640 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)	Rx6600 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)
600	4/12	4/12
700	4/12	4/12
800	4/12	4/12
900	4/12	4/12
1000	5/16	5/16

Example 3: Company with 1200 Users with Heavier CAD User Load and Higher Active User Percentages

In this example, the system must 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+ part, assembly, drawing, or family table instances in their workspace on a regular basis.

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

A company with 1200 users needs to support 400 CAD users and 800 non-CAD users + higher active user percentage + heavier CAD user load:

W — CAD users that the system needs to support = **400**

X — Named non-CAD users that the system needs to support = **800**

Y — Active CAD users, calculated as $W \times 0.40 = 160$

Z — Active non-CAD users, calculated as $X \times 0.30 = 240$

A — Weighted number of active users, calculated as $4Y + Z = 880$

Application Tier Recommendation

For 880 weighed active users with higher active user percentage and heavier CAD user load, the recommendation for the application tier using the HP-UX Itanium platform is 9 CPU cores and 36 GB of RAM.

Application Server Sizing		
Windchill 9.0		
Weighted Number of Active Users	Rx8640 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)	Rx6600 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)
700	7/28	7/28
800	8/32	8/32
900	9/36	9/36
1000	10/40	10/40
1200	12/48	12/48

Database Tier Recommendation

For 880 weighed active users with higher active user percentage and heavier CAD user load, the recommendation for the database tier using the HP-UX Itanium platform is 4 CPU cores and 12 GB of RAM.

Application Server Sizing		
Windchill 9.0		
Weighted Number of Active Users	Rx8640 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)	Rx6600 HP-UX Itanium [dual core 1.6 GHz] (Cores/RAM)
700	4/12	4/12
800	4/12	4/12
900	4/12	4/12
1000	5/16	5/16
1200	6/16	6/16

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 of workstation as 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 core 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 CPU cores and 4 GB RAM, minimum
- If larger requirements than 4 GB, use a 64-bit Windows version or UNIX workstation

Sizing a Windchill File Server (formerly referred to a “Content Cache Server”)

The minimum recommended Windchill File Server hardware is:

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

Note: The Windchill File Server, formerly referred to as a content cache server, has also been informally referred to as a replication server.

Directory of Online Information

Windchill 9.0 Software Matrices

http://www.ptc.com/view?im_dbkey=58031

Windchill Future Platform Support Summary

http://www.ptc.com/view?im_dbkey=69784

Oracle Software Assistant Compatibility Matrices

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

Windchill Performance Tuning Guide

http://www.ptc.com/view?im_dbkey=53325

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/cs/doc/cont_sup.htm

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