Hardware and Software Requirements

PowerSchool Premier
Student Information System
With PowerGrade

PEARSON

Document Properties

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Last Updated	7/22/2007

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Introduction

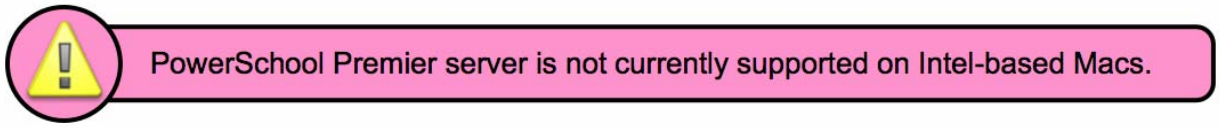
This document contains the hardware and software requirements for implementing PowerSchool Premier.

The equipment and operating systems listed herein are required for a typical installation of a PowerSchool Premier solution using the version currently in production as of April 2007.

Additional hardware and software may be required for customized installation configurations. The requirements contained in this document may not meet specifications for future releases of PowerSchool Premier. Please consult with a Pearson School Systems sales representative prior to purchasing any equipment.

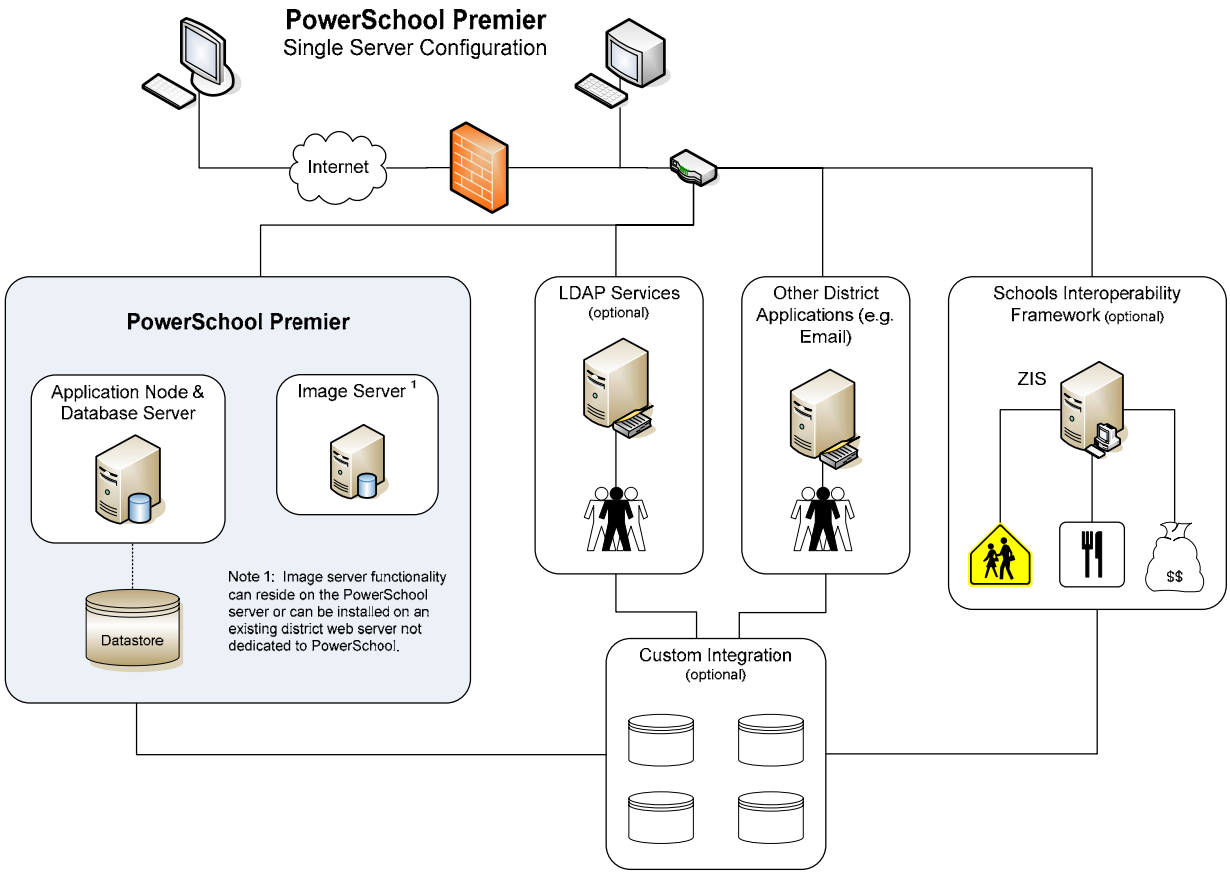
Important Notes:

- This document is designed to assist customers with system configuration guidance for districts up to 30,000 students. For PowerSchool Premier configurations that support more than 30,000 students please contact your Pearson School Systems sales representative for consultative assistance.
- For optimal performance, server computers should be dedicated. Other applications, especially heavily accessed files or other server software, should not be on the same machine.
- **Pearson School Systems does not currently support the Intel-based Mac platforms**. We will periodically update our status to address this issue in the future.
- Specifications herein do not take into account upcoming functionality (e.g., PowerTeacher). Further specifications will be published upon release of those functional modules.



Single Server Configuration

This section describes configurations based on a single server.



Single Combined Server

The following chart indicates how you can configure PowerSchool with the application node and the database server on a single system.

Requirements	Less than 3,000 Students	3,000 to 7,000 Students
CPUs	Dual Core 2.33GHz Xeon or AMD equivalent	Quad Core 2.33GHz Xeon or AMD equivalent
Memory (RAM)	4GB	6GB
Storage Planning	The use of RAID or redundant storage is highly recommended to reduce the server downtime in case of catastrophic hardware failure. See *Sample RAID Configurations* for examples.	
Storage	• Database Size: Approximately 2MB per student plus 2MB per student growth per year. • Temp DB and Log Files: Approximately 125% of the database size. • Backup Files: Districts should maintain a backup strategy allowing for nightly incremental backup. Database backups should be copied to an alternate storage device to protect data.	
Operating System & Other Software Components[2]	Windows 2003 Server 32-bit Enterprise Edition SP2[3] Java 1.5 (Java 5), QuickTime 7, Timbuktu Pro 8.0[1]	

[1]Timbuktu software is included with the purchase of PowerSchool Premier. Installation is required on this server.

[2]Pearson School Systems certifies the required software versions listed above with PowerSchool Premier. Prior or future versions / service packs may work properly but are not supported.

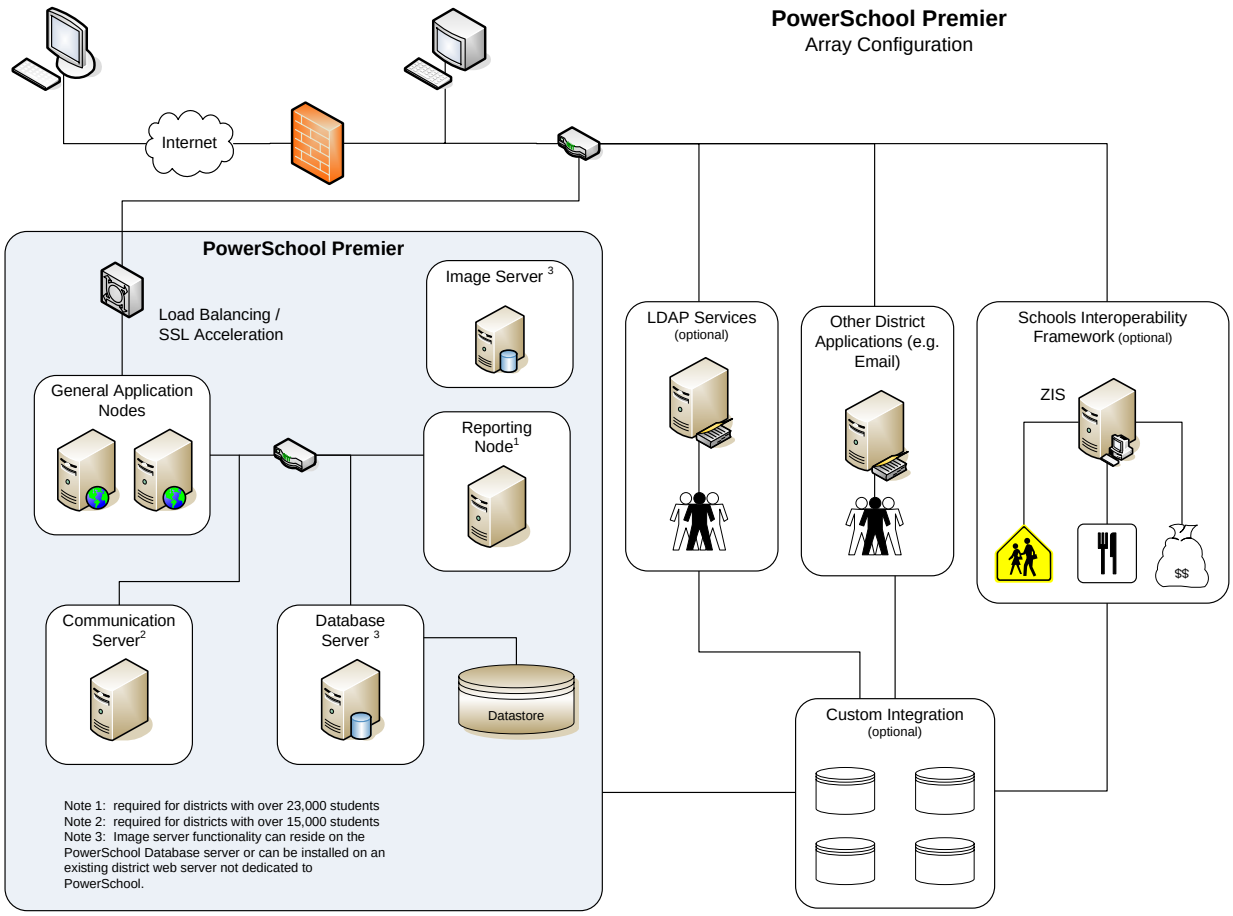
[3]Sybase 12.5 is not 64-bit compatible. Single server configurations and all database server configurations require Microsoft Windows 2003 Server 32-bit Enterprise Edition.

Notes:

- A separate web server is required to serve PowerSchool's graphic files (Image Server). An existing district web server may be used for this purpose and does not need to be dedicated to PowerSchool. A Fully Qualified Domain Name is required for this server.
- It is important to note that a single server configuration does not provide any redundancy in case of hardware failure.

Server Array Configuration

The following chart indicates how you can configure PowerSchool across an array of servers.



Application Nodes

Requirements	7,000 to 15,000 Students	15,000 to 22,000 Students	22,000 to 30,000[3] Students
General App Nodes Required	2	3	4
Dedicated Comm Server	-	1	1
Dedicated Reporting Node	-	-	1
CPUs	Dual Core 2.33GHz Xeon or AMD equivalent		
Memory (RAM)	4GB		
Storage	The use of RAID or redundant storage is highly recommended to reduce the server downtime in case of catastrophic hardware failure. See *Sample RAID Configurations* for examples.		
Operating System & Other Software Components[2]	Windows 2003 Server 32-bit Enterprise Edition SP2 Java 1.5 (Java 5), QuickTime 7, Timbuktu Pro 8.0[1]		
Hardware Load Balancer	**F5 BigIP** **Cisco 115xx** Currently, Windows NLB is not supported. Other hardware load balancing solutions may function properly. However, they are unsupported by Pearson School Systems at this time.		

[1]Timbuktu software is included with the purchase of PowerSchool Premier. Installation is required on this server.

[2]Pearson School Systems certifies the required software versions listed above with PowerSchool Premier. Prior or future versions / service packs may work properly but are not supported.

[3]For PowerSchool Premier configurations that support more than 30,000 students please contact your Pearson School Systems sales representative for consultative assistance.

Notes:

- A separate web server is required to serve PowerSchool's graphic files (Image Server). An existing district web server may be used for this purpose and does not need to be dedicated to PowerSchool. A Fully Qualified Domain Name is required for this server.
- SSL encryption is highly recommended to help secure student data transmission. An external hardware-based SSL accelerator is recommended. Many load balancing devices have the option of SSL acceleration.

Database Server

Requirements	7,000 to 15,000 Students	15,000 to 30,000 Students[3]
CPUs	Dual Core 3GHz Xeon or AMD equivalent	Quad Core 3GHz Xeon or AMD equivalent
Memory (RAM)	6GB	8GB
Storage Planning	The use of RAID or redundant storage is highly recommended to reduce the server downtime in case of catastrophic hardware failure. See *Sample RAID Configurations* for examples.	
Storage	• Database Size: Approximately 2MB per student plus 2MB per student growth per year. • Temp DB and Log Files: Approximately 125% of the database size. • Backup Files: Districts should maintain a backup strategy allowing for nightly incremental backup. Database backups should be copied to an alternate storage device to protect data.	
Operating System and Other Software Components	Windows 2003 Server 32-bit Enterprise Edition SP2[2] Timbuktu Pro 8.0[1]	

[1]Timbuktu software is included with the purchase of PowerSchool Premier. Installation is required on this server.

[2]Sybase 12.5 is not 64-bit compatible. Single server configurations and all database server configurations require Microsoft Windows 2003 Server 32-bit Enterprise Edition.

[3]For PowerSchool Premier configurations that support more than 30,000 students please contact your Pearson School Systems sales representative for consultative assistance.

Note:

- Sybase will bind to only one physical or logical IP address. Multiple physical NICs can be teamed to improve throughput.

Bandwidth Requirements

PowerSchool is a web-based enterprise application that is reliant on a certain standard of network capacity. Network administrators commonly use network switches to isolate the administrative network traffic from the traffic generated by students. However, schools tend to be networked to the district office in a hub and spoke design. Much of the traffic, including email and all Internet activity, is routed from each school back to the district office. All of this traffic consumes a certain percentage of the available bandwidth for each school. The remaining bandwidth is available to new applications, such as PowerSchool.

For PowerSchool, each district has varied requirements for bandwidth due to their own use of the product, including such factors as teacher use of PowerSchool's Gradebook, the taking of classroom attendance, whether the district uses multiple bell schedules (these tend to spread the network load), and other factors. As a standard guideline, Pearson recommends you use the following bandwidth allowance:

- Elementary Schools – Dedicate a minimum of 750Kbs for PowerSchool traffic.
- Secondary Schools – Dedicate a minimum of 1.5Mbs for PowerSchool traffic.

Client Software Requirements

PowerSchool requires the following software to access the application and view reports.

Platform	Browser	PDF Reader
Macintosh™	Safari 2.0.x Firefox 2.0.x	Preview, provided with OS X
Windows	Internet Explorer 6.0 Firefox 2.0.x	Adobe Acrobat Reader 7 for Windows

Notes:

- A network connection to the PowerSchool server is required on the workstation.
- Pearson School Systems certifies the required software versions listed above with PowerSchool Premier. Prior or future versions / service packs may work properly but are not supported.

PowerScheduler Requirements

PowerScheduler uses a scheduling engine that requires local processing. Use the following workstation configuration to ensure the best possible performance during scheduling activities.

Platform	Minimum	Recommended	Browser
Macintosh	PowerPC G4 500 MHz or Intel Core Solo 100MB available disk space 512MB RAM Mac OSX 10.4	Intel Core Duo 100MB available disk space 1GB RAM or more Mac OSX 10.4.9	Safari 2.0.x Firefox 2.0.x
Windows	Pentium 4 1GHz 100MB available disk space 512MB RAM Windows 2000, XP	Intel Core Duo or AMD equivalent 100MB available disk space 1GB RAM or more Windows XP SP2	Internet Explorer 6.0 Firefox 2.0.x

Notes:

- PowerSchool Scheduling Engine 3.0.2 is now certified on Macintosh computers featuring Intel processors with Mac OS X v10.4 or later.
- A network connection to the PowerSchool server is required on the workstation.

PowerGrade Requirements

PowerGrade capable workstations must meet the following criteria.

Platform	Minimum	Recommended
Macintosh	PowerPC G4 500 MHz or Intel Core Solo 100MB available disk space 512MB RAM Mac OSX 10.4	Intel Core Duo 100MB available disk space 1GB RAM or more Mac OSX 10.4.9
Windows	Pentium 4 1GHz 100MB available disk space 512MB RAM Windows 2000, XP	Intel Core Duo or AMD equivalent 100MB available disk space 1GB RAM or more Windows XP SP2

Notes:

- A network connection to the PowerSchool server is required on the workstation.

Sample RAID Configurations

Redundant Arrays of Inexpensive Disks (RAID) is a method whereby information is spread across several disks to achieve redundancy, lower latency and/or higher bandwidth for reading and writing, and recoverability from hard disk failures. There are more than ten different types of defined RAID configurations, such as disk mirroring (RAID level 1) and Block Interleaved Distributed Parity (RAID level 5).

There are many options in designing a RAID solution, and each configuration has pros and cons. These configurations deliver different levels of performance and availability, and vary in cost. Your hardware vendor can assist you with the exact configuration for your district.

The following section describes examples of RAID configurations for districts that choose to add RAID to their PowerSchool implementation.

Districts with up to 10,000 students

RAID Controller	
Dual channel (Raid 1 Array and Raid 5 Array on separate channels), 128MB controller cache, and a 160MB/sec data rate	
RAID 1 Array – operating system	**RAID 5 Array – data**
Two hard disks of equal size (min 36GB)	Five hard disks online, one hot spare drive (drive should be of equal size, min. 36GB) External SCSI Drive Chassis

Districts with greater than 10,000 students

Option 1

RAID Controller	
Dual channel (Raid 1 Array and Raid 5 Array on separate channels), 128MB controller cache, and a 160MB/sec data rate	
RAID 1 Array – operating system	**RAID 5 Array – data**
Two hard disks of equal size (min 36GB)	Seven hard disks online, one hot spare drive (drive should be of equal size, min. 36GB) External SCSI Drive Chassis

Option 2

RAID Controller	
One Single Channel RAID Controller, 128MB controller cache, and a 160MB/s data rate One Single Channel RAID Controller, 128MB controller cache, and a 320MB/s data rate	
RAID 1 Array – operating system and transaction logs	**RAID 5 Array – data**
Two hard disks of equal size (min 36GB) on 160MB/s controller	Seven hard disks online, one hot spare drive (Drive should be of equal size, min. 36GB) External SCSI Drive Chassis on 320MB/s controller

Option 3

RAID Controller	
One RAID controller, 128MB controller cache, and a 16 MB/sec data rate One Fiber Channel Host Bus Adaptor (HBA) (minimum 1GB/s)	
RAID 1 Array – operating system and transaction logs	**RAID 5 Array – data**
Two hard disks of equal size (min 36GB)	Seven hard disks online, one hot spare drive (Drive should be of equal size, min. 36GB) External Fiber Channel Smart Array Drive Chassis

Appendix A – PowerPC Server Configurations

For customers with existing Macintosh servers based on the PowerPC, please use the following table to determine system requirements.

Single Server Configuration

A single server configuration can be used at districts under 5,000 students.

Platform	Minimum	Recommended
Macintosh™	Two 2.3GHz PowerPC G5 processors, or two 2.3GHz dual-core PowerPC G5 processors 4GB RAM Mac OSX 10.4 or Mac OSX 10.4 Server	Two 2.3GHz PowerPC G5 processors, or two 2.3GHz dual-core PowerPC G5 processors 8GB RAM or more Mac OSX 10.4 or Mac OSX 10.4 Server

Software	Minimum	Recommended
Java Virtual Machine	1.5 (Java 5)	1.5 (Java 5)
Timbuktu	8.1.1	8.1.1

Storage	Minimum	Recommended
Application / Database	40GB	• Database Size: Approximately 2MB per student plus 2MB per student growth per year. • Temp DB and Log Files: Approximately 125% of the database size. • Backup Files: Districts should maintain a backup strategy allowing for nightly incremental backup. Database backups should be copied to an alternate storage device to protect data.

Notes:

- PowerSchool 5.x is not certified on Apple Intel-based hardware. We will periodically update our status to address this issue in the future.
- RAID storage is recommended for housing the database data files.
- Apache and Internet Information Services are recommended, but an Internet standard web server is acceptable.

Notes (cont.):

- Timbuktu software is included with the purchase of PowerSchool Premier. Installation is required on this server.
- PowerSchool requires QuickTime v.7 or greater.
- A separate web server is required to serve PowerSchool's graphic files (Image Server). An existing district web server may be used for this purpose and does not need to be dedicated to PowerSchool. A Fully Qualified Domain Name is required for this server.

Server Array Configuration

Below are the server specifications required for a PowerPC server array configuration. One database server is required along with the indicated nodes in the table below:

Requirements	5,000 to 12,000 Students	12,000 to 18,000 Students	18,000 to 22,000 Students
General App Nodes Required	2	3	4
Dedicated Comm Server	-	1	1
Dedicated Reporting Node	-	-	1

Database Server	Minimum	Recommended
Macintosh™	Two 2.3GHz PowerPC G5 processors 2GB RAM Mac OSX 10.4 or Mac OSX 10.4 Server	Two 2.5GHz PowerPC G5 processors, or two 2.5GHz dual-core PowerPC G5 processors 3GB RAM or more Mac OSX 10.4 or Mac OSX 10.4 Server

Application/ Report/ Comm Server Node	Minimum	Recommended
Macintosh™	2.0GHz PowerPC G5 processor 2GB RAM Mac OSX 10.4 or Mac OSX 10.4 Server	Two 2.3GHz PowerPC G5 processors or 2.3GHz dual-core PowerPC G5 processors 3GB RAM or more Mac OSX 10.4 or Mac OSX 10.4 Server

Software	Minimum	Recommended
Java Virtual Machine	1.5 (Java 5)	1.5 (Java 5)
Timbuktu	8.1.1	8.1.1

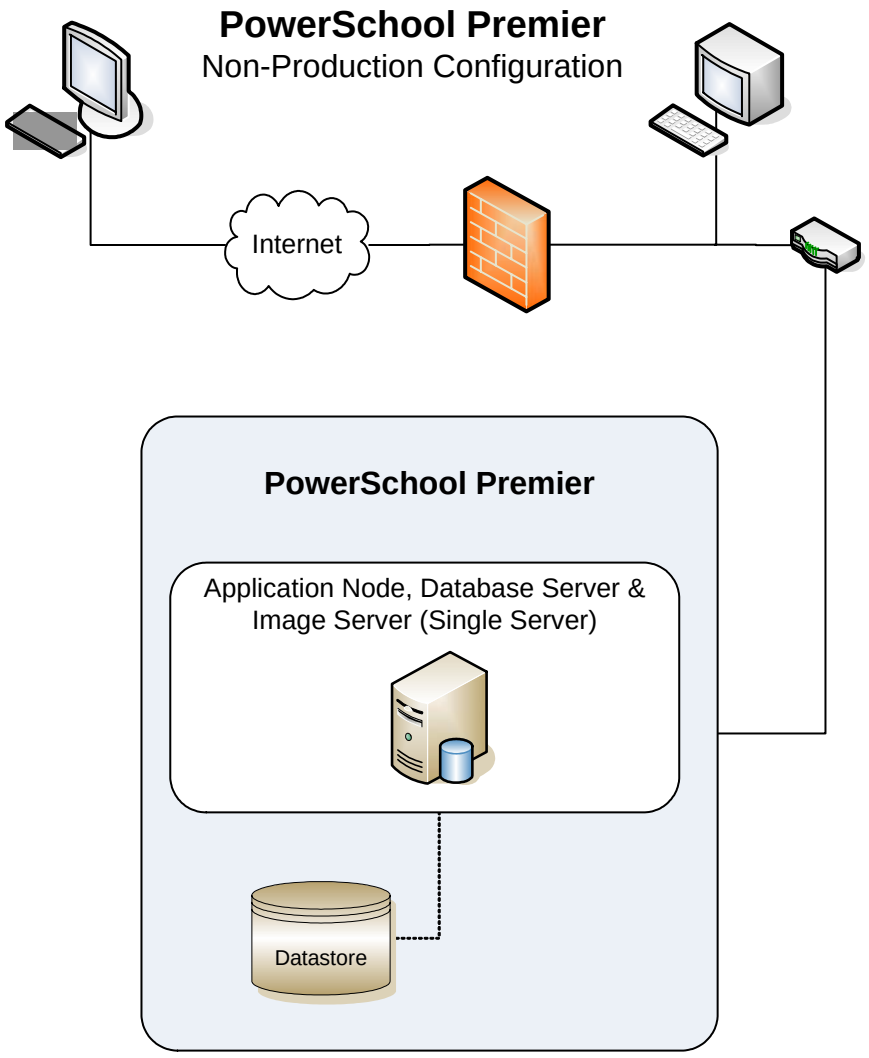
Storage	Minimum	Recommended
Database Server	• Database Size: Approximately 2MB per student plus 2MB per student growth per year. • Temp DB and Log Files: Approximately 125% of the database size. • Backup Files: Districts should maintain a backup strategy allowing for nightly incremental backup. Database backups should be copied to an alternate storage device to protect data.	
Application Node	40GB	60GB

Notes:

- PowerSchool 5.x is not certified for Apple Intel hardware. We will periodically update our status to address this issue in the future.
- RAID storage is recommended for housing the database data files.
- Apache and Internet Information Services are recommended, but an Internet standard web server is acceptable.
- Timbuktu software is included with the purchase of PowerSchool Premier. Installation is required on this server.
- **F5 BigIP** and **Cisco 115xx** load balancer solutions are currently supported.
- PowerSchool requires QuickTime v.7 or greater.
- A separate web server is required to serve PowerSchool's graphic files (Image Server). An existing district web server may be used for this purpose and does not need to be dedicated to PowerSchool. A Fully Qualified Domain Name is required for this server.

Appendix B – Non-Production Environments

Customers may choose to setup non-production environment(s) for various purposes such as training, feature testing (sand-box), QA, etc. Each environment can be a single server configuration which combines all functions in one. In the example below, the application node, comm server functions, reporting, image server and database server are all combined in one physical server. Typically, there is not a high load on this type of environment.



Sample Configuration

The following chart indicates how you can configure PowerSchool with the application node, image server and the database server on a single system.

Requirements	Non-Production Environment
CPUs	Dual Core 2.33GHz Xeon or AMD equivalent
Memory (RAM)	4GB
Storage Planning	Non-Production systems are not typically critical to school operation. Storage for these systems can be fixed non-RAID or can follow the *Sample RAID Configurations* shown in this document.
Storage	• Database Size: Approximately 2MB per student. For test/sand-box systems, storage should match that of production systems to accommodate access to same database. Training systems typically require far less storage than production. • Temp DB and Log Files: Approximately 125% of the database size. • Backup Files: Backup of data on this class of system is typically not of concern.
Operating System & Other Software Components[2]	Windows 2003 Server 32-bit Enterprise Edition SP2[3] Java 1.5 (Java 5), QuickTime 7, Timbuktu Pro 8.0[1]

[1]Timbuktu software is included with the purchase of PowerSchool Premier. Installation is required on this server.

[2]Pearson School Systems certifies the required software versions listed above with PowerSchool Premier. Prior or future versions / service packs may work properly but are not supported.

[3]Sybase 12.5 is not 64-bit compatible. Single server configurations and all database server configurations require Microsoft Windows 2003 Server 32-bit Enterprise Edition.

Notes:

- Unlike production systems, a separate web server is not required to serve PowerSchool's graphic files. Image server functions can be combined on the single server.