Hardware and Software Requirements

Release 7.5.x

PowerSchool
Student Information System

ALWAYS LEARNING PEARSON

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This edition applies to Release 7.5.x of the PowerSchool software and to all subsequent releases and modifications until otherwise indicated in new editions or updates.

The data and names used to illustrate the reports and screen images may include names of individuals, companies, brands, and products. All of the data and names are fictitious; any similarities to actual names are entirely coincidental.

Contents

Introduction

This document contains the hardware and software requirements for implementing the PowerSchool 7.5.x Student Information System, including the PowerTeacher and ReportWorks components. The equipment and resources listed herein are required to ensure system usability and a quality user experience.

PowerSchool 7.5.x supports a Microsoft Windows configuration using 64-bit hardware with a Windows Server 2008 R2 SP1 64-bit operating system (English version). Windows Server 2003 and Windows Server 2008 R1 are no longer supported. For existing PowerSchool customers using 32-bit hardware (either Microsoft Windows or Mac), you should plan on purchasing new hardware to meet the stated minimum requirements or recommended specifications listed in this document. For existing Microsoft Windows customers who have previously purchased 64-bit hardware, plan to upgrade that hardware if applicable to meet the stated minimum requirements or recommended specifications as well.

This document is designed to assist customers with system configuration guidance for smaller districts consisting of fewer than 15,000 enrolled students. Larger districts may require a configuration tailored to meet their specific needs. For consultative assistance with PowerSchool configurations that support more than 15,000 students, or to learn more about Pearson's hardware packages and services for all enrollments, please contact your Pearson sales representative at 877.873.1550 or email **TSGHelpDesk@Pearson.com** for environment consultation.

As of release 7.0, PowerSchool no longer supports application components running natively on Mac OS X. Mac servers may be used to create a virtualized environment running Windows 2008 R2 SP1. For more information regarding changes to Mac OS X server support, please refer to **Knowledgebase article 62029** available on PowerSource.

General Requirements

The following requirements must be implemented with every PowerSchool configuration.

- All servers in the production environment must be dedicated solely to operation of the PowerSchool product and its complementary components, such as PowerTeacher and ReportWorks. The only exception to this rule is the image server (see below).
- All hardware referenced in this document must be server class hardware, except the PowerScheduler client and user workstations.
- Changes in PowerSchool 7.5 require that the default dynamic port range be in compliance with Microsoft Windows Server 2008 R2 requirements.
- All environments must include an image server to serve the graphical files in PowerSchool. The image server may be configured on the same, single computer if the active student count is fewer than 3000 students. For districts with an active student count over 3000, a separate image server is recommended. For districts with an active student count over 7000, a separate image server is required. The server used for these images may be an existing web server and does not need to be dedicated to PowerSchool image serving. For enhanced performance, the image server may reside on a dedicated server, but this is not a requirement.
- Array environments of two or more application nodes must be served by a load balancer, which directs the user traffic and balances the load among all nodes in the array. Although neither supported nor certified by PowerSchool, any hardware or software load balancer, when configured properly, should have the potential to operate successfully within the production environment. PowerSchool does not endorse any particular manufacturer, and the load-balancing provider would provide support. For more information, please refer to the *Load Balancer Requirements and Configuration Guide* available on **PowerSource**.
- All application component servers, including the database server, must run the Microsoft Windows Server 2008 R2 SP1 64-bit operating system (English version). PowerSchool supports the following editions of Microsoft Windows Server 2008 R2:
    - Windows Server 2008 R2 Standard
    - Windows Server 2008 R2 Enterprise
    - Windows Server 2008 R2 Datacenter
    - Windows Web Server 2008 R2

  Most servers can run the Standard Edition, which covers most production environments up to and greater than 15,000 students. Windows Web Server 2008 R2 may also be used, although this edition caries some constraints, such as its inability to be used as a file server. For configurations where the database server needs more than 32GB RAM, either Enterprise Edition or Datacenter Edition of Windows 2008 R2 SP1 is required.

  Microsoft licensing provisions require specific licenses when most users connect to a Windows 2008 R2 server. A Client Access License (CAL) is required for each teacher and administrator who accesses PowerSchool, since Microsoft considers them internal users. The CAL can be either a "Device" CAL to cover the number of workstations used by teachers and administrators who access PowerSchool, or a "User" CAL to cover each individual teacher and administrator who accesses

PowerSchool. An External Connector License (ECL) is required for each PowerSchool server that serves parents, guardians, and students since they are considered external users by Microsoft.

Exceptions to these two guidelines include the following:

- PowerSchool "Software as a Service" customers (Pearson manages the licenses)
- Districts that license Active Directory for their users for Windows 2008 R2
- Districts that choose to deploy Windows Web Server 2008 R2 instead of Windows Server 2008 R2 Standard, Enterprise, or Datacenter Editions

CAL and ECL licenses purchased for Windows Server 2003 are not transferable to Windows 2008 R2. Customers that incorporate other Windows 2008 R2 file, application, or authentication servers and have previously purchased Windows 2008 R2 CAL(s) for those server roles can apply the same Windows 2008 R2 CAL(s) for use with PowerSchool, and do not require the purchase of additional CAL(s) for internal users.

Pearson recommends that you contact Microsoft or your district's software vendor for details regarding Microsoft software licensing. You may also want to review the Microsoft licensing resources located here:
http://www.microsoft.com/windowsserver2008/en/us/licensing-faq.aspx

Configuration Requirements

Each production environment should be configured so as to provide acceptable performance for all users during a typical school day. With its new architecture, new operating system and database versions, and new features in version 7.0, an implementation of PowerSchool has slightly higher system resource requirements than in previous versions. The following sections detail the minimum and recommended resource requirements for a production environment of districts up to 15,000 students in size.

- Minimum refers to the absolute lowest value that is acceptable for the resource. A production deployment will experience acceptable performance with servers that meet these minimum requirements. Pearson does not support operating a production environment with less than the minimum specifications for any resource.
- Recommended refers to the value that will provide better than acceptable performance without requiring excessive resources. The recommended level of resources allows room for growth as your district needs grow and as new PowerSchool versions and features become available in the next few years. If any of the recommended specifications cannot be met, certain options are available to mitigate the situation, such as deploying additional, lower-resourced application servers that meet the minimum requirements in an array.

To discuss viable options, please contact your Pearson sales representative for consultative assistance.

All-in-One Solution – Up to 3,000 Students

This is a one server Microsoft Windows solution with the Oracle database and PowerSchool Tomcat application node residing on the same server. This covers the needs of all districts up to 3,000-student enrollment.

Minimum Requirements

- One Quad-Core CPU, 2.0 GHz or greater, Intel Xeon or AMD Opteron processors
- 8 GB RAM
- 160GB Serial-Attach SCSI (SAS) storage

Recommended Specifications

- Two Quad-Core CPUs, 2.0 GHz or greater, Intel Xeon Nehalem class processors or faster, or equivalent AMD Opteron processors
- 16 GB RAM
- 160GB Serial-Attach SCSI (SAS) storage
- RAID 1 (OS, Tomcat) and RAID 10 (1 plus 0) (Oracle Database)

Two Server Solution – 3,000 to 7,000 Students

This is a two server Microsoft Windows solution with the database and Tomcat application node residing on separate servers dedicated to each function. One server supports the Oracle database; the other supports the PowerSchool Tomcat application node. This covers the needs of all districts up to 7,000-student enrollment.

Minimum Requirements

Application Node:

- One Quad-Core CPU, 2.0 GHz or greater, Intel Xeon or AMD Opteron processors
- 8 GB RAM
- 60GB Serial-Attach SCSI (SAS) storage

Database:

- One Quad-Core CPU, 2.0 GHz or greater, Intel Xeon or AMD Opteron processors
- 8 GB RAM
- 150GB Serial-Attach SCSI (SAS) storage

Recommended Specifications

Application Node:

- Two Quad-Core CPU, 2.0 GHz or greater with Intel Xeon Nehalem class processors or faster, or equivalent AMD Opteron processors
- 12 GB RAM
- 60GB Serial-Attach SCSI (SAS) storage

Database:

- Two Quad-Core CPU, 2.0 GHz or greater with Intel Xeon Nehalem class processors or faster, or equivalent AMD Opteron processors
- 12 GB RAM
- 150GB Serial-Attach SCSI (SAS) storage
- RAID 1 (OS, Tomcat) and RAID 10 (1 plus 0) (Oracle Database)

Server Array Solution – 7,000 to 15,000 Students

This is a three to four server solution with a dedicated database server and two to three dedicated Tomcat application node servers. Please note that Microsoft Windows Server 2008 R2 64-bit Standard Edition only supports up to 32GB RAM; Array Solutions that require greater than 32GB RAM will need to utilize Microsoft Windows Server 2008 R2 64-bit Enterprise Edition. This covers the needs of all districts up to 15,000-student enrollment.

Minimum Requirements

Application Node:

- One Quad-Core CPU, 2.0 GHz or greater, Intel Xeon or AMD Opteron processors
- 8 GB RAM
- 60GB Serial-Attach SCSI (SAS) storage

Database:

- One Quad-Core CPU, 2.0 GHz or greater, Intel Xeon or AMD Opteron processors
- 8 GB RAM
- 300GB Serial-Attach SCSI (SAS) storage

Recommended Specifications

Application Node:

- Two Quad-Core CPU, 2.0 GHz or greater with Intel Xeon Nehalem class processors or faster, or equivalent AMD Opteron processors
- 12 GB RAM
- 60GB Serial-Attach SCSI (SAS) storage

Database:

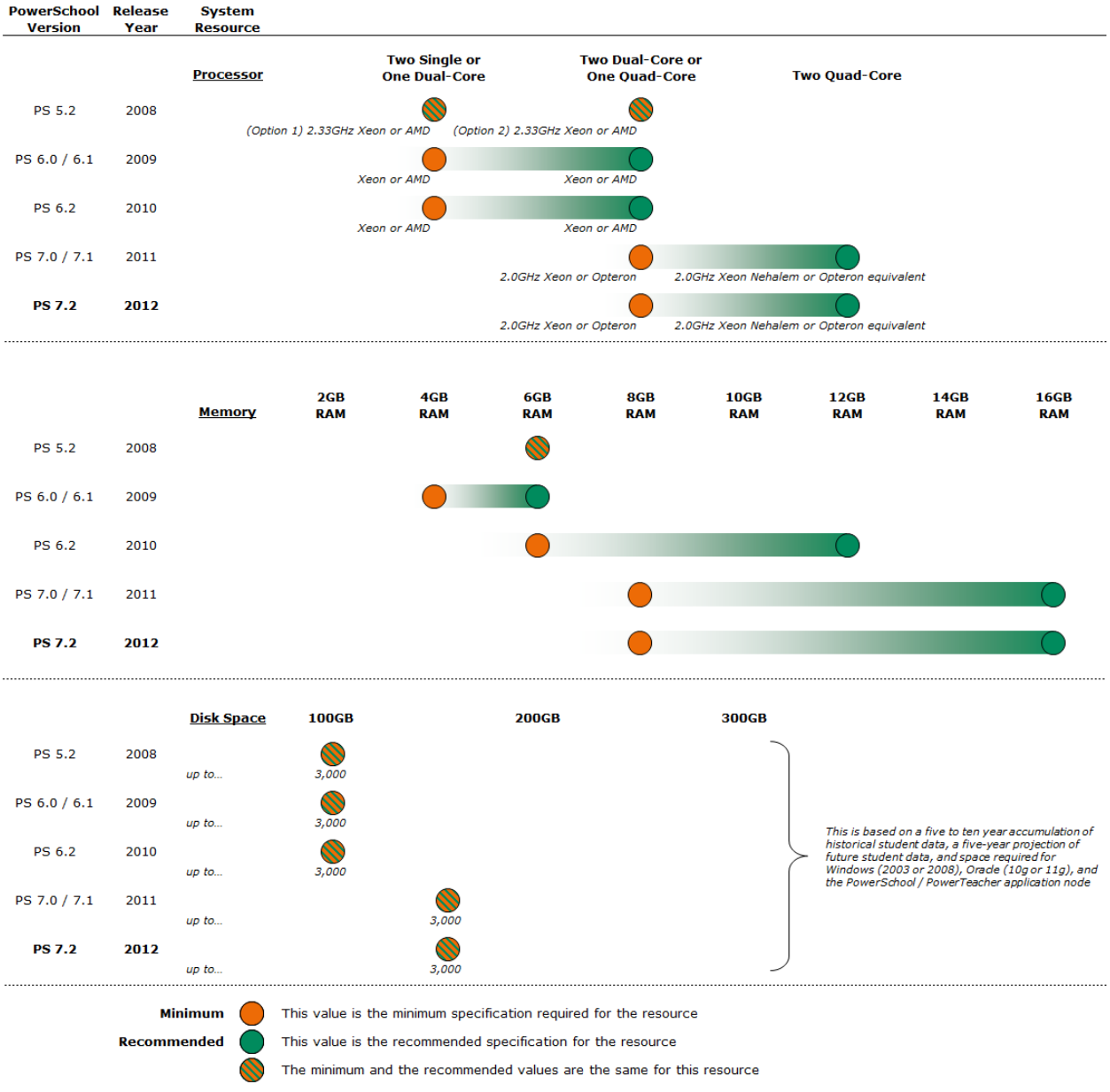
- Two Six-Core CPU, 2.0 GHz or greater with Intel Xeon Nehalem class processors or faster, or equivalent AMD Opteron processors
- 16 GB RAM
- 300GB Serial-Attach SCSI (SAS) storage
- RAID 1 (OS, Tomcat) and RAID 10 (1 plus 0) (Oracle Database)

Historical Resource Requirements

The following charts compare the new minimum and, when stated, the recommended requirements for three hardware resources: RAM (Memory), CPU (processing power), and disk space, to the stated minimum and recommended values for previous versions of PowerSchool.

All-in-One Application and Database Server

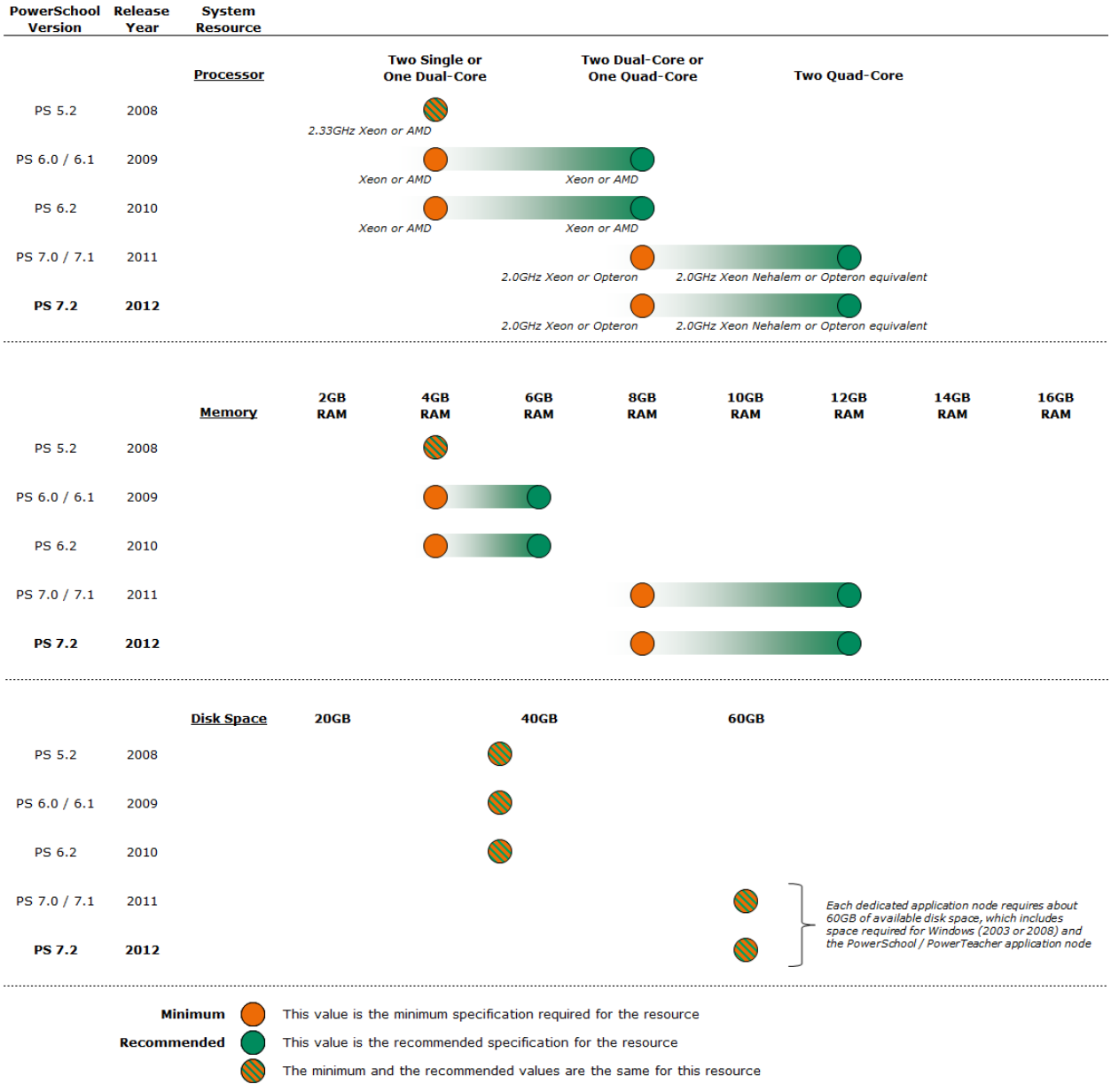
The following chart depicts the all-in-one production configuration, with both the application node and database on a single server. This covers the needs of all districts up to 3,000-student enrollment.



Multi-Server Solution

The following charts depict those production configurations where there are two or more servers, and each server is dedicated to either hosting the database, or to a single application node - regardless of the actual number of application servers required, based on the size of the district. This covers all districts that currently have or, due to growth, will need to have separate, dedicated database and application node server(s), typically larger than 3,000 enrolled students.

Each Dedicated Application Server



Dedicated Database Server

General Recommendations

The following recommendations are not required for a successful implementation of PowerSchool, but are strongly recommended for reasons pertaining to data security, redundancy, performance, and efficiency.

- Data Security with SSL: Secure Socket Layer (SSL) is the standard security technology for establishing an encrypted link between a web server and a web browser, and ensures that all data passed between them remains secure and private.
- Redundancy and Performance with RAID: Redundant Array of Independent Disks (RAID) is a standard technology that provides increased storage reliability through redundancy, and in some configurations results in increased performance. While Pearson recommends a RAID 10 (1 plus 0) for increased redundancy and performance on the database server, larger districts requiring 1 TB of storage or more may find RAID 5 a suitable alternative at a lower cost per disk.
- Network Bandwidth Requirements: Network bandwidth requirements will vary by district based on their usage of PowerSchool and PowerTeacher, as well as the taking of classroom attendance and whether the district uses multiple bell schedules, as these tend to spread the network load. Pearson recommends you use the following bandwidth allowances:
    - Elementary Schools – Dedicate a minimum of 750Kbs for PowerSchool traffic
    - Secondary Schools – Dedicate a minimum of 1.5Mbs for PowerSchool traffic

Additional Information

Client Software Support

Operating System

PowerSchool 7.5.x supports the following operating systems:

- Microsoft Windows XP and Windows 7
- Mac OS X 10.5 Leopard, 10.6 Snow Leopard, 10.7 Lion, and 10.8 Mountain Lion.

As of PowerSchool 7.2, Windows Vista and Mac OS X 10.4 Tiger are no longer supported.

Browser

With the numerous browser versions available in the marketplace, Pearson employs a model of certification and support to evaluate the general user experience. Pearson recommends migrating to "Certified" bowsers for improved security and increased performance. Occasionally, new PowerSchool features will also leverage emerging browser technologies, which are only available in the latest browser versions.

Pearson Determined Browser Compatibility	Description
Certified	PowerSchool is actively tested with this browser. A rich user experience is expected.
Supported	PowerSchool is lightly tested or no longer tested with this browser, so issues may arise. Since supported browsers were generally once certified by PowerSchool, a rich user experience is expected to persist.
Unsupported	The browser vendor has deprecated this version, so PowerSchool no longer supports it. Additionally, all "Beta" versions of Internet Explorer, Firefox, Safari, and Chrome are unsupported, as well as other browsers not listed below.

Available Browsers

Browser and Version	Certified	Supported	Unsupported
Internet Explorer 9 (on Windows 7)	✔		
Internet Explorer 8 (on Windows XP)		✔	
Internet Explorer 7 and below			✖

Browser and Version	Certified	Supported	Unsupported
Safari 6 (on Mac 10.8)	✔		
Safari 5 (on Mac 10.5, 10.6 and 10.7)		✔	
Safari 4 (on Mac 10.5 and 10.6)		✔	
Safari 3 and below			✖
Firefox 10 ESR (on Mac & Windows)	✔		
Firefox – *two latest non-ESR versions* (on Mac and Windows)		✔	
Firefox 3.6 & 4			✖
Chrome – *two latest versions* (on Mac and Windows)		✔	

As of PowerSchool 7.2, Firefox 3.6 and Firefox 4 are no longer supported.

Note: Pearson does not support Compatibility View on Internet Explorer.

Note: Visual Scheduler may be used with any certified or supported browser as indicated in this document. However, due to the use of more technically advanced browser features in the Visual Scheduler, Pearson believes the best user experience from both a functional and a performance perspective will be with the most current versions of Firefox, Safari, and Chrome.

Java

PowerSchool 7.5.x supports the following Java releases:

Windows Operating System

- JRE 6 (Java 1.6)
- JRE 7 (Java 1.7)

Mac Operating System

- OS X 10.5 - JRE 6 (Java 1.6 up to 1.6.0_37)
- OS X 10.6 - JRE 6 (Java 1.6 up to 1.6.0_37)
- OS X 10.7 - JRE 6 (Java 1.6 up to 1.6.0_35) and JRE 7 (Java 1.7)
- OS X 10.8 - JRE 6 (Java 1.6 up to 1.6.0_35) and JRE 7 (Java 1.7)

JRE 5 is no longer supported.

Mobile Web Page Platform Support

Supported Device	Supported Operating Systems	Supported Browser	Notes
iPhone	iOS 4.0 or higher	Safari	With some exceptions, due to the lack of Java and Flash support, regular access to the non-mobile web pages are operational and may also be utilized. For more information, see **Knowledgebase article 60068** on PowerSource.
iPod Touch	iOS 4.0 or higher	Safari	With some exceptions, due to the lack of Java and Flash support, regular access to the non-mobile web pages are operational and may also be utilized. For more information, see **Knowledgebase article 60068** on PowerSource.
iPad	iOS 4.0 or higher	Safari	With some exceptions, due to the lack of Java and Flash support, regular access to the non-mobile web pages are operational and may also be utilized. For more information, see **Knowledgebase article 60068** on PowerSource.
Android Phones	Android 2.2 (Froyo) or higher	Native Android Browser	The user experience may vary based on phone purchased and Android version installed.

PowerScheduler

While periodic hardware upgrades for reliability and performance are recommended, the client hardware requirements for PowerScheduler remain unchanged with PowerSchool 7.5, so you may choose to either continue to use the hardware you currently have, or purchase new hardware.

Mac Solution

Minimum Requirements	Recommended Specifications
PowerPC G4 500 MHz or Intel Core Solo	Intel Core Duo
100MB available disk space	100MB available disk space
512MB RAM	1GB RAM or more
Mac OSX 10.4 or greater	Mac OSX 10.4 or greater

Microsoft Windows Solution

Minimum Requirements	Recommended Specifications
Pentium 4 1GHz	Intel Core Duo or AMD equivalent
100MB available disk space	100MB available disk space
512MB RAM	1GB RAM or more
Windows 2000, XP	Windows XP SP2 or Vista

Non Production Environments

Customers may choose to set up a non-production environment for various purposes such as training and testing. Since these environments typically are not receiving significant user load, you may configure these environments with the database, application node, and image server residing on a single server – an “all-in-one” configuration.

Plan for upgrading your non-production environment hardware to a Microsoft Windows configuration using 64-bit hardware with a Windows Server 2008 R2 64-bit Standard Edition operating system.

Notes

Efficiency with Virtualization

Virtualization is software technology that uses a physical resource such as a server and divides its resources into virtual machines (VMs). Virtualization allows users to consolidate physical resources, simplify deployment and administration, and reduce power and cooling requirements. Pearson has determined through performance testing that virtual environments result in an approximate 20 percent performance degradation as compared to a similarly configured physical environment, but this degradation can be overcome by incrementally adding Tomcat application nodes without sacrificing the benefits of virtualization. Despite this addition of application nodes, the total number of physical servers in the configuration will be fewer in a virtualized environment.

Any environment may be virtualized as long as the virtual machines still meet at least the minimum requirements stated in this document. Although neither supported nor certified by PowerSchool, virtualization software, when configured properly, should have the potential to operate successfully within the production environment. PowerSchool does not endorse any particular manufacturer, and the virtual environment manufacturer provides support. For more information, please refer to the *Virtualization Hardware and Software Requirements and Configuration Guide* available on **PowerSource**.

Performance Assumptions

The PowerSchool Quality Assurance and Performance Team routinely test the server resource requirements specified in this document. In executing this performance testing, we make several assumptions that reflect system usage of a typical customer, in several sizes from 3,000 to 75,000 enrolled students:

- 20 students for every teacher
- 100 students for every administrator
- On average, 25 percent of the total user population is actively using the system at any given time during the school day
- Five school years' worth of complete historical data in addition to the district data for the current school year

These assumptions may or may not reflect your business model. They are provided solely to add context to our system requirements so that you may build a configuration that enables you to achieve system performance that meets your expectations.

Disk Space Requirements

The minimum required disk space listed in this document on the server containing the Oracle 11g database, datafiles, and backups is calculated based on the following factors, which are applicable to all district regardless of student enrollment:

- Daily accumulation of district data for the current school year
- Five previous school years of complete historical data
- Five previous school years of partial historical data (grade information)
- Will eventually contain five years of data for future school years
- Disk space requirements for installations of Windows 2008 R2 SP1 and Oracle 11g
- Standard logging configuration and backup regimen