Release 10.x Hardware and Software Requirements

PowerSchool
Student Information System

Contents

Introduction

This document contains the hardware and software requirements for implementing the PowerSchool 10.x Student Information System, including PowerTeacher Pro, PowerTeacher, Enhanced Reporting, and ReportWorks, and is designed to guide customers with fewer than 15,000 enrolled students. The equipment and resources listed herein are required to ensure proper system usability and the highest quality user experience possible.

The following information is new in this document:

- o Streamlined client OS and browser support
- o Updated device and version support for PowerSchool Mobile app
- o Streamlined Java client requirements
- o PowerTeacher Pro requirements

PowerSchool 10.x requires 64-bit, server class hardware using a 64-bit Windows operating system running Windows Server 2012 R2 (English Version) and an Oracle 12c database.

For districts larger than 15,000 enrolled students, a more tailored configuration may be warranted. For consultative assistance with PowerSchool configurations of this nature, or to learn more about PowerSchool's hardware packages and services for all enrollments, please contact your PowerSchool sales representative at 877-873-1550, or email **TSGHelpDesk@PowerSchool.com**.

General Requirements

The following requirements must be implemented with every PowerSchool configuration.

- Dedicated Hardware: 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).

- Server Class: All hardware referenced in this document must be server class hardware, except the PowerScheduler client and user workstations.

- Dynamic Port ranges: The default dynamic port range is in compliance with Microsoft Windows Server 2012 R2 requirements.

- Image Server: 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 3,000 students. For districts with an active student count over 3,000, a separate image server is recommended. For districts with an active student count over 7,000, 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.

- Load Balancing: Array environments of two or more application nodes must be served by a load balancer. A properly configured load balancer will appropriately distribute incoming user traffic to the multiple Tomcat application node servers, allowing for optimized performance and scalability. Additionally, the load balancer can provide the ability to offload the SSL transactions, as well as serve cached image files, negating the need for separate image servers. For more information, please refer to the *Load Balancer Requirements and Configuration Guide* available on **PowerSource**.

- Windows Operating System: The entire PowerSchool deployment, inclusive of all application nodes and the database server, must run on the same version and edition of Windows Server. PowerSchool supports only Microsoft Windows Server 2012 R2, Standard and Datacenter editions.

  Note: The Server Core installation option is not supported.

  Microsoft licensing provisions require specific licenses when most users connect to a Windows 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:

- o PowerSchool Software as a Service customers (PowerSchool manages the licenses).

- o Districts that license Active Directory for their users for Windows Server 2012 R2

PowerSchool recommends that you contact Microsoft or your district's software vendor for details regarding Microsoft software licensing.

Securing PowerSchool Data

The security of Personally Identifiable Information (PII) pertaining to students, parents, and staff is one of our greatest concerns at PowerSchool. While we take extra measures to ensure our solutions are secure, such as security vulnerability scanning, PowerSchool strongly recommends that all customers take the following additional and deliberate measures to secure their PowerSchool deployment.

- Scrutinize the physical security of your PowerSchool environment. Access to PowerSchool server(s), client machines utilized by students and staff, and your wireless network should all be highly controlled.

- Implement a strong password management regiment based on the robust capabilities available in PowerSchool.

- Implement Secure Socket Layer (SSL) for encryption of Data In Transit. 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. PowerSchool supports SSL v3, and Transport Layer Security (TLS) v1.x with x.509-formatted certificates. For more information on implementing SSL for PowerSchool see **Knowledgebase article 8476** available on PowerSource.

  Important Note: Effective July 1, 2016, all PowerSchool customers are required to implement SSL in all production and test environments. If your PowerSchool instance is hosted by PowerSchool, SSL has already been implemented and there is no further action needed.

- Implement Microsoft BitLocker for encryption of data at rest. Based on PowerSchool performance benchmarking, the most cost-effective and comprehensive tool for securing PowerSchool data at rest is utilization of Microsoft BitLocker to encrypt both the database server, and all application nodes. Microsoft BitLocker is a delivered component of Windows Server, and has been shown to have minimal impact to overall performance. Alternatively, many storage devices also have encryption capabilities that can be leveraged in addition to, or in place of, Microsoft BitLocker.

Recommended Hardware Specifications

For new customers purchasing new hardware, or existing customers seeking to refresh their hardware, the following recommended specifications will provide better than acceptable performance without requiring excessive resources. The recommended specifications allow room for growth as your district needs grow and as new PowerSchool versions and features become available in the next few years.

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.

Combined Application Node and Database:

- Processor: (2) Six-Core CPUs
- RAM: 16 GB (If purchasing new server hardware, 32 GB of RAM is recommended)
- Disk: 100 GB 15k Serial-Attach SCSI (SAS) (OS, Tomcat);

  250 GB 15k Serial-Attach SCSI (SAS) (Oracle Database)
- RAID: 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.

Application Node:

- Processor: (2) Six-Core CPUs
- RAM: 16 GB
- Disk: 100 GB 15k Serial-Attach SCSI (SAS)
- RAID: RAID 1 (OS, Tomcat)

Database:

- Processor: (2) Six-Core CPUs

- RAM: 16 GB

- Disk: 100 GB 15k Serial-Attach SCSI (SAS) (OS);

    300 GB 15k Serial-Attach SCSI (SAS) (Oracle Database)

- RAID: RAID 1 (OS) 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. This covers the needs of all districts up to 15,000-student enrollment.

Application Node:

- Processor: (2) Six-Core CPUs

- RAM: 16 GB

- Disk: 100 GB 15k Serial-Attach SCSI (SAS)

- RAID: RAID 1 (OS, Tomcat)

Database:

- Processor: (2) Eight-Core CPUs

- RAM: 16 GB

- Disk: 100 GB 15k Serial-Attach SCSI (SAS) (OS);

    400 GB 15k Serial-Attach SCSI (SAS) (Oracle Database)

- RAID: RAID 1 (OS) and RAID 10 (1 plus 0) (Oracle Database)

Load Balancer:

- Layer 4 / Layer 7 load balancing capabilities

- Cookie-based session persistence

- SSL offload / termination on the load balancer

Minimum Hardware Specifications

For new or existing customers seeking to repurpose previously purchased hardware for a PowerSchool deployment, the minimum requirements identify the absolute lowest value that is acceptable for a given resource. A production deployment will experience acceptable performance with servers that meet these minimum requirements. PowerSchool does not support operating a production environment with less than the minimum requirements for any resource.

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.

Combined Application Node and Database:
- Processor: (2) Quad-Core CPUs
- RAM: 16 GB
- Disk: 160 GB 15k Serial-Attach SCSI (SAS)

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.

Application Node:
- Processor: (2) Quad-Core CPUs
- RAM: 16 GB
- Disk: 60 GB 15k Serial-Attach SCSI (SAS)

Database:
- Processor: (2) Quad-Core CPUs
- RAM: 16 GB
- Disk: 150 GB 15k Serial-Attach SCSI (SAS)

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. This covers the needs of all districts up to 15,000-student enrollment.

Application Node:

- Processor: (2) Quad-Core CPUs
- RAM: 16 GB
- Disk: 60 GB 15k Serial-Attach SCSI (SAS)

Database:

- Processor: (2) Six-Core CPUs
- RAM: 16 GB
- Disk: 300 GB 15k Serial-Attach SCSI (SAS)

Document Attachment

PowerSchool Document Attachment enables administrators to attach documents to the student record in the administrator portal of PowerSchool. If you intend to utilize this feature, you will need to consider the impact on your data storage and network bandwidth needs. To estimate your *basic* storage needs, there are three primary considerations:

- Estimated number of documents to be attached per student
- Estimated size of documents to be attached
- 5 percent allocation for attachment metadata files

For example, if your district has 1,000 students, you anticipate an average of 10 attachments per student, and you anticipate the average attachment file size to be 300 KB, then you would need a minimum of approximately 3 GB of storage for the attachment of documents to the student record:

Example Calculation

Total Attachments	Estimated Storage
10 attachments x 300 KB attachment size	3,000 KB per student
3,000 KB x 1,000 students	3,000,000 KB for all students
(3,000,000 KB / 1,048,576 KB per GB) * (1 + 5% for attachment metadata)	3 GB storage

To calculate your *true* storage needs, there are additional factors to consider:

- Annual rate of increase of student population
- Attachment retention and archival policy (for example, the number of years after graduation that an attachment saved)
- Data back-up strategy implemented
- File compression or encryption implemented on the storage device

All of these factors should be considered to ensure a seamless and uninterrupted utilization of PowerSchool Document Attachment. PowerSchool also recommends that you review your network bandwidth if implementing this feature, since files of varying sizes being uploaded and downloaded throughout a typical day may demand increased network bandwidth.

Note: PowerSchool Document Attachment requires the implementation of SSL. For more information on implementing SSL for PowerSchool see **Knowledgebase article 8476** available on PowerSource.

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.

- 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 PowerSchool 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 Guidelines: Network bandwidth will vary by district based on a myriad of different factors such as network type and configuration, and district-by-district usage patterns. The following data can be used as a starting point for calculating your district-level needs, and is based on network traffic of sampled PowerSchool pages:

    o Up to 3,000 Students: 1.52 Mbs
    o 3,000 to 7,000 Students: 3.55 Mbs
    o 7,000 to 15,000 Students: 7.61 Mbs

Client Software Support

Tablets

PowerSchool 10.x supports the following tablets for standard delivered web pages.

Device	Operating System	Browser
iPad 2, 3, 4, Mini, Air, Pro	iOS 8 or greater	Latest two Safari versions
7" – 10" Android Tablets 1024dp × 768dp minimum resolution	Android 4 or greater	Latest two Chrome versions
Microsoft Surface Tablets 1024dp × 768dp minimum resolution	Windows 8.1 or greater	Latest two Edge versions
Chromebooks	ChromeOS 36 or greater	Latest two Chrome versions

Note: Amazon Kindle Fire and Barnes & Noble Nook are currently not supported. Additionally, some PowerSchool features such as Visual Scheduler, ReportWorks Developer, Scheduling Engine, and the creation of seating charts are not intended for use on a mobile device, and are therefore not supported.

Laptops and Personal Computers

PowerSchool 10.x supports the following browsers. Older browser and operating system combinations may continue to operate properly, but are no longer supported.

Windows Browsers
Latest two versions of Edge
Internet Explorer 11
Latest two versions of Firefox (including most current ESR release)
Latest two versions of Chrome
Mac Browsers
Latest two versions of Safari
Latest two versions of Firefox (including most current ESR release)

Latest two versions of Chrome
Chromebook (except PowerTeacher Gradebook and ReportWorks)
Latest two versions of Chrome OS

Note: PowerTeacher Gradebook is currently not supported on Internet Explorer Metro.

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, PowerSchool 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.

Note: Districts using Mac OS X 10.9 or greater for scheduling should refer to **Knowledgebase article 65782** available on PowerSource for installation instructions.

Java Client

PowerSchool 10.x requires Java Client version 8.0; Java 9 is not yet supported. To ensure a secure PowerSchool we strongly encourage customers to set Java client to auto-update. The following chart can be used to help manage when and where Java client is installed.

Function	Java Client Requirement
PowerTeacher Pro	Not Required
ReportWorks Developer	Required
Old PowerTeacher launch method (Java webstart)	Required
New PowerTeacher Gradebook installer (launch button)	Not Required

PowerTeacher Pro

For districts or teachers using the new PowerTeacher Pro gradebook, the Java client is not required. While client hardware requirements are not different between PowerTeacher and PowerTeacher Pro, the best performant experience will be achieved on current-technology desktops and laptops purchased within the last three years.

Notes

Non-Production PowerSchool Environments

Customers may choose to set up a non-production environment for various purposes such as training, testing, development and off-line/snapshot reporting. 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.

Virtualization of PowerSchool Environments

Server virtualization is software technology that uses a physical server and divides its total resources across many virtual machines (VMs). Server virtualization allows technology administrators to consolidate physical resources, simplify deployment and administration of resources and environments, improve disaster recovery, and reduce power and cooling requirements.

For districts up to 15,000 enrolled students, the district may utilize virtualization for the PowerSchool application node server(s), the PowerSchool database server, the combined application node and database server, and the PowerSchool image server. In all cases, each virtual machine must have server specifications that are at least equal to the stated physical requirements in this document.

For more information, please refer to the *Virtualization Hardware and Software Requirements and Configuration Guide* available on **PowerSource**.

Note: PowerSchool does not recommend or endorse any particular server virtualization software. For support, please contact the manufacturer of the server virtualization software that you choose to implement.

Note: PowerSchool provides application support for PowerSchool when it is deployed within a virtualized server environment. However, PowerSchool does not provide direct support for the configuration and performance of virtualization technology environment itself within the definition of PowerSchool Technical Support.

Performance Assumptions

The PowerSchool Quality Assurance and Performance Team routinely tests 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 configurations ranging from 3,000 to 15,000 enrolled students:

- 20 students for every teacher.

- 100 students for every administrator.

- On average, 25 percent of the total Teacher and Administrator 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 12c database, data-files, 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).

- Disk will eventually contain five years of data for future school years.

- Disk space requirements for installations of Windows 2012 R2 and Oracle 12c.

- Standard logging configuration and backup regimen.