Schoolnet 18.0 System Requirements

This document lists the system requirements of the Schoolnet web-based platform, as well as the requirements of supporting Schoolnet desktop applications. This includes platform and browser requirements, scanner compatibility information, recommended clicker models, and details and assurances around security, disaster recovery, and reliability. Pearson reserves the right to adjust these requirements as needed over time.

Schoolnet Web Client Requirements

Hardware Requirements

The Schoolnet web application requires the following minimum platform specifications for workstations.

Schoolnet Web Client Minimum Hardware Requirements

Processor/Computer	1.0 GHz or faster 32-bit (x86) **-or-** 64-bit (x64) processor (Please review the ScanIt requirements for specific 64-bit details)
Operating System	Windows 7, Windows 8.1, Windows 10 **-or-** Mac OS X 10.11
Memory	1 gigabyte (GB) RAM (32-bit) or 2 GB RAM (64-bit) or better*
Display	XGA (1024 x 768 pixel) resolution or better

Note: Chromebook OS 49 has been tested for use with both TestNav (non-secure) and the Secure Tester app for Chromebook (which supports both TestNav and Test Tunnel).

For more details, please consult the minimum and recommended requirements for the specific operating system. The minimum requirements originate from the Windows 7 minimum requirements. Please note, Schoolnet does not require any specific storage other than what is needed by the browser for cache and temporary files, so these requirements are meant to support typical computer usage.

Browser Support

The current release of the Schoolnet application has been tested with and supports the following browsers. Older browsers may work, but have not been tested.

Schoolnet Web Client Browser Compatibility

	Windows 7	Windows 8.1	Windows 10	Mac OS X 10.11
Internet Explorer	11	11	11 or Edge	N/A
Apple Safari	N/A	N/A	N/A	9.0.3
Mozilla Firefox	46	46	46	46
Google Chrome	50	50	50	50

Some browsers not listed in this table may work with Schoolnet. However, Pearson has tested the current release only against those browsers listed in the table above. If a defect is reported with an unsupported browser, Pearson may not be able to offer a fix.

Most issues with unsupported browsers will be cosmetic. In addition, key functionality such as WYSIWYG HTML editing may not be available on unsupported platform/browser combinations.

The browser must be a Secure Socket Layer (SSL)-capable browser to successfully log in to the site to ensure that sensitive data is protected.

With any browser, JavaScript and cookies must be enabled.

Internet Explorer should NOT be used in compatibility mode. Internet Explorer 11 is now the lowest supported version of this browser.

Where there is flexibility, we recommend using either the Chrome or Firefox browser.

Additional Plug-in Requirements

The following browser plug-ins are necessary for use with specific Schoolnet application functionality.

Schoolnet Web Client Browser Plug-ins

Adobe Acrobat Reader DC 2015	Print-formatted content such as student profiles.
Adobe Flash Player 21 for your browser. For Chrome, Flash must be enabled and PepperFlash disabled.	For integration with Promethean classroom input devices (clickers).

	Required for spoken response recording.
Microsoft Silverlight 3.0	For integration of eInstruction clickers with proctor dashboard.

All required plug-ins are available via free downloads from manufacturer websites.

The use of clickers often has different implications for the software requirements. For certain clicker brands, Flash is required for the clicker integration on the test proctor page. The reason for using Flash is that it is both Mac and PC compatible and is able to make outbound requests to software running on the client that in turn communicates with the clickers. This is very specific functionality used only by districts using clickers. Flash is also required for spoken response recording in open response questions in TestNav.

For districts and users planning to use video and audio files within the Schoolnet platform, the client must also provide appropriate speakers.

Internet Connectivity Requirements

To run optimally, Schoolnet requires a full T1 or better connection from each school to the administration building, and from the administration building to Schoolnet (1.5 Mbs/sec or higher), with ports 80 and 443 open for access to the Internet. Schoolnet usage generally requires between 5-20kbp/s of bandwidth per concurrent user of the system. It is recommended that the connection never be more than 50% utilized in order to handle unexpected spikes in usage.

Mobile Software Support

The Schoolnet Assessment and Reporting solution is completely web-based, and all new development considers mobile devices. The following mobile devices are supported:

- iPads running iOS 9.3.1 with the Safari browser - The entire Schoolnet application is supported except for the lesson planner/calendar.
- Samsung Galaxy Tab 3 running Android Version 4.2.2 with Native Android or Chrome browser - We support students taking assessments in the online Test Tunnel. (This does not include taking assessments using the Secure Tester, which must be installed locally on a PC.)
- Samsung Google Nexus 10 running Android Version 5.1.1 with the Chrome browser - We support students taking assessments in the online Test Tunnel. (This does not include taking assessments using the Secure Tester, which must be installed locally on a PC.)

Browsers are in effect integrated with the version of the operating system (OS) for these mobile devices. Some features such as WYSIWYG HTML editing may not be available or may be somewhat different on mobile devices. Features such as clicker integration will be expressly disabled.

Clickers

A variety of hand-held student clickers are compatible with Schoolnet and can be used by students to respond to Schoolnet test questions. The clickers listed below are recommended and have been tested by Schoolnet. Installation requirements are noted as well.

eInstruction Clickers

The following eInstruction clickers are supported for use in the Schoolnet proctor dashboard:

- KG3EI RF (Radio Frequency)
- KG3EI-S (CPS Spark) (Radio Frequency)
- KGEN2EI (Radio Frequency)
- Clickers must also include a screen display.
- Installation requirements: Microsoft Silverlight 3.0 or later, eInstruction device manager V.6.71.183.52459.

Insight 360 Software (for use with Turning Technologies and eInstruction clickers)

Schoolnet supports integration with the Insight 360 software from eInstruction. Tests created in Schoolnet are imported by and administered through the Insight 360 software, which supports both eInstruction and Turning Technologies devices. The student results are then sent back to Schoolnet when the test session is completed. Contact Turning Technologies for more information: http://www.turningtechnologies.com/support.

Turning Technologies devices require Insight 360 for use with Schoolnet. eInstruction devices can be run either through Insight 360 or directly through the Schoolnet proctor dashboard.

Promethean Devices

- ActivExpression 2 Model PRM-AE2-01
- Other clicker models that are compatible with the Promethean Virtual Learner Response System may also be supported. Clickers must also include a screen display.
- Installation requirements:
    - Flash 10.1 or higher must be installed
    - ActivDriver & ActivSDK Flash Extension (provided by Promethean)
    - Using the Chrome browser requires additional configuration steps for Promethean devices. You must first disable the built-in native flash player and enable the Adobe Flash player. To do so, enter "chrome://plugins" in the address bar. Under Flash, click disable on the other flash players, and enable the Adobe Flash player.
    - Step-by-step set-up instructions are available. Please contact your Schoolnet Project Manager.

SMART

- SMART PE
- SMART XE
- Installation requirements: Install SMART Education Software available on the Schoolnet release site.

Accessibility

Screen Readers

The following screen reader is supported in Schoolnet:

- JAWS 16.0 plus updates with Windows 7, 8, and 10 and Internet Explorer 11

Schoolnet Secure Tester Requirements

Some districts or schools may choose to use the Schoolnet Secure Tester, a desktop application that enables the online administration of a Schoolnet test, while at the same time preventing access to any other computer applications while in use. This application must be installed on individual workstations and configured prior to student use. Secure Tester works with both the TestNav and Test Tunnel online test platforms.

For Chromebook, the Chromebook Secure Tester app is used to run Secure Tester.

The Schoolnet Secure Tester application will run on computers that meet the following minimum requirements.

Schoolnet Secure Tester Minimum Requirements

	Windows	Mac	Chromebook
Processor/Computer	1.4 GHz or faster processor	Intel Core Duo 1.83GHz or faster processor	
Operating System	Windows 7, 8.1, and 10	Mac OS X 10.11	Chromebook OS 49
Memory	1 gigabyte (GB) RAM (32-bit) or 2 GB RAM (64-bit) or better	1 gigabyte (GB) RAM (32-bit) or 2 GB RAM (64-bit) or better	
Available Disk Space	800 MB	800 MB	

Display	XGA (1024 x 768 pixel) resolution	XGA (1024 x 768 pixel) resolution	
Software	Microsoft .NET Framework 4.5		

ScanIt and Scanners

ScanIt 8.0.0 is recommended for use with Schoolnet 18.0.

Schoolnet's proprietary ScanIt software connects a variety of TWAIN-compliant plain paper and OMR image scanners to the Schoolnet application in real time, allowing users immediate access to scanned results. Schoolnet ScanIt can work with either plain-paper scanners or OMR scanners/forms that meet the requirements listed in the following pages.

Hardware Requirements

ScanIt will run on computers that meet the following minimum requirements.

Schoolnet ScanIt Hardware Minimum Hardware Requirements

Processor/Computer	1.4 GHz
Operating System	Windows 7 and 8.1 (some scanner drivers may require a 32-bit OS)
Memory	1 gigabyte (GB) RAM (32-bit) or 2 GB RAM (64-bit) or better
Disk Space	800 MB
Display	XGA (1024 x 768 pixel) resolution or better
Internet Connectivity	Active internet connection from broadband, LAN, or cable modem source (wireless is not recommended), ports 80 and 443 open, and no firewalls preventing access to *.schoolnet.com sites.

Mac OS Virtual Machine Support

ScanIt does not run natively on the Mac OS, but can be run virtually in a Windows guest OS. ScanIt can be installed on Windows in either VMware Fusion or Parallels Desktop on the Mac OS.

Plain-Paper Scanning

Plain-paper scanning can be done on commodity optical scanners using plain paper forms that are printed using commodity printers.

Supported Plain-Paper Scanners

Most optical scanners that support the following requirements will work:

- TWAIN-compliant
- Black/white scanning at 300 dpi or above
- USB 2.0 or later
- Equipped with Automatic Document Feeder (ADF)

As a general note, the most important thing is that the scanners have legible image quality that contrasts, for instance, the difference between filled and unfilled bubbles. Schoolnet has found that some scanner models (typically multi-function devices) have poor optical scanning quality.

ScanIt includes a test-mode that will let a customer try their scanner with ScanIt if they have an existing model they are interested in testing out. Refer to the ScanIt User Guide for additional details.

Suggested Plain-Paper Scanner Models

Schoolnet does not support specific plain-paper scanners, as many makes and models of TWAIN-compliant scanners will work successfully with Schoolnet. However, the following scanners are **suggested (but not required)**:

- Brother MFC 7340 (discontinued but still available by resellers)
- Brother MFC-J6910DW
- Brother MFC-8480
- Fujitsu FI-6130 (discontinued but still available by resellers)
- Fujitsu Fi-6130Z as a locally connected scanner
- Scantron InSight 20
- Scantron InSight 30
- Canon DR-9080C (discontinued but still available by resellers)

At this time, the following Scantron scanners are **NOT** plain-paper compatible with Schoolnet ScanIt:

- InSight 4
- OpScan 3
- OpScan 4
- OpScan 4U

Network Scanner Support

Schoolnet does not support the use of ScanIt with network scanners. A network scanner is defined as a scanner that communicates with a local computer's instance of ScanIt by way of a network, as opposed to the local computer being directly connected via USB to the scanner. If clients choose to

use network scanners with Schoolnet ScanIt, they will be responsible for the set-up, troubleshooting, and ongoing maintenance of that scanner's successful communication with Schoolnet ScanIt. Schoolnet is not responsible for the setup or ongoing success of the client's network scanning solution with Schoolnet ScanIt.

Printers and Paper

Most printers that can accurately print Schoolnet answer sheets as rendered in the generated PDF are supported. Printers must render the page faithfully without a noticeable variation in contrast within a page, as is typical when a page is printed from a printer low on ink/toner. Legibility of the bar code in the upper right of the answer sheet is critical for successful scanning to ScanIt; low-quality inkjet printers or thicker papers may diminish the quality of the printed barcode.

A copy paper weight of 20 lb. or higher is recommended for use with plain paper/imaging scanners.

OMR Scanning

OMR scanning (OMR = Optical Mark Recognition) requires the use of a third-party hardware scanner and specially-made forms that are designed to be used with that device. Schoolnet is compatible with the OMR scanners and forms listed below.

Supported OMR Scanners

The following scanners use OMR to read from specially designed forms that are purchased separately from a scanner vendor. It is expected that ScanIt will generally work with any Scantron or NCS scanner with a serial port connection.

Scanmark Series	OpScan Series****	InSight Series****	Apperson
Scanmark ES2010 Scanmark ES2260 Scanmark ES2800 Scanmark 4000 Scanmark 5500 Scanmark 6500	OpScan 2 OpScan 3** OpScan 4** OpScan 4ES* OpScan 4U OpScan 6** OpScan 8**	InSight 4 (OMR Only)* InSight 4 (OMR with Imaging; this model has a USB port) InSight 4ES InSight 30***	Apperson Advantage 1200

* These models will only work with a USB emulated serial port. Please reference the document "Configuring the USB Emulated Serial Port for NCS Pearson Scanners" on the Pearson Powersource site for directions.

** These scanners only have a serial port. To connect these scanners to a computer that does not have a serial port, please use the USB-serial converter Keyspan Adapter (part number is USA-19HS). This is the **only** converter that has been tested and approved for use with these scanner models.

*** To use this model with ScanIt as an OMR scanner, port name "L_port_twain" must be selected within ScanIt's Scanner Configuration.

*** *Need to install the Pearson Runtime Module from the Schoolnet Support Downloads Site in order for OMR forms to be recognized in ScanIt.

OMR Form Pre-Slugging

Schoolnet does not offer a product that is capable of pre-slugging customer OMR forms with student, class, or test data. If a client wishes to pre-slug OMR forms, they may use software outside of the Schoolnet platform, but the use and troubleshooting of this software will not be supported by Schoolnet. There is functionality within the Schoolnet application that can generate and export a .csv pre-slug file that can be used in third-party software.

All OMR forms must ultimately include a bubbled-in Student ID and Test ID in order to be scanned correctly by ScanIt.

Supported OMR Forms

As OMR forms are often scanner-specific, this list of Schoolnet-supported OMR forms is presented in accordance with the specific scanner models with which they are compatible. Customers wishing to use other Scantron OMR forms may do so, but there may be an additional cost to support them. Customers should reach out to their Schoolnet contact for further details.

OMR Scanner Model	Supported OMR Forms
Scanmark ES2010 Scanmark ES2260 Scanmark ES2800 Scanmark 4000 Scanmark 5500 Scanmark 6500	F-18385-AS-L.800 (50 items; ABCDE) F-18387-AS-L.800 (200 items; ABCDE) F-19462-AS-L.800 (100 items; ABCDE/FGHJK) F-19464-AS-L.800 (100 items; ABCDE) F-19465-AS-L.800 (100 items; ABCDE/FGHJK)
OpScan 2 OpScan 3** OpScan 4** OpScan 4ES* OpScan 4U OpScan 6** OpScan 8** InSight 4 (OMR Only)	z095.sds Pearson 19465 (100 items; ABCDE/FGHJK) z501.sds Pearson 71737 (50 items; ABCDE) F-19462-AS-L (100 items; ABCDE/FGHJK) F-19465-AS-L.800 (100 items; ABCDE/FGHJK)

InSight 4 (OMR with Imaging; this model has a USB port) InSight 4ES InSight 30	245696 (1-50, A-E)* 245699 (1-200, A-E)* 219482 (1-100, A-E) 220608 (1-400, A-E)** 245695 (1-25, A-D)* 245677 (1-200, A-E/F-K)* 271815 (1-200, A-D/F-J)* 271063 (1-100, A-E)
Apperson Advantage 1200* Scanners with a serial # that begins with "S" will need to install a firmware update in order to scan Form 70280. Please see "Firmware Updater Instructions for Apperson Advantage 1200 S series ONLY".	Apperson 70280 (50 items; ABCD/FGHI)

* When using these forms, the Test ID will be bubbled into the field labeled "Assignment ID".

** Schoolnet only supports up to 200 items on a test.

Infrastructure Security

Infrastructure security refers to all security policies and mechanisms that apply to the physical network and hardware infrastructure. This includes network security (i.e., firewalls, routers), server security, and security for other system components. The staging environment is physically isolated from the production environment in order to minimize the risk of malicious and unauthorized traffic interrupting service.

The physical network components that tie the entire infrastructure together are built on proven technologies from reputable suppliers; they maintain high performance, reliability, and security. Security policies are adopted by the network administrator to protect the network and the network-accessible resources from unauthorized access. Schoolnet installs firewalls and edge routers at the system entry point to provide security from intruders and malicious attacks on the system. Schoolnet also implements a load balancing system to maintain full use of all available system components thereby achieving the quickest response time for the customer and maintaining consistent operation of the system even in the event of hardware failures. Finally, Schoolnet deploys high-speed Gigabit Ethernet switches to mitigate internal bandwidth problems and confirm that all services have access to full bandwidth without competing with other servers when communicating across the network. The following diagram demonstrates how the various components of our infrastructure security are related and addressed in the context of current and future needs.
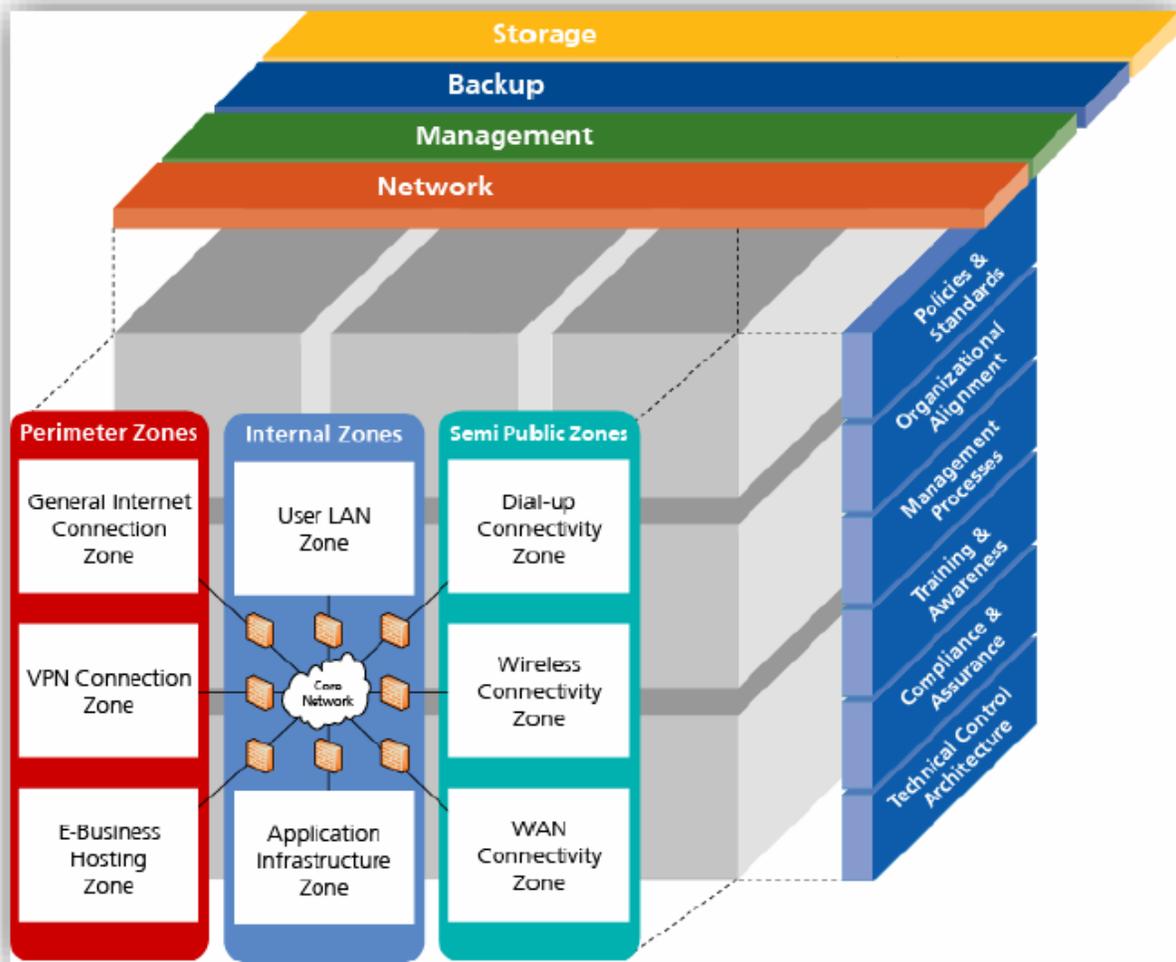
Schoolnet approaches information security using an end-to-end methodology. Each application and infrastructure component between the client (i.e., student, parent, or teacher) and the sensitive data is secured according to written best practice procedures. The communication from the front-end browser to the client is secured via an SSL connection. All the server components such as the web servers, application servers, Active Directory servers, portal servers, and database servers are hardened using the industry best practices for additional security.

Disaster Recovery, ASP Hosted

Schoolnet addresses high availability and disaster recovery through a completely redundant infrastructure (power, systems, network, etc.), multiple levels of data backups, regular testing, and an off-site secondary hosting facility. As part of the Schoolnet ASP SLA, customers enjoy guaranteed 99.9% uptime, and if a disaster is declared, a five- day Recovery Point Objective (RPO) and a 10-day Recovery Time Objective (RTO).

To meet these disaster recovery objectives, Schoolnet Hosting maintains database backups every three hours, differential system backups nightly, and weekly full system backups stored off-site with

an internationally recognized data storage facility. In the event of a declared disaster, media is recalled on a weekly basis for recovery testing on the secondary hosting platform.

Focusing on uptime with excellent response times, the Schoolnet production environment features fully redundant power feeds, battery systems, generators, load balanced and clustered servers and networking devices. All single points of failure have been removed from the infrastructure.

Reliability

Schoolnet's hosting facility is SAS 70 (Statement on Auditing Standard 70) certified. SAS 70 is the most widely used standard for Information Technology service organizations and is maintained by The American Institute of Certified Public Accountants. SAS 70 is an extremely thorough annual audit that is used chiefly to provide authoritative guidance on IT controls including:

- Control Environment
- Physical Security and Environmental Security
- Computer Operations (Backup & Storage and System Availability)
- Information Security
- Data Communications

SAS 70 Certification means that Schoolnet's ASP-hosted clients are provided with a certified-reliable data hosting environment which is audited and validated by an independent auditing agency on an annual basis.
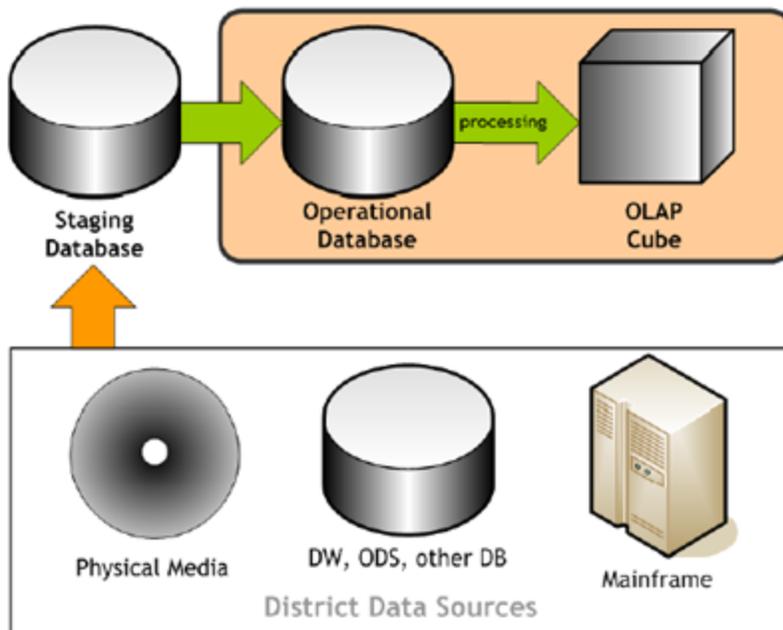
System Architecture

Software Architecture

The IMS is a single, centralized, web-based application with end-user functionality broken into modules that uses Web Services for integration with partner applications. The application tier is comprised of a business logic layer and a data access layer, while core services interact with a read-write operational database, and report objects pull data from a data cube.
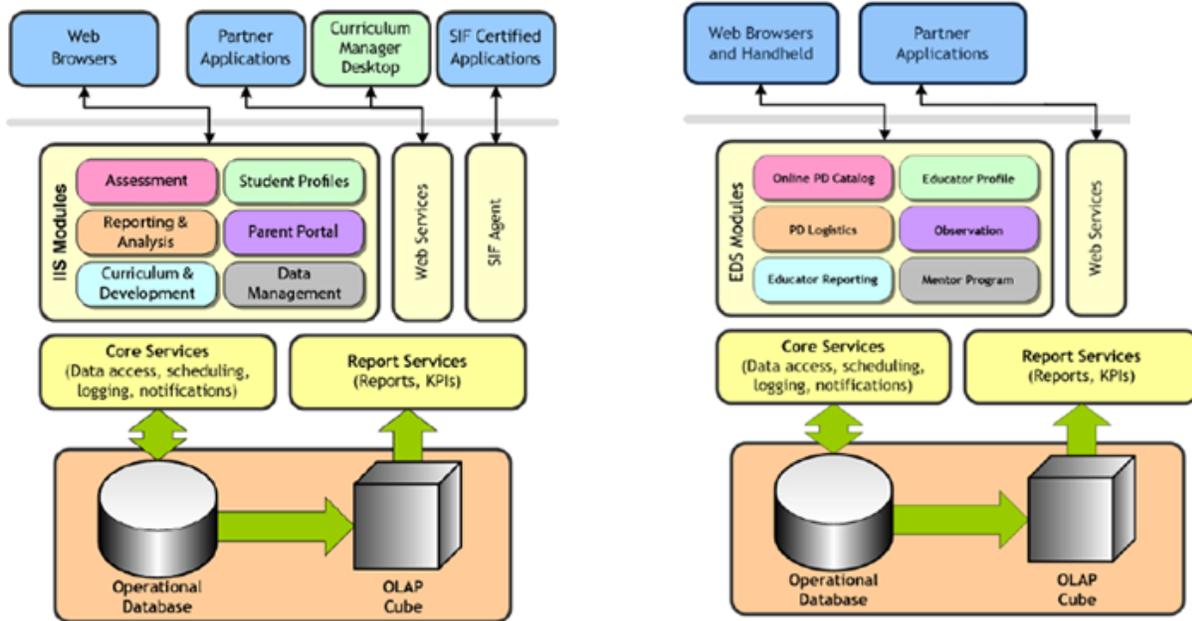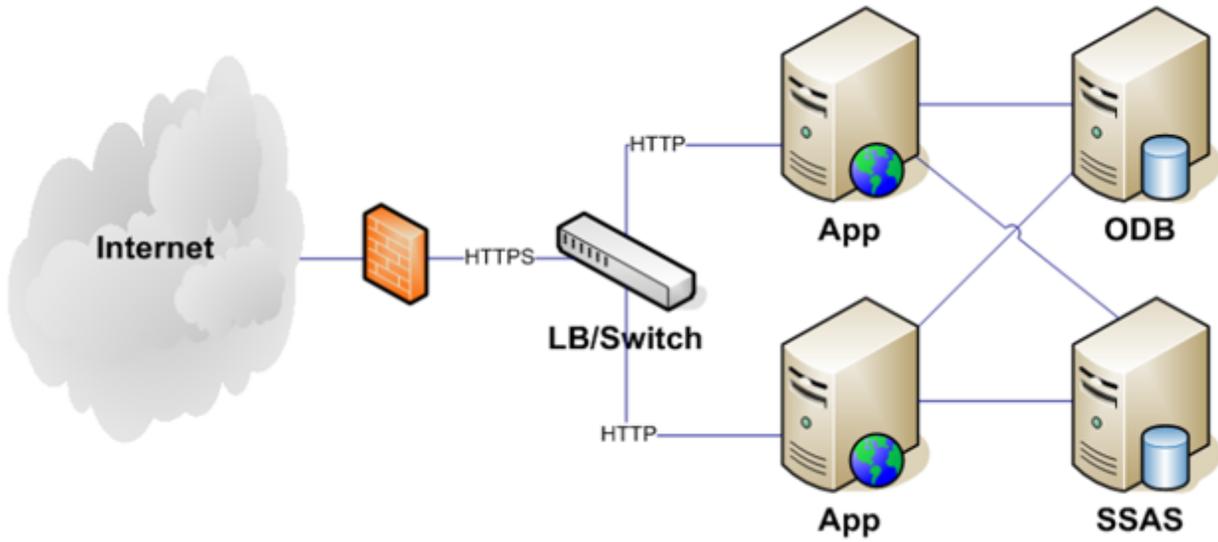
Data Architecture

IMS Data Systems use a Staging DB with a temporary ETL store for validation, and an Operational DB with the complete data set updated by ETL and UI. The OLAP Cube has a read-only reporting structure refreshed nightly. With our complete data services offering, data is loaded using SSIS through standard data loading templates. There are hundreds of data validation tasks and our team has extensive experience integrating with major SIS and assessment vendors.

Physical Architecture

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