



# Enterprise Edition and Next Generation

Version 2.0.x

## System Requirements & Technical Overview

The Scholastic Achievement Manager (SAM) is the learning management system and technology platform for all Scholastic Enterprise Edition (EE) applications. EE applications take advantage of advances in technology and provide a platform for district-wide implementation of Scholastic programs.

SAM provides administrators with the ability to implement and monitor applications on a district-wide basis based on scalable technology, as well as district-wide capabilities such as district reporting, AYP demographic grouping and reporting, and AYP demographic filtering. SAM also provides teachers with multiple supports for data-driven instruction.

### SAM Technology Platform

SAM and EE applications are built using Internet and industry-standard technology in order to provide for high levels of concurrent usage and reliability. EE applications use standard Internet components that simplify setup and optimize issues surrounding student access to servers. Clients run in standard web browsers and connect to servers over HTTP or HTTPS.

The recommended system requirements outlined in the following sections are based on a certification process in which applications are put through a rigorous set of tests to determine their stability, performance, and compatibility with each other and with a wide variety of hardware and software environments. Scholastic lists requirements that have been tested and will be supported by Scholastic should issues arise. Noncertified configurations may be compatible with EE applications but Scholastic cannot guarantee support for these configurations.

**Contact Scholastic Technical Support at 1-800-283-5974 for specific questions regarding these requirements or any of the information contained in this document.**



## **Servers**

All EE programs require a connection to a SAM Server. A SAM server combines the functions of an applications server (which runs the programs) with a database server (which manages and stores the data). In some implementations involving multiple SAM servers, an aggregation server may be deployed to pull together all student data from across the district into a single reporting database.

All EE programs (including *READ 180* Next Generation) use browser-based clients. Therefore, large media files (video, audio, animations) must be sent to the client over the network. To reduce network congestion, Scholastic recommends installing one or more Scholastic Media Accelerators (SMA) (*page 5*). The SMA is free software provided by Scholastic that sets up media caching on a district server.

System requirements for a SAM Server are as follows:

- **Operating System:** Macintosh® OS X Server 10.4.11 (Intel only) thru Macintosh OS X 10.6.8; Windows® Server 2003, 2008 (32 or 64 bit); Novell SUSE® Linux Enterprise Server 10 or 11 (32 bit); Scholastic recommends the use of 64-bit operating systems.
- **Memory:** Minimum 4GB of RAM (more for higher concurrency levels)
- **CPU:** Minimum Intel Xeon dual-core (higher speed/more cores for higher concurrency levels)
- **Hard Drive:** Minimum 20 GB free space for single school servers, 200GB or more for large multi-school servers.
- **Internet:** EE v2.0.x requires all SAM servers to have Internet access.

Customers hosting their EE applications from the Scholastic Data Center do not require a SAM server in the district (see *page 7*).

Scholastic recommends the use of multi-core Intel® Xeon® processors (or equivalent) operating at 2.0 GHz or better for servers. *Faster processors, more cores, and more memory all contribute to the ability of the server to handle higher numbers of concurrent users and larger databases.*

EE v2.0.x programs have been certified for use with VMWare ESX.

Scholastic EE programs may be installed on virtual servers using virtualization software such as VMWare ESX. Resources for the Scholastic VM should be dedicated, not shared. Please schedule a consultation with Scholastic Technical Services if you are planning a deployment using virtual servers.

Scholastic EE programs are **not** supported on servers using the following operating systems:

- Windows 2000 Server, Windows NT
- Mac OS X Server 10.0 through 10.4.10.x
- Novell Netware
- Novell SUSE Linux Enterprise Server 9
- Novell SUSE Linux Enterprise Server 11 (64 bit)

Scholastic EE programs are **not compatible** with Power PC Macintosh computers or iPads.

For installations that serve a large number of concurrent users or 100,000+ active student accounts, additional application servers may be required (see *Concurrency, page 4*).

**Please contact Scholastic Technical Support at 1-800-283-5974 with questions regarding your district's servers.**



## Workstations

Enterprise Edition v2.0.x programs run on workstations that meet the following requirements:

### Student Workstations

- **Browser:** Internet Explorer 7.x , 8.x or 9x, Safari 4.x or 5.x, or Firefox 3.x or later
- **Operating System:** Macintosh OS X 10.4.11 (Intel only) thru Macintosh OS X 10.6.8; Windows XP SP3, Windows Vista Professional, Windows 7 Professional
- **Memory:** 512MB to 1GB of RAM, based on OS version
- **CPU:** Intel dual-core or later (PPC Macs not supported)
- **Network:** Network Interface Card supporting TCP/IP (wireless networks, including 802.11a, 802.11g, or 802.11n, are supported, but application performance may be limited by the network's bandwidth capacity)
- **Screen:** 1024x768 resolution or higher
- **Plug-ins:** Flash 10.2 or later (set to allow the microphone), Adobe Reader or Adobe Acrobat 7 or later
- **Other:** Headset w/microphones required for *READ 180* Next Generation, *READ 180* Enterprise Edition, *System 44*, *ReadAbout*, *FASTT Math*, *Fraction Nation*, and *Scholastic Phonics Inventory*.

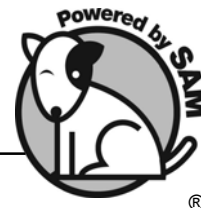
### Teacher Workstations

- **Browser:** Internet Explorer 7.x 8.x or 9x, Safari 4.x or 5.x, or Firefox 3.x
- **Operating System:** Macintosh OS X 10.4.11 (Intel only) thru Macintosh OS X 10.6.8; Windows XP SP3, Windows Vista Professional, Windows 7 Professional
- **Memory:** 512MB to 1GB of RAM, based on OS version
- **CPU:** Intel dual-core or later (PPC Macs not supported)
- **Network:** Network Interface Card supporting TCP/IP (wireless networks, including 802.11a, 802.11g, or 802.11n, are supported, but application performance may be limited by the network's bandwidth capacity)
- **Screen:** 1024x768 resolution or higher
- **Plug-ins:** Flash 10.2 or later (set to allow the microphone), Adobe Reader or Adobe Acrobat 7 or later

Thin Client workstations have not been certified and are not recommended for EE programs.

Enterprise Edition v2.0.x supports a wide range of client workstations running many different processors and operating systems. As a general rule, any workstation or laptop purchased in the last four years should be capable of running any Enterprise Edition application. Districts considering using older workstations should consider the following factors:

1. CPU clock speed is not a reliable indicator of relative performance. The slowest Intel® Core 2 Duo is more powerful than the fastest Pentium® 4. A Core 2 Duo @ 2.13GHz is almost twice as fast as a P4 @ 2.8GHz. Workstations that run an Intel Pentium M, Pentium D, or Intel Celeron® must at minimum have a clock speed and RAM that are the same or greater than what is recommended for a Pentium 4.
2. Workstations, laptops, or netbooks with Intel Atom processors (or equivalent) may or may not be suitable for running Enterprise Edition applications depending on the processor's version, clock speed, and supporting hardware. Scholastic recommends testing any Atom-based system with the application(s) you intend to use.
3. The table below provides general guidelines for determining whether your existing workstations are suitable for use with EE programs (including *READ 180* Next Generation):



**Processor Brand Name**

<ul style="list-style-type: none"> <li>▪ Intel 2x Core 2 Extreme</li> <li>▪ Intel Core i7</li> <li>▪ Intel Core 2 Quad</li> <li>▪ AMD Phenom</li> <li>▪ Intel Core 2 Duo</li> <li>▪ Dual-core Celeron 740</li> <li>▪ Intel Pentium EE</li> <li>▪ AMD Athlon II X2</li> </ul>	<p>FASTER</p>	<p>Above this line is fine regardless of CPU spec</p>
<ul style="list-style-type: none"> <li>▪ Intel Atom</li> <li>▪ AMD Athlon 64</li> <li>▪ Pentium dual-core</li> <li>▪ Intel Pentium D</li> <li>▪ AMD Athlon X2</li> <li>▪ Intel Pentium 4</li> </ul>		<p>In this zone, the CPU needs a clock speed of ~2.8GHz or better for <i>System 44</i> and <i>SPI</i> or <i>READ 180 2.0.x</i> or Next Generation. (1.66 GHz for the Intel Atom)</p>
<ul style="list-style-type: none"> <li>▪ Intel Celeron</li> <li>▪ Intel Pentium III</li> <li>▪ AMD Athlon B</li> <li>▪ AMD K6</li> <li>▪ Intel Pentium M</li> </ul>	<p>SLOWER</p>	<p>Anything below this line is not recommended regardless of CPU speed</p>

GHz numbers are only comparable within a processor family. A 2.8GHz P4 is faster than a 2.0GHz P4, but a 1.8GHz Core 2 Duo is faster than either P4. In general, more cores means faster, a larger L2 Cache means faster, and within a family higher clock speed (GHz) is faster.

**A Note Regarding Netbooks:** In the past two years, netbooks (laptop-format miniature computers typically configured with an Intel Atom-class processor, Windows 7, Vista, or XP, reduced local storage, 1 GB of RAM and a small display) have been gaining in popularity. Some models of netbooks are able to run EE programs successfully. Other models are not compatible because of inadequate local storage, underpowered processors, or screens not capable of displaying a minimum resolution of 800 x 600 (*READ 180*, *System 44*® and *Scholastic Phonics Inventory* require a minimum of 1024 x 768). In particular, Linux-based netbooks or netbooks with a maximum screen resolution of 1024 x 576 are not suitable for use with EE programs. Because of persistent reports from customers of problems with netbooks from many manufacturers, Scholastic does not recommend the use of netbooks with EE programs. **Contact Scholastic Technical Support with questions regarding specific netbooks.**

## Browser Settings

All workstation browsers must have the following settings enabled:

- **Flash:** Should be version 10.2 plug-in (enabled by default) and must not be disabled;
- **Java:** Should be JavaScript (enabled by default) and must not be disabled;
- **Pop-Up Blockers:** Must be disabled, or Student and Educator Access pages excepted;
- **Security Level Settings:** Default settings supported; IE Maximum Security levels not supported;
- **Images Enabled:** Default settings are supported; Image Display must not be turned off;
- **Privacy Settings:** Default settings supported; Maximum Privacy Setting (disabling cookies) not supported.
- **Mixed Content (Hosted Customers):** Should allow mixed content (e.g. http:// and https://).



## Media Considerations

Starting with EE v2.0, media (CD or DVD-based media assets) must be installed on a server, not the individual student workstations. In small deployments, media may be served directly from the SAM server. For larger deployments where network bandwidth may be limited, the media may be installed on a media server close to the student workstations using a Scholastic Media Accelerator.

## Scholastic Media Accelerator (SMA)

The Scholastic Media Accelerator (SMA) is new software that can be installed on a separate server and controls all media for EE programs by creating a cache server to allow for faster delivery of media over the network.

Scholastic **recommends** districts with low available bandwidth or districts that use Scholastic Hosting Services install the SMA. Additionally, districts with low available bandwidth and high concurrent usage of Scholastic programs may also wish to install the SMA. Districts that wish to move media traffic off of central servers should also consider installing the SMA.

Districts should evaluate their deployment to determine if it is necessary to install the SMA, and to determine where it should be installed. Please contact Scholastic Technical Services to discuss your deployment.

The SMA requires a server with the following characteristics:

- **Operating System:** Windows XP SP3, Windows 2003 or 2008; Macintosh OS X 10.5 or later
- **Processor:** Pentium 4 processor 2 GHz or higher; Intel-based Mac
- **Memory:** Minimum 2.0 GB of RAM
- **Hard Drive:** Minimum 25 GB available drive space
- **Drive Speed:** 7200 rpm drive recommended
- **Network:** 100 megabit, Gigabit ethernet recommended

**NOTE:** SMA currently does not run on Linux-based servers.

SMA servers cannot contain any traces of SAM software, therefore aggregation servers cannot double as SMA servers.

## Concurrency

Concurrency refers to the number of simultaneous users that may be logged in to a program before there is a noticeable reduction in the program's responsiveness.

For certification purposes, Scholastic benchmarks using a Quad-Core Xeon server with 16GB of RAM operating over a high-speed network. In this configuration, SAM is capable of supporting 700 concurrent users in Fraction Nation<sup>®</sup>, 750 concurrent users in *READ 180* and *System 44*, and 1000 concurrent users in all other applications. These benchmarks were established by simulating a district infrastructure with high-speed WAN, gigabit ethernet switch, and 100Base-T connections to all workstations from the servers described on *page 2*.

These concurrence levels represent a best-case scenario. Real-world performance may be considerably lower as concurrency is affected by many factors, including:

- Network bandwidth across the enterprise
- Bandwidth utilization
- Packet prioritization availability
- Firewall configurations
- Processor speed on the server



- Server virtualization
- Available memory on the server
- Other server settings
- Content filtering settings
- Properly configured virus protection software

In addition, concurrency is affected by running class, school, or district reports while students are using the applications. Impact from running reports is most noticeable when running large district-level reports or when a server is running near full capacity from student sessions. Therefore, Scholastic recommends running reports whenever possible outside of normal class time.

In testing, server performance was found to be comparable on Macintosh®, Windows®, and Linux® servers. To achieve highest levels of performance, multiple cores and a 64-bit OS (e.g., Windows 2008 64 bit) are required.

**Please contact Scholastic Technical Support at 1-800-283-5974 for help with selecting and tuning an Enterprise Server to best match your installation's product mix and expected usage.**

## **Bandwidth Requirements**

As a rule of thumb, Scholastic recommends an average of 100 kbps of bandwidth per active workstation, bearing in mind that *average*, *peak*, and *initial* bandwidth requirements vary greatly depending on the product and the student, teacher, or administrator usage. For example, *READ 180* uses only 4.4 kbps on average over a 20-minute session, but during Zone transitions in the software, as well as login and logging off, bandwidth can briefly spike to over 100 kbps. Similarly, uploading a long student recording will momentarily use significant bandwidth. Over a T3 connection (45 MB/s) this upload may only require a few milliseconds, but over a T1 connection (1.5 MB/s) the network could be saturated for several seconds.

No matter how fast a network you have between workstation and server, if other bandwidth-intensive activities (VoIP, streaming video, audio downloads, database backups, etc.) are running anywhere on the network at the same time, performance on EE programs (including *READ 180* Next Generation) may suffer. For this reason, Scholastic recommends the use of packet shaping techniques on heavily trafficked networks.

EE programs operate over TCP/IP networks including wireless (802.11.a, g, n). When employing a wireless network, it is important not to overload the access point with too many connections, or student sessions may be dropped. Scholastic recommends using an industry-standard switched network for optimal performance.

**Contact Scholastic Technical Support at 1-800-283-5974 for specific questions regarding bandwidth concerns.**

## District-Wide Deployment Options

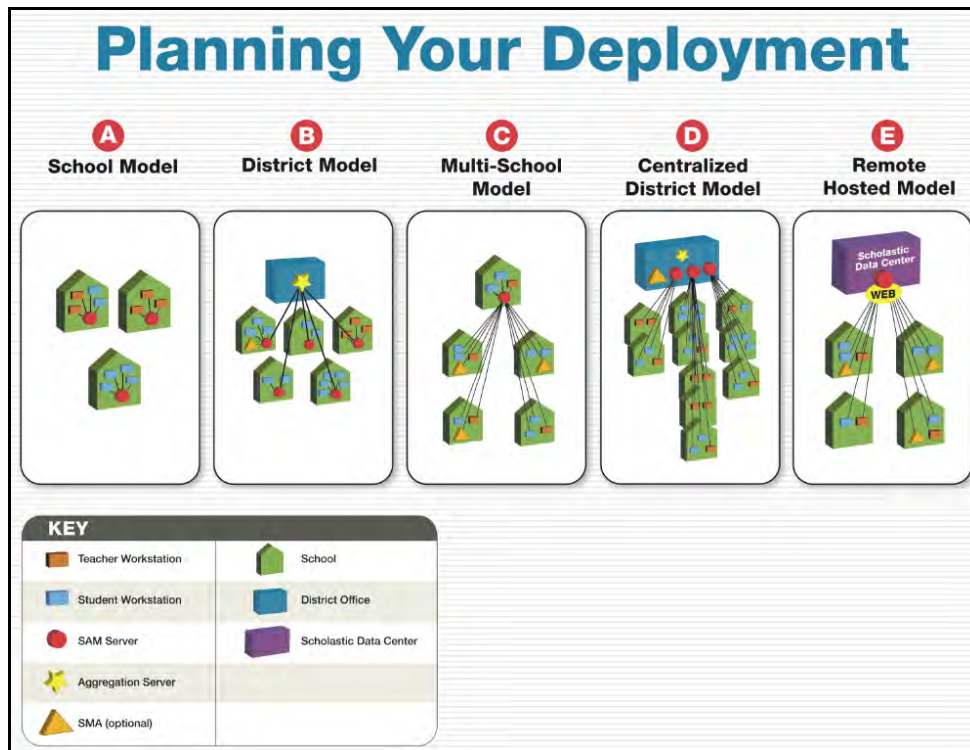
Enterprise Edition programs (including *READ 180* Next Generation) are designed for flexibility. SAM and EE applications may be deployed using one of five basic deployment options or configurations, depending on the district's bandwidth, infrastructure, hardware CPU and memory, and the estimated level of concurrent usage.

Local and Web Hosted deployments require:

- **Student workstations** in a classroom or computer lab (desktops or laptops)
- Teacher workstations (desktop or laptop)
- Depending on deployment, an SMA may be needed to offload media delivery (*page 5*).

Local deployments also require:

- One or more **SAM servers** networked to the workstations
- A **data aggregation server** that can receive student data from multiple SAM servers to create district-wide reports. (If aggregation is not desired, or all schools are supported by one SAM server, no aggregation server is needed.)



- **Option A School Model (Local Application Server[s] and no Data Aggregation Server):** Recommended for districts or schools that do not have high-speed infrastructures and have no desire to aggregate data. There are no district-wide reporting or data aggregation capabilities since this option does not include a data aggregation server.
- **Option B District Model (Local Application Server[s] and Centralized Data Aggregation Server):** Recommended for districts that deploy application servers locally but also want to run district-wide reports. SAM aggregation tools may be used to consolidate data from multiple application servers into a single aggregated database at a central location.



- **Option C Multi-School Model (Centralized Application Server[s] and no Data Aggregation Server):** Recommended for districts with high-speed infrastructures that have a centralized application server capable of supporting multiple schools. Depending on concurrency, multiple centralized application servers may need to be employed.
- **Option D Centralized District Model (Centralized Application Server[s] and Data Aggregation Server):** Recommended for districts with high-speed infrastructures and multiple centralized application servers, each capable of supporting multiple schools. Data from the application servers may then be aggregated to a district-wide aggregation server.
- **Option E Scholastic Hosted Model:** Scholastic Hosting Services and Scholastic Web Subscriptions use a Scholastic data center to host your applications, with workstations connecting to the data center over the Internet. There are no school or district servers (though some districts may still require one or more SMAs). This option is recommended for districts that want to eliminate the cost of installing and maintaining local SAM servers, as well as Novell Netware districts or any district moving toward an ASP or SaaS deployment model. No aggregation server is required.

## Data Management

See the [SAM Data Management Manual](#), available at the [Scholastic Education Product Support](#) website, [www.scholastic.com/sam/productsupport](http://www.scholastic.com/sam/productsupport), for information on data management; aggregation; data migration; importing, exporting, or transferring data; or backing up EE systems.

**Contact Scholastic Technical Support at 1-800-283-5974 for specific questions regarding moving data within SAM, from one SAM installation to another, or from Student Management Systems into SAM.**