



# SAM Suite System Requirements & Technical Overview

July, 2021

## Student Achievement Manager and SAM-Based Programs

The Student Achievement Manager (SAM) is the learning management system and technology platform for HMH's SAM-based programs. SAM provides administrators with the ability to implement and monitor applications on a district-wide basis, such as district reporting, adequate yearly progress (AYP), demographic grouping and reporting, and AYP demographic filtering. For the teacher, SAM provides multiple supports for classroom management and data-driven instruction.

### **SAM Platforms**

Student Achievement Manager (SAM)	HMH Leader Central™
SAM Central	HMH Teacher Central™
Next Generation Dashboards	HMH Tech Central

### **SAM-Based and HMH Central-Based Products**

<i>English 3D</i>	<i>READ 180</i> Universal (including Workshop Assessments)
<i>iRead</i> ®	<i>Reading Counts!</i>
<i>MATH 180</i> ® (including mSkills)	<i>Reading Inventory</i>
<i>Math Inventory</i>	<i>System 44</i> Next Generation
<i>Phonics Inventory</i>	

## Technology Platform

SAM and SAM-based programs are built using Internet and industry-standard technology in order to provide capacity for high levels of concurrent usage and reliability. It uses 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.

SAM and SAM-based programs require a persistent connection to a server hosted by an HMH data center. This server, the SAM Server, combines the functions of an application server (running programs) with a database server (managing and storing data).

SAM and SAM-based programs use browser-based clients. This requires large media files (video, etc.) be sent to the client over the network. A careful evaluation of the district's wireless infrastructure is strongly recommended to assure that program bandwidth requirements are adequately met. See the [Technical Implementation Guide](#) (available at [hmhco.com/product-support](http://hmhco.com/product-support)) for more information.

The recommended system requirements outlined 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. The requirements listed in this document have been tested and will be supported by Technical Support should issues arise. Noncertified configurations may be compatible with SAM and SAM Suite software, but performance and support is not guaranteed for these configurations.



## Browser and Operating System Requirements

See the chart below for supported and recommended pairings of browser and operating systems.

Platforms				
BROWSER AND OPERATING SYSTEM COMPATIBILITY for Ed: Your Friend in Learning, ThinkCentral and Holt McDougal Online				
	EDGE LATEST	CHROME LATEST	SAFARI LATEST	FIREFOX LATEST
ChromeOS	Not supported by HMH	Recommended (Continually tested to ensure compatibility)	Not supported by HMH	Not supported by HMH
Win 8.1	Supported Combination (Committed to supporting compatibility)	Supported Combination (Committed to supporting compatibility)	Not supported by HMH	Supported Combination (Committed to supporting compatibility)
Win 10	Recommended (Continually tested to ensure compatibility)	Recommended (Continually tested to ensure compatibility)	Not supported by HMH	Recommended (Continually tested to ensure compatibility)
Mac 10.14	Not supported by HMH	Supported Combination (Committed to supporting compatibility)	Supported Combination (Committed to supporting compatibility)	Supported Combination (Committed to supporting compatibility)
Mac 10.15, Mac 11	Not supported by HMH	Supported Combination (Committed to supporting compatibility)	Recommended (Continually tested to ensure compatibility)	Supported Combination (Committed to supporting compatibility)
iOS 12	Not supported by HMH	Supported Combination (Committed to supporting compatibility)	Supported Combination (Committed to supporting compatibility)	Not supported by HMH
iOS 13, iOS 14	Not supported by HMH	Supported Combination (Committed to supporting compatibility)	Recommended (Continually tested to ensure compatibility)	Not supported by HMH
Android 8.1 and above	Not supported by HMH	Supported Combination (Committed to supporting compatibility)	Not supported by HMH	Not supported by HMH

\* - will no longer be supported after July 1

- Recommended (Continually tested to ensure compatibility)
- Supported Combination (Committed to supporting compatibility)
- Not supported by HMH

All devices must have 7" screens or higher to be supported

[Adobe Flash Announcement: learn about Adobe's Flash retirement announcement and program implications.](#)

Operating Systems and browsers are frequently updated and HMH attempts to maintain alignment with these updates as soon as possible to support the best learning experience.

### SSL Connections

Hosted SAM Servers use a Secure Socket Layer (SSL) connection to communicate with workstations. Hosted SAM Servers are automatically updated with new and updated software and backed up nightly, and they use encrypted format to store all user data. **Contact Technical Support Contact Technical Support at 1-800-283-5974 with questions.**



## Additional Workstation Requirements

SAM and SAM Suite software run on workstations that meet these additional requirements:

- **Processor:** Intel dual-core or later (Power PC Macintosh computers not supported)
- **Network:** Network Interface Cards supporting TCP/IP (wireless networks, including 802.11a, 802.11g, or 802.11n, are supported, but performance may be limited by the network's bandwidth capacity). **See page 6 for important information regarding concurrency.**
- **Screen:** 1024 x 768 resolution or higher
- **Plug-ins:** Adobe Flash (version 32 recommended; must not be disabled), Adobe Reader or Adobe Acrobat 9 or later. **See page 2 for important information regarding Adobe Flash.**
- **Other:** Headphone and microphone required for use with *READ 180* Universal, *System 44* Next Generation, and *iRead*; headphones required for *MATH 180* and *Phonics Inventory*. Printer for teacher, DVD player(s) for *System 44* Next Generation audiobooks and anchor videos. Check hardware documentation for compatible accessories.

SAM and SAM-based programs support 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 SAM Suite software. Districts using older workstations with Intel Atom processors (or equivalent) should consider that these workstations, laptops, or netbooks may not be suitable for running SAM Suite software. HMH recommends testing any Atom-based system with the application(s) you intend to use. Thin Client workstations, including nComputing, are not certified for SAM and SAM Suite software.

## Additional Browser Requirements

All workstation browsers must have the following settings selected:

- **Cookies:** Cookies must be enabled on all browsers.
- **JavaScript:** Must be enabled
- **Pop-Up Blockers:** Must be disabled, or Student and Educator Access pages excepted
- **Security Level Settings:** Default settings supported;
- **Images:** 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:** Browsers should allow mixed content (e.g., http:// and https://)
- **Character Set:** It is expected that Unicode UTF-8 is set as the default character set.

## Additional Requirements for *iRead*

Districts and schools using *iRead* must meet these additional requirements:

- **Network:** 2 mbps / user bandwidth recommended per student for best performance.
- **Desktop or Chromebook:** Windows 10, MacOS 10.12 or later; latest version of Google Chrome, Firefox, Microsoft Edge, or Safari; 4GB RAM; 64-bit; Web GL 2 compatible; HTML5 standards compliant.
- **Mobile Devices:** iOS 12 or later, Android 7.7 or later, 4GB RAM



### Additional Mobile Requirements

Some SAM-based programs are available in mobile-compatible forms. All mobile-compatible programs are compatible with iOS; Android- and Windows-based devices may access SAM-based programs through the device's browser. See individual program documentation at the Product Support website ([hnhco.com/product-support](http://hnhco.com/product-support)) for mobile specifications for specific programs. Mobile devices must meet the following requirements:

- **Screen:** 10-inch screen recommended. 7-inch screens with 1024x768 resolution (iPad Mini) supported. Other 7-inch screens will not display all content. Smaller devices, including iPhones, are not supported.
- **Storage:** Approximately 2 GB of space per app; some apps require less space.
- **Other:** Headphone and microphone are required.
- **Notes:** SAM-based programs are compatible with Samsung Galaxy 10.1 and Nexus 10-inch. SAM and SAM-based programs **do not** support apps that emulate Flash browser support on the iPad. Windows 8.1 and Windows 10 browser-based programs are not fully compatible with touch screens and mobile keyboards. External keyboards and pointers are required.

HMH supports AirWatch for mobile device management (MDM). Any MDM that can create and set keys may be used to manage software on mobile devices.

### Chromebooks & Google Tablets

Chromebooks and Google Tablets are manufactured under license from Google that use Google's operating system, Chrome OS, and the Chrome browser. SAM-based programs are compatible with Chrome OS under the following guidelines:

- Chrome OS version 70 or later
- Intel processor
- 10 inch or larger screen (no smaller devices or mobile phones)
- Headphone and microphone
- Browser and Flash settings to match workstation requirements. Some changes to browser or system settings (i.e., browser full-screen, hiding toolbar, etc.) may be required.

Some browser-based programs are not fully compatible with touch screens and virtual keyboards; an external keyboard or pointer is required with some Chromebook models.

**Recommended:** Set Chrome OS to the **Stable** channel in the Chromebook settings. On this channel, Google will push an update to Chrome OS approximately every six weeks. These updates may result in performance changes; in such cases HMH will identify the root cause and resolve the issue, which may include settings changes, Chrome OS updates, or software updates.

Product compatibility on Chromebooks and Google Tablets is tested using various hardware models from different manufacturers. Specific model information is available from Technical Support.

### Netbooks

**Not Recommended:** Netbooks are not compatible due to inadequate storage, underpowered processors, or screens not displaying a minimum resolution of 800x600. Linux-based netbooks or netbooks with a maximum screen resolution of 1024x576 are not suitable for SAM-based programs.



## Concurrency

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

Data Centers that host SAM, HMH Teacher Central, and SAM-based programs (including *READ 180* Universal, *English 3D*, *iRead* and *MATH 180*) are constantly adjusted to accommodate concurrent users. However, end-user performance will be affected by the factors listed above, particularly bandwidth. Your district technical audit provides specific bandwidth information and recommendations. For more information on technical audits, see the [Technical Implementation Guide](#) (available at [hnhco.com/product-support](http://hnhco.com/product-support)).

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

## Bandwidth Requirements

SAM and SAM-based programs operates 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.

**Recommended:** Using an average of 256 kbps of bandwidth per concurrent workstation or mobile device. Average, peak, and initial bandwidth requirements vary greatly depending on the product and the usage. No matter how fast the network connection between workstation and server is, if other bandwidth-intensive activities (VoIP, streaming video, audio downloads, database backups, etc.) are running on the network at the same time, program performance may suffer. Packet-shaping techniques on heavily trafficked networks are also recommended, as well as an industry-standard switched network for optimal performance. **Contact Technical Support at 1-800-283-5974 for specific bandwidth questions.**



## Firewalls, Proxies, and Content Filters

The following is a list of all available IP Addresses used by Amazon Web Services:

- HMH Hosting Center (Amazon Web Services): <https://ip-ranges.amazonaws.com/ip-ranges.json>

The following URLs should be whitelisted to pass through firewalls, proxies, and content filters:

- adobe.com
- \*.content.hmhco.com
- \*.education.scholastic.com
- grolier.com
- \*.hmhco.com
- imports.education.scholastic.com (35.174.34.220, 54.81.113.146)
- js-agent.newrelic.com
- samconnect.scholastic.com
- \*.scholastic.com

### **For SAM Products**

- cdn.education.scholastic.com
- sam-cdn.education.scholastic.com
- samresources.scholastic.com

### **For Teacher Central Products**

- \*.intellifylearning.com
- \*.s3.amazonaws.com
- s3.education.scholastic.com
- scholasticcentraltoolbar.speechstream.net
- spaces-content.education.scholastic.com
- spaces.content.hmhco.com
- \*.teachercentral.hmhco.com

Ports 80, 443, 37282, and 1935 should be open to allow data to pass from servers to workstations. Local installations use port 55880 for workstations and 55880-55887 for servers.

Please resolve spaces-content.education.scholastic.com, spaces.content.hmhco.com, \*.s3.amazonaws.com from your network to get the specific IPs needed for your systems. IPs may change based on load, availability and proximity. HMH recommends using the URL redirect since using the IP may result in having to make adjustments continuously to your firewall.

**Contact Technical Support for a complete list of whitelist URLs as well as questions regarding firewalls, proxies, and content filters as they relate to SAM Suite software.**



## Home Access

SAM and SAM-based programs offer home or other out-of-classroom access to supplemental resources (school libraries, etc.) in some programs. Consult individual program documentation at the Product Support website ([hnhco.com/product-support](http://hnhco.com/product-support)) for detailed information on home-access options for programs. See the Workstation Requirements (*page 3*) for computer and browser requirements for home computers.

Administrators in districts whose SAM Servers are hosted in the HMH Data Center may set time access restrictions on certain programs. See *Enrolling and Managing Students Using Student Achievement Manager* on the Product Support website for more information. HMH does not provide support for devices used outside the school or district network.

## Data Management

See the *HMH Hosting User's Guide and Data Management Manual* and the Data Dictionary, available at the Product Support website ([hnhco.com/product-support](http://hnhco.com/product-support)), for information on data management, aggregation, data migration, importing, exporting, or transferring data.

**Contact 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.**