



Hawai'i

Statewide Assessment Program



System Requirements for Online Testing 2017–2018

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Section I. Introduction

This document contains basic technology requirements for online testing using American Institutes for Research's (AIR) systems for the 2017–2018 test administration.

Organization of this Manual

This document contains the following sections:

- [Supported Operating Systems for Student Testing](#)
- [Supported Web Browsers for Online Systems](#)
- [Requirements for Peripheral Equipment](#)

Other Resources

The following publications provide additional information:

- For information about installing secure browsers, refer to the *Secure Browser Installation Manual*.
- For information about network and Internet requirements, general peripheral and software requirements, and configuring text-to-speech settings, see the *Technical Specifications Manual for Online Testing*.
- For information about securing a computer before a test session, see the *Guide to Navigating the Online Administration*.
- For information about supported hardware and software for Braille testing as well as information about configuring JAWS, refer to the *Braille Requirements and Testing Manual*.

The above resources, as well as secure browsers and user guides for other systems, are available on the Hawaii Statewide Assessment Program portal (<https://www.alohahsap.org>).

Section II. Supported Operating Systems for Student Testing

This section describes the supported operating systems for online testing. For optimal performance, AIR expects all systems to have the latest minor updates and patches installed. Major updates including new versions require review and testing.



Warning: Support for New Desktop Operating Systems

Operating systems that become available but do not appear in the following tables are not supported. Do not upgrade to new operating systems on computers that will be used to administer online assessments without ensuring the updates meet the required specifications.

Desktops and Laptops

[Table 1](#) lists the operating systems and hardware required for student testing. Online testing functions effectively with the minimum requirements listed. However, the recommended specifications provide improved performance.

Table 1. Supported Desktop Operating Systems

Supported Operating Systems	Minimum Requirements	Recommended Specifications
Windows 7 (Professional and Enterprise) 8 (Professional and Enterprise) 8.1 (Professional and Enterprise) 10 (Professional, Educational, and Enterprise) Server 2008 R2, 2012 R2, 2016 R2 (thin client)	1.1 GHZ Processor 512 MB of RAM 200 MB hard drive space	1.4 GHZ Processor 2 or more GB RAM 16 or more GB hard drive space
Mac OS X 10.7–10.13	1.1 GHZ Processor 512 MB of RAM 200 MB hard drive space	1.4 GHZ Processor 2 or more GB RAM 16 or more GB hard drive

Supported Operating Systems	Minimum Requirements	Recommended Specifications
Linux Fedora 25-26 ^a LTS (Gnome) Ubuntu 14.04, 16.04 LTS (Gnome)	1.1 GHZ Processor 512 MB of RAM 200 MB hard drive space Required libraries/packages: <ul style="list-style-type: none"> • GTK+ 2.18 or higher • GLib 2.22 or higher • Pango 1.14 or higher • X.Org 1.0 or higher (1.7+ recommended) • libstdc++ 4.3 or higher • libreadline6:i386 (required for Ubuntu only) • GNOME 2.16 or higher 	1.4 GHZ Processor 2 or more GB RAM 16 or more GB hard drive space Recommended libraries/packages: In addition to the required libraries listed under minimum requirements, the following should be installed: <ul style="list-style-type: none"> • NetworkManager 0.7 or higher • DBus 1.0 or higher • HAL 0.5.8 or higher

^a Support for this version will begin upon its release.

Tablets

[Table 2](#) lists the supported tablets, operating systems, and related requirements. See the *Technical Specifications Manual for Online Testing* for information about configuring these devices for online testing.

Table 2. Supported Tablets and Operating Systems

Supported Operating Systems	Supported Tablets
iOS (iPads) 9.3, 10.3, 11.1, 11.2, 11.3	iPad 2 iPad 3 4 th Generation (Retina Display) 5 th Generation (Retina Display) iPad Air iPad Air 2
Android^a 5.1, 6.0, 7.1	Google Nexus 10 Asus Transformer Pad Asus Memo Pad Dell Venue 10 HP Pro Slate 10 Samsung Galaxy Tab 4 Education

Supported Operating Systems	Supported Tablets
Windows 8 (Professional and Enterprise) 8.1 (Professional and Enterprise) 10 (Professional, Educational, and Enterprise)	AIR supports any tablet running these versions of Windows, but has done extensive testing only on Surface Pro, Surface Pro 3, Asus Transformer, and Dell Venue.

^a For a complete list of supported Android tablets, go to <https://support.google.com/chrome/a/answer/6220366>

Chromebooks and Chromebases

[Table 3](#) lists the supported operating systems for Chromebooks and Chromebases.



About Chrome OS and Automatic Updates

While AIR actively works to support new versions of the Chrome operating system as they come out, we recommend disabling automatic updates until new versions are listed as supported. Disabling automatic updates allows AIR to review changes and address any updates that pose a potential risk to student testing.

Automatic update settings are configured in Google's admin console.



Warning: Student monitoring software (such as Hapara, etc.) may not be used during testing. This software may run on the student tablets, such as Chromebooks, when the Secure Browser has been launched in Kiosk mode, but the test coordinator, technology coordinator and/or others who may have access to the parent computer may not use these program(s) during testing. Access to students' screens via student monitoring software during testing is considered to be a test security violation.



Warning: Chromebooks have built-in accessibility support options such as ChromeVox, which allow full text (including Reading Passages) to be read to students who do not have these accommodations set in TIDE. These built-in accessibility supports may allow for non-standard administration of the assessment and result in Test Incidents. To disable these supports, please refer to the Technical Specifications Manual in alohasap.org.

Table 3. Supported Chromebooks

Supported Operating Systems	Related Requirements
Chrome OS 60+	AIR will support any device that Google actively supports for auto-update. AIR will not support any device that Google does not support for auto-update. Information on Google's auto-update policy, including currently supported devices, can be found at https://support.google.com/edu/android/answer/6220366 .

**Chromebooks Manufactured in 2017 or later**

Due to recent changes by Google, users with Chromebooks manufactured in 2017 or later who do not have an Enterprise or Education license **will not** be able to use those machines for assessments. Google no longer allows users without these licenses to set up kiosk mode, which is necessary to run the AIR Secure Browser.

This change restricting kiosk mode does not affect the Chrome operating system. You can still use any version of Chrome OS on hardware manufactured in 2016 or earlier.

**Warning: Chrome OS Tablet Mode Not Supported**

Chrome OS 64 introduced a feature called tablet mode, which offers a touchscreen environment for supported Chromebooks and for Chrome OS tablets. AIR does not support the use of tablet mode for testing.

Thin Clients: NComputing and Terminal Servers for Windows

NComputing

[Table 4](#) lists the supported hardware and software for NComputing solutions.

Table 4. Supported NComputing solutions

Supported Server Host	Supported Server Software	Supported Terminal
Windows Server 2008 R2	vSpace Server 8.4	L300, firmware version 1.11.xx
Windows Server 2012 R2	vSpace PRO 10	
Windows Server 2016 R2		
Windows 10		

Terminal Servers

[Table 5](#) lists the supported terminal servers for use with a thin client machine.

Table 5. Supported terminal servers

Supported Terminal Servers	Supported Thin Client
Windows Server 2008 R2, 2012 R2, 2016 R2	Any thin client that supports a Windows Server.

**Warning: Security Issues with Terminal Services or Remote Desktop Connections to Servers**

Using a terminal services or remote desktop connection to access a Windows Server or workstation that has the secure browser installed is typically not a secure test environment.

Section III. Supported Web Browsers for Online Systems

This section lists the supported web browsers for the 2017–2018 test year. It also addresses AIR’s secure browsers for student testing.

Supported Web Browsers by Operating System

[Table 6](#) lists the supported operating systems and corresponding web browsers for each AIR application. AIR recommends using recent versions of supported web browsers. Each application requires disabling pop-up blocking software and enabling JavaScript. Be sure to use the correct combination of operating system and web browser. For example, Windows 10 requires Internet Explorer 11 or Edge.

Table 6. Supported Web Browsers by Operating System

Operating Systems	Browsers	TA Sites, Student Practice Tests, DEI, AVA, THSS	TIDE, ORS
Windows			
7 (Professional and Enterprise)	Chrome 59+	✓	✓
	Firefox 52+	✓	✓
	Internet Explorer 11	✓	✓
8 (Professional and Enterprise) 8.1 (Professional and Enterprise)	Chrome 59+	✓	✓
	Firefox 52+	✓	✓
	Internet Explorer 11	✓	✓
8 RT	Internet Explorer 11	✓	✓
10 (Professional, Educational, and Enterprise)	Chrome 59+	✓	✓
	Firefox 52+	✓	✓
	Internet Explorer 11, Edge	✓	✓
Mac OS			
10.7-10.8	Chrome 59+	✓	✓
	Firefox 45+	✓	✓
	Safari 7+	✓	✓
10.9-10.13	Chrome 59+	✓	✓
	Firefox 52+	✓	✓
	Safari 7+	✓	✓

Operating Systems	Browsers	TA Sites, Student Practice Tests, DEI, AVA, THSS	TIDE, ORS
Linux			
Fedora 25–26 ^a LTS (Gnome)	Chrome 59+	✓	✓
	Firefox 52+	✓	✓
Ubuntu 14.04, 16.04 LTS (Gnome)	Chrome 59+	✓	✓
	Firefox 52+	✓	✓
iOS			
9.3	Safari 9	✓	
10.3	Safari 10	✓	
11.1, 11.2, 11.3	Safari 11	✓	
Android			
5.1, 6.0, 7.1	Chrome 60+	✓	
Chrome OS			
Chrome 60+	Chrome 60+	✓	

^a Support for this version is anticipated upon the completion of testing following its release.

Secure Browsers for Online Testing

[Table 7](#) lists the AIR secure browsers for each operating system. A secure browser must be downloaded and installed on each computer used for student testing. Districts that installed a secure browser with a version older than the versions listed below must uninstall it before installing the secure browser for the 2017–2018 school year. For instructions on downloading and installing the secure browsers, refer to the *Secure Browser Installation Manual*.

Table 7. Secure Browsers by Operating System

Operating Systems	Secure Browser
Windows 7 (Professional and Enterprise) 8 (Professional and Enterprise) 8.1 (Professional and Enterprise) 10 (Professional, Educational, and Enterprise) Server 2008 R2, 2012 R2, 2016 R2 (thin client)	10

Operating Systems	Secure Browser
Mac OS X 10.7–10.8 10.9–10.12 10.13	9.5 ^a 10 10.2
Linux Fedora 25–26 ^b LTS (Gnome) Ubuntu 14.04, 16.04 LTS (Gnome)	10
iOS (iPads) 9.3 10.3 11.1, 11.2, 11.3	AIRSecureTest Mobile Secure Browser
Android 5.1, 6.0, 7.1	AIRSecureTest Mobile Secure Browser
Chrome OS Chrome 60+	AIRSecureTest kiosk application

^a Secure Browser version 9.5 will be available to support Mac OS X 10.7-10.8 only.

^b Support for this version is anticipated upon the completion of testing following its release.

Delaying Firefox Updates

AIR conducts quality assurance on the most recent Firefox versions for each system except the Student Testing Site (which requires the secure browser). You should wait before installing new versions of Firefox, which could impact system performance. Delaying updates allows AIR time to review changes and verify each system works correctly with the new version.

To learn how to disable auto-updates for Firefox, see <https://support.mozilla.org/en-US/kb/forum-response-turning-auto-update>. You may need to disable auto-updates again after installing a newer version.

Available Audio Settings by Browser

Some test items play audio files, and some students have the text-to-speech (TTS) accommodation. In either case, the student should be able to adjust the audio settings for those items. Table 8 lists the browsers and their associated capability to modify such settings. Use Table 8 to ensure that you deploy a browser with the required capability.

Table 8. Available Audio Settings by Browser

Operating System	Browser	System Volume	TTS Volume	TTS Pitch	TTS Rate	Pause	Resume
Windows	Secure browser	Y	Y	Y	Y	Y	Y
	IE 11	N	N	N	N	N	N
	Edge	N	N	N	N	N	N
	Chrome ^a	Y	Y	Y	Y	N	N
	Firefox	N	Y	Y	Y	Y	N
OS	Secure browser	Y	Y	Y	Y	Y	Y
	Safari	N	N	N	N	N	N
	Chrome ^a	Y	Y	Y	Y	N	N
Linux ^b	Secure browser	Y	Y	Y	Y	Y	Y
	Firefox	N	N	N	N	N	N
	Chrome ^a	Y	Y	Y	Y	N	N
iOS	Mobile secure browser	N	Y ^c	Y ^c	Y ^c	N	N
	Safari	N	N	N	N	N	N
Android	Mobile secure browser	N	N	N	N	N	N
	Chrome ^a	Y	Y	Y	Y	N	N
Chromebook ^d	Secure browser	N	Y	Y	Y	N	N
	Chrome ^a	Y	Y	Y	Y	N	N

^a TTS features for practice tests are available on Chrome only if the client explicitly enables them.

^b TTS Tracking is not available on Linux.

^c Available for mobile secure browser version 3.4 or later.

^d Some Chromebook users may find that ChromeVox reads the non-test elements of the secure browser and the test, which poses a construct violation. Users will need to disable this before starting to test. For information on disabling ChromeVOX please see the *Technical Specifications Manual for Online Testing* available at <https://www.alohahsap.org>.

Section IV. Requirements for Peripheral Equipment

This section describes the requirements for peripheral equipment: monitors, screens, keyboards, and headphones.

Monitors and Screen Display Requirements

All supported computers, laptops, netbooks, and tablets must meet the following requirements.

Screen Dimensions

Screen dimensions must be 10" or larger (iPads with a 9.7" display are included). This means the following devices are **not** supported:

- Apple iPad Mini
- Google Nexus 7 and similar-sized Android tablets
- Netbooks with screen dimensions smaller than 10"

Screen Resolution

All devices must meet the following minimum resolution. Larger resolutions can be applied as appropriate for the monitor or screen being used.

- Desktops, laptops, and tablets: 1024 × 768
- Netbooks: 1024 × 600

Depending on the screen size, students may need to use vertical or horizontal scroll bars to view all test-related information. Students may also use the Zoom tool in the online test to enlarge the content on the screen.

Keyboards

External keyboards are strongly recommended for tablets used for testing, and some states require external keyboards for such devices. Students may use mechanical, manual, and Bluetooth-based keyboards. Some external keyboards have additional "shortcut" buttons that can create security issues. These buttons may allow students to open another application or the tablet's default on-screen keyboard. AIR strongly cautions against using keyboards that have these shortcut buttons.

Keyboards with the Android

The Android mobile secure browser requires the secure browser keyboard to disable predictive text. Therefore, any external keyboard that has a shortcut button to open the tablet's default keyboard is not permitted, as this default keyboard will override the mobile secure browser keyboard.

AIR has determined that the EZOWare Slim Full Size Keyboard contains a shortcut button that opens the default keyboard and should NOT be used with Android tablets.

Headsets and Headphones

Students may need headphones to listen to audio in online assessments, and may use headsets to record answers to tests. Below are some scenarios that require headphones or headsets.

- Students with the text-to-speech accommodation can use headphones to listen to stimuli or to test items being read aloud.
- Students with the enhanced accessibility accommodation can use headphones along with Job Access with Speech (JAWS®) or other screen reading software to complete online tests.
- Each NComputing terminal must have a USB headphone or headset when used for tests that require students to record or listen to audio.
- Students participating in ELPA21 must have a headset (with a microphone) to record responses to speaking items.

Test Coordinators should determine how many students will need headphones to ensure that there are enough available at the time of a test.

Mice

Mice on mobile devices are not supported. Wireless or wired two- or three-buttoned mice that are compatible with the operating system on desktops and laptops are supported. No other mice should be used, especially mice equipped with a "browser back" button that could potentially kick users out of a test.

Appendix A. Change Log

This Change Log can be used to identify specific changes that are made to any of the information included in the original document throughout the current school year.

Change	Section	Date
Removed Red Hat Enterprise Linux 6.5	Desktops and Laptops Table 6. Supported Web Browsers by Operating System Table 7. Secure Browsers by Operating System	8/22/17
Removed support for iOS 8.4. Added support for iOS 11.1	Table 2. Supported Tablets and Operating Systems Table 6. Supported Web Browsers by Operating System Table 7. Secure Browsers by Operating System	11/22/17
Added support for TTS on Firefox for Windows	Table 8. Available Audio Settings by Browser	11/22/17
Added footnote: TTS Tracking is not available on Linux	Table 8. Available Audio Settings by Browser	12/1/17
Added note regarding Chromebooks manufactured in 2017 or later	Chromebooks and Chromebases	12/21/17
Added iOS 11.2 Updated Chrome OS 59+ to Chrome OS 60+ Updated Chrome Browser 59+ to 60+	Table 2. Supported Tablets and Operating Systems Table 3. Supported Chromebooks Table 6. Supported Web Browsers by Operating System Table 7. Secure Browsers by Operating System	1/20/18
Removed footnote re: support for macOS 10.13 Added Secure Browser 10.2 for macOS 10.13	Table 1. Supported Desktop Operating Systems Table 6. Supported Web Browsers by Operating System Table 7. Secure Browsers by Operating System	2/4/18
Added iOS 11.3	Table 2. Supported Tablets and Operating Systems Table 6. Supported Web Browsers by Operating System Table 7. Secure Browsers by Operating System	4/3/18

Change	Section	Date
Added warning regarding "Chrome OS Tablet Mode Not Supported"	Chromebooks and Chromebases	5/1/18