

System Requirements for Online Testing

This document contains basic technology requirements for online testing using American Institutes for Research's (AIR) systems for the 2015–2016 test administrations. This document contains the following sections:

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

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 setting up a test session and logging in students to test, see the *Test Administrator User Guide*.
- For information about entering data for the Alternate Assessment for Students with Significant Cognitive Disabilities, see the *Data Entry Interface User Guide*.
- The above resources, as well as secure browsers and user guides for other systems, are available on the Ohio Assessment Systems portal (www.ohiostatetests.org).



Updates to the System Requirements for Online Testing Document

The System Requirements for Online Testing Document is periodically updated as support is added for operating systems and web browsers. The information in this document is current through the publication date. For more recent information, please refer to the [Secure Browsers](#) page.

Supported Operating Systems for Student Testing

This section describes the supported operating systems for online 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 XP (Service Pack 3)*, Vista, 7, 8.0, 8.1, 10 Server 2003, 2008, 2012 (thin client)	Pentium 4 or newer processor that supports SSE2 512 MB of RAM 200 MB of hard drive space	Pentium 4 or newer processor that supports SSE2 2 GB+ RAM 80 GB+ hard drive
Mac OS X (Intel) 10.6–10.11	Intel x86 processor 512 MB of RAM 200 MB hard drive space	Pentium 4 or newer processor 2+ GB RAM 80+ GB hard drive
Linux Fedora 19*, 20, 21, 22 openSUSE 13.1 Red Hat Enterprise Linux 6.5 Ubuntu (LTS) 12.04, 14.04	Intel x86 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 	Pentium 4 or newer processor 2 GB RAM 80 GB hard drive 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

**This platform is approaching end-of-life; AIR recommends migrating to newer platforms.*

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) 7.0, 7.1 8.0–8.4 9.2–9.3	iPad 2 iPad 3 Fourth-generation (Retina Display) iPad Air iPad Air 2
Android 4.3, 4.4, 5.0, 5.1	Google Nexus 10 Motorola Xoom Samsung Galaxy Note (2014 edition) Samsung Galaxy Tab 3 and 4 LearnPad Quarto
Windows 8.0, 8.1, 10 (Educational and Professional)	AIR supports any tablet running Windows 8.0, 8.1 Pro, and 10, but has done extensive testing only on Surface Pro, Surface Pro 3, Asus Transformer, and Dell Venue.



Warning: Guidelines for Configuring iPads

During testing, iOS devices must be placed in Autonomous Single App Mode (ASAM) or Guided Access mode to ensure a secure testing environment. Apple and the Ohio Department of Education recommend using ASAM, although Guided Access is acceptable for devices with iOS 7.0 – 8.1.2. Devices with iOS 8.1.3 or later are required to use ASAM and restrict certain features to ensure a secure testing environment. Failure to do so can lead to test security violations. Step-by-step instructions for enabling ASAM or Guided Access can be found in the *Technology Specifications Manual*.

Districts using iOS 8.3 and 8.4 should be aware of the following known issue: If a student hits the tab key on an external keyboard during testing, the AIRSecureTest App will crash. This will require the test administrator to launch the AIRSecureTest App on the device and repeat the sign-in process for the student to resume testing.

Chromebooks and Chromebases

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



About Chrome OS and Automatic Updates

AIR recommends turning off or delaying automatic updates of the Chrome operating system. Doing so allows AIR to review changes from Google and address any updates that pose a potential risk to student testing. The recommended period for delaying automatic updates is two weeks.

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

Table 3. Supported Chromebooks

Supported Operating Systems	Related Requirements
Chrome OS 41–49	See the <i>Secure Browser Installation Manual</i> for information about installing the secure browser in kiosk mode, a requirement for online 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 Terminals
Windows 2008 R2	vSpace Server 8	L300

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 2003, 2008, 2012	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.

Supported Web Browsers for Online Systems

This section lists the supported web browsers for the 2015–2016 test year. It also addresses AIR’s secure browsers for student testing.

Secure Browsers for Online Testing

[Table 6](#) 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 an older version than the versions listed below must uninstall it before installing the secure browser for the 2015–2016 school year. For instructions on downloading and installing the secure browsers, refer to the *Secure Browser Installation Manual*.

Table 6. Secure Browsers by Operating System

Operating Systems	Secure Browser
Windows XP (Service Pack 3), Vista, 7, 8.0, 8.1, 10 Server 2003, 2008, 2012	8.0
Mac OS X (Intel) 10.6–10.11	8.0
Linux Fedora 19–22 openSUSE 13.1 Red Hat Enterprise 6.5 Ubuntu 12.04, 14.04 (LTS)	8.1
iOS (iPads) 7.0, 7.1 8.0–8.4 9.2–9.3	AIRSecureTest Mobile Secure Browser
Android 4.3–5.1	AIRSecureTest Mobile Secure Browser
Chrome OS 41–49	AIRSecureTest kiosk application* <i>Districts administering the OELPA using Chromebooks must download kiosk application version 2.8+. Audio recording will not work on prior versions of the app.</i>

Supported Web Browsers By Operating System

[Table 7](#) 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 8 requires Internet Explorer 10 or 11.

Table 7. Supported Web Browsers by Operating System

Operating Systems	Browsers	TA Sites, Student Practice Tests (non-OELPA), AASCD DEI	OELPA Student Practice Tests, OELPA DEI	TIDE, ORS
Windows				
XP (SP3) ^a	Chrome 41–49	✓	✓	✓
	Firefox	Versions 10–41	Versions 31–41	✓
Vista	Chrome 41–49	✓	✓	✓
	Firefox	Versions 10–41	Versions 31–41	✓
7	Chrome 41–49	✓	✓	✓
	Firefox	Versions 10–41	Versions 31–41	✓
	Internet Explorer 10–11	✓		✓
8.0 RT	Internet Explorer 10–11	✓		
8.0 Pro, 8.1	Chrome 41–49	✓	✓	✓
	Firefox	Versions 10–41	Versions 31–41	✓
	Internet Explorer 11	✓		✓
10 (Educational and Professional)	Chrome 41–49	✓	✓	✓
	Firefox	Versions 10–41	Versions 31–41	✓
	Internet Explorer 11	✓		✓
Mac OS X				
10.6	Chrome 41–49	✓	✓	✓
	Firefox	Versions 10–41	Versions 31–41	✓
	Safari 5.1.x	✓		✓
10.7	Chrome 41–49	✓	✓	✓
	Firefox	Versions 10–41	Versions 31–41	✓
	Safari 5.1.x, 6	✓		✓

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Operating Systems	Browsers	TA Sites, Student Practice Tests (non-OELPA), AASCD DEI	OELPA Student Practice Tests, OELPA DEI	TIDE, ORS
10.8	Chrome 41–49	✓	✓	✓
	Firefox	Versions 10–41	Versions 31–41	✓
	Safari 6	✓		✓
10.9	Chrome 41–49	✓	✓	✓
	Firefox	Versions 10–41	Versions 31–41	✓
	Safari 7	✓		✓
10.10	Chrome 41–49	✓	✓	✓
	Firefox	Versions 10–41	Versions 31–41	✓
	Safari 8	✓		✓
10.11	Chrome 41–49	✓	✓	✓
	Firefox	Versions 10–41	Versions 31–41	✓
	Safari 9	✓		✓
Linux				
Fedora 19 ^a Fedora 20–22	Chrome 41–49	✓	✓	✓
	Firefox	Versions 10–41	Versions 31–41	✓
openSUSE 13.1	Chrome 41–49	✓	✓	✓
	Firefox	Versions 10–41	Versions 31–41	✓
Red Hat Enterprise 6.5	Chrome 41–49	✓	✓	✓
	Firefox	Versions 10–41	Versions 31–41	✓
Ubuntu (LTS) 12.04, 14.04	Chrome 41–49	✓	✓	✓
	Firefox	Versions 10–41	Versions 31–41	✓
iOS				
7.0, 7.1	Safari 7	✓		
8.0–8.2	Safari 8	✓		
9.2–9.3	Safari 9	✓		
Android				
4.3, 4.4, 5.0, 5.1	Chrome 41–49	✓		

Operating Systems	Browsers	TA Sites, Student Practice Tests (non-OELPA), AASCD DEI	OELPA Student Practice Tests, OELPA DEI	TIDE, ORS
Chrome OS				
41–49	Chrome 41–49	✓	✓	

^a This platform is approaching end-of-life; AIR recommends migrating to newer platforms.

Web Browser Updates

Manufacturers who release their browsers annually (Safari by Apple and Internet Explorer by Microsoft) typically make a significant number of changes. For this reason, AIR blocks new versions of these browsers from accessing the Test Administrator Sites, Student Practice Site and Data Entry Interface until they are tested and all issues are resolved. AIR intends to support a new version of a currently supported web browser within 90 days of official release.

AIR works collaboratively with Google and Mozilla on new versions of Chrome and Firefox, which are released every 6 weeks. We do not block new versions from accessing the site. New versions often work out-of-the-box without software modifications on AIR’s side, but occasionally issues will need to be resolved depending on the change from the manufacturer.

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 students use the text-to-speech (TTS) feature. The student should be able to adjust the audio settings for TTS. 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
Windows	Secure browser	Y	Y	Y	Y
	IE 10	N	N	N	N
	IE 11	N	N	N	N
	Chrome	N	N	N	N
	Firefox	N	N	N	N
OS X	Secure browser	Y	Y	Y	Y
	Safari	N	N	N	N
Linux	Secure browser	Y	Y	Y	Y
	Firefox	N	N	N	N

Operating System	Browser	System Volume	TTS Volume	TTS Pitch	TTS Rate
iOS	Mobile secure browser	N	Y*	Y*	Y*
	Safari	N	N	N	N
Android	Mobile secure browser	N	N	N	N
	Chrome	N	N	N	N
Chromebook	Secure browser	N	Y	Y	Y
	Chrome	N	N	N	N

*Available for mobile secure browser version 3.1 or later.

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 9.5" 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. 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 used for testing must have a USB headphone or headset when used for tests that require students to record or listen to audio.
- Students participating in OELPA must have a headset (with a microphone) to record responses to speaking items. Supported headsets are listed in Table 9.

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

Table 9 lists the supported headphones and headsets.

Table 9. Supported Headphones and Headsets

Model	Connector	Microphone Included	Hardware
Logitech 390 ^a	USB (wired)	Yes	All supported desktops, laptops, and Chromebases with USB port.
Panasonic RP-HT21	XBS	No	All supported desktops, laptops, and Chromebases with XBS port.

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Model	Connector	Microphone Included	Hardware
Logitech analog	3.5 mm	No	iOS, Android tablets with 3.5 mm port.
Plantronics 326 ^a	3.5 mm ^b	Yes	All supported desktops, laptops, and Chromebases with 3.5 mm port—except NComputing terminals.
Senheizer PC 151 ^a	3.5 mm ^b	Yes	All supported desktops, laptops, and Chromebases with 3.5 mm port—except NComputing terminals.
Plantronics 355 ^{a,c}	3.5 mm ^b	Yes	All supported desktops, laptops, and Chromebases with 3.5 mm port—except NComputing terminals.
Generic headphones	3.5 mm	No	All supported desktops, laptops, and Chromebases with 3.5 mm port—except NComputing terminals.
Generic headphones	USB (wired)	No	All supported desktops, laptops, and Chromebases with USB port.

^a OELPA audio recording is supported for the identified headsets.

^b These models have two connectors, one each for headphone and microphone. They require a 3.5 mm headphone splitter when used with a computer having a single speaker-microphone port.

^c This headset is orderable through AIR at <http://www.airelpa21headsets.org>.

Mice

Mice on mobile devices are not supported. Wireless or wired mice on desktops and laptops that are compatible with the operating system are supported.

Change Log

Date	Section/Element	Note
9/21/15	Supported Operating Systems for Student Testing Supported Web Browsers for Online Systems	Added support for Windows 10
9/21/15	Supported Web Browsers for Online Systems	Added support for Chrome 45 Added support for Firefox 40
9/21/15	Supported Web Browsers for Online Systems	Added <i>Available Audio Settings by Browser</i> sub-section
10/12/15	Desktops and Laptops, Supported Web Browsers By Operating System, Secure Browsers for Online Testing	Added support for Linux to include Fedora 22
10/12/15	Supported Web Browsers By Operating System	Updated references of Safari 5 to Safari 5.1
10/26/15	Chromebooks and Chromebases	Added support for Chrome 46
10/26/15	Supported Web Browsers for Online Systems	Added support for Chrome 46 Add support for Firefox 41
10/26/15	Introduction	Added note
10/29/15	Supported Operating Systems, Supported Web Browsers for Online Systems	Added support for Mac OS X 10.11
10/29/15	Supported Web Browsers for Online Systems	Updated Safari 5.1 to 5.1.x
10/29/15	Secure Browsers for Online Testing	Updated secure browser from 8.0 to 8.1 for Linux
11/13/15	Supported Operating Systems for Student Testing Supported Web Browsers for Online Systems	Added support for iOS 8.3, 8.4 and 9.0-9.1
11/13/15	Supported Operating Systems for Student Testing: Tablets	Warning added for configuring iPads
1/5/16	Secure Browsers for Online Testing	Added note about OELPA and the Chrome OS kiosk application
1/5/16	Supported Web Browsers By Operating System	Footnotes added to indicate which browsers are supported for the OELPA practice tests
1/5/16	Headsets and Headphones	Additional information added for OELPA
2/23/16	Chromebooks and Chromebases	Increased ChromeOS and Chrome browser support to 48 Added warning about TTS
2/23/16	Supported Web Browsers for Online Systems	Increased ChromeOS and Chrome browser support to 48

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2/23/16	Supported Operating Systems for Student Testing Supported Web Browsers for Online Systems	Updated iOS 9 support to only allow 9.2
3/8/16	Chromebooks and Chromebases	Removed TTS warning
3/18/16	Supported Web Browsers by Operating System	Reformatted table to make OELPA information clearer and note difference between AASCD DEI and OELPA DEI
3/29/16	Supported Operating Systems for Student Testing	Added Support for iOS 9.3 Added Support for Chrome OS 49
3/29/16	Supported Web Browsers for Online Systems	Added Support for iOS 9.3 Added Support for Chrome 49