

System Requirements for Online Testing

Updated as of 6/30/17

This document was developed by the American Institutes for Research (AIR) and contains basic technology requirements to help schools and districts prepare for online testing using AIR's Test Delivery System.

For complete information, refer to the *Technical Specifications Manual for Online Testing* and the *Secure Browser Installation Manual*. For information about Braille requirements, refer to the *Braille Requirements and Testing Manual*.

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.

Supported Operating Systems

Desktops and Laptops

Computers used for testing must have a supported operating system and meet the specifications as shown in the table below. Online testing will function effectively with the minimum requirements listed. However, faster processors and more disk space will improve performance.

Table 1. Supported Desktop Operating Systems for 2016–2017

Supported Operating Systems	Minimum Requirements	Recommended Specifications
Windows* 7 (Professional and Enterprise) 8.0 (Professional and Enterprise) 8.1 (Professional and Enterprise) 10 (Professional, Educational and Professional) Server, 2008, 2012, 2016 (thin client)	1.1 GHZ Processor 512MB of RAM 200MB of hard drive space	1.4 GHZ Processor 2 or more GB RAM 16 or more GB hard drive space
Mac OS X 10.9 -10.12 ^a 10.13 ^b	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 hard drive space
Linux Fedora 25-26 ^a LTS (Gnome) Red Hat Enterprise 6.5 Ubuntu 14.04, 16.04 (LTS)	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 	1.4 GHZ Processor 2 or more GB RAM 16 or more hard drive space Recommended Libraries/Packages: <i>In addition to the required libraries, the following should be installed:</i> <ul style="list-style-type: none"> • NetworkManager 0.7 or higher • DBus 1.0 or higher

	<ul style="list-style-type: none"> • X.Org 1.0 or higher (1.7+ is recommended) • libstdc++ 4.3 or higher • libreadline6:i386 (required for Ubuntu only) • GNOME 2.16 or higher 	<ul style="list-style-type: none"> • HAL 0.5.8 or higher
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^a Support for this version will begin upon its release.

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



Warning: Support for New Desktop Operating Systems

If a new desktop operating system becomes available after the secure browsers for this year are released and it is not listed in the above table, *it may not be supported*. **Please do not upgrade to new operating systems on computers that will be used to administer online assessments.**

Tablets

Unlike desktops, laptops, and netbooks, only specific tablets are supported. The supported tablets listed below have been tested for use with AIR’s Test Delivery System and may be used for testing. Supported tablets must run a supported operating system and have related requirements enabled.

Table 2. Supported Tablets and Operating Systems for 2017-2018

Supported Operating Systems	Supported Tablets
iOS (iPads) 9.2, 9.3 10.0 ^{11a}	iPad 2 iPad 3 4 th Generation (Retina Display) 5 th Generation (Retina Display) iPad Air iPad Air 2
Android^b 5.0, 5.1, 6.07.0 (Nougat)	Google Nexus 10 Asus Transformer Pad Asus Memo Pad Dell Venue 10 HP Pro Slate 10 Samsung Galaxy Tab 4 Education
Windows 8.0, (Professional and Enterprise) 8.1 (Professional 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.

10 (Professional, Educational and Professional)	
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- a **Support for this version is anticipated upon the completion of testing following its release.**
- b **For a complete list of supported tablets, go to <https://support.google.com/chrome/a/answer/6220366?hl=en>**

Chromebooks

Table 3 lists the supported operating systems for Chromebooks and Chromebases. 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>.

Table 3. Supported Chromebooks and Chromebases for 2016–2017

Supported Operating Systems	Related Requirements
Chrome OS 60^a	See the <i>Secure Browser Installation Manual</i> for information about installing the secure browser in kiosk mode, a requirement for online testing.

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



Alert: 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.

Thin Clients: NComputing and Terminal Servers for Windows

NComputing

NComputing solutions can be used for online testing when used with supported operating systems, server software, and terminals. For an optimal online testing experience, AIR strongly recommends using Windows 7.

Table 4. Supported NComputing solutions

Supported Server Host	Supported Server Software	Supported Terminals
Windows 2008 R2	vSpace Server 8 vSpace PRO 10	L300, firmware version 1.11.xx

**About NComputing Terminals**

AIR conducts quality testing with L300 terminals.

Terminal Servers

Terminal servers can be used for online testing when used with a thin client machine.

Table 5. Supported terminal servers

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

**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*.

Secure Browsers for Online Testing

The secure browsers must be downloaded and installed on all computers that will be used for student testing during the 2017-2018 testing year.

For instructions on downloading and installing the secure browsers, refer to the *Secure Browser Installation Manual*.

Table 6. Secure Browsers for 2017-2018

Supported Operating Systems	Supported Secure Browser
Windows 7 (Professional and Enterprise) 8.0 (Professional and Enterprise) 8.1 (Professional and Enterprise) 10 (Professional, Educational, and Enterprise) Server 2008, 2012, 2016 (thin client)	10
Mac OS X 10.9–10.12^a	10
Linux Fedora 25-26 LTS (Gnome) Red Hat Enterprise 6.5 Ubuntu 14.04. 16.04 LTS (Gnome)	10
iOS (iPads) 9.2, 9.3 10.0, 10.2 11 ^a	AIRSecureTest Mobile Secure Browser
Android 5.0, 5.1, 6.0, 7.0 (Nougat)	AIRSecureTest Mobile Secure Browser
Chrome OS 60 ^a	AIRSecureTest kiosk application

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

Supported Web Browsers by Operating System

This section provides an overview of the supported operating systems and corresponding web browsers for each AIR application. AIR recommends using recent versions of supported web browsers on all sites for maximum functionality and experience (e.g., Firefox 28, Internet Explorer 11, Chrome 45, or Safari 7). **Please note that each application requires pop-up blocking software to be disabled and JavaScript to be enabled.**



Note: Support of web browsers is also contingent on the machine's operating system.

About Firefox: AIR conducts quality assurance on the most recent Firefox versions distributed by Mozilla for each system except the Student Testing Site (which requires the secure browser). While you may update Firefox upon new versions being released, AIR encourages you to wait a few weeks to ensure that each system works correctly with the new Firefox version.

For the Student Training Test site, if you update Firefox to a new version that has not been thoroughly tested, you will receive a warning message.

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

Table 7. Supported Web Browsers by Operating System

Operating Systems	Browsers	TA Sites	Student Practice Test	TIDE	ORS
Windows					
7 (Professional and Enterprise)	Chrome 60 ^a +	✓	✓	✓	✓
	Firefox 52+	✓	✓	✓	✓
	Internet Explorer 11	✓	✓	✓	✓
8.0 RT	Internet Explorer 11	✓	✓		
8.0 (Professional and Enterprise) 8.1 (Professional and Enterprise)	Chrome 60 ^a +	✓	✓	✓	✓
	Firefox 52+	✓	✓	✓	✓
	Internet Explorer 11	✓	✓	✓	✓
10 (Professional, Educational, and Enterprise)	Chrome 60 ^a +	✓	✓	✓	✓
	Firefox 52+	✓	✓	✓	✓
	Internet Explorer 11, Edge	✓	✓	✓	✓
10 RT	Chrome 60 ^a +	✓	✓	✓	✓
	Firefox 52+	✓	✓	✓	✓
	Internet Explorer 11	✓	✓	✓	✓
Mac OS X					
10.9	Chrome 60 ^a +	✓	✓	✓	✓
	Firefox 52+	✓	✓	✓	✓
	Safari 7+	✓	✓	✓	✓
10.10	Chrome 60 ^a +	✓	✓	✓	✓
	Firefox 52+	✓	✓	✓	✓
	Safari 7+	✓	✓	✓	✓

Operating Systems	Browsers	TA Sites	Student Practice Test	TIDE	ORS
10.11	Chrome 60 ^a +	✓	✓	✓	✓
	Firefox 52+	✓	✓	✓	✓
	Safari 7+	✓	✓	✓	✓
10.12	Chrome 60 ^a +	✓	✓	✓	✓
	Firefox 52+	✓	✓	✓	✓
	Safari 7+	✓	✓	✓	✓
Linux					
Fedora 25–26 ^a LTS (Gnome)	Chrome 60 ^a +	✓	✓	✓	✓
	Firefox 52+	✓	✓	✓	✓
Red Hat Enterprise 6.5	Chrome 60 ^a +	✓	✓	✓	✓
	Firefox 52+	✓	✓	✓	✓
Ubuntu 14.04, 16.04 LTS (Gnome)	Chrome 60 ^a +	✓	✓	✓	✓
	Firefox 52+	✓	✓	✓	✓
iOS					
9.2, 9.3	Safari 9	✓	✓		
10.0, 10.2	Safari 10	✓	✓		
11 ^a	Safari 11	✓	✓		
Android					
5.0, 5.1, 6.0, 7.0 (Nougat)	Chrome 60 ^a +	✓	✓		
Chrome OS					
60 ^a	Chrome 60 ^a +	✓	✓		

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

Additional Requirements

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 x 768
- Netbooks: 1024 x 600

Depending on the screen size, students may need to use vertical and/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

The use of external keyboards is strongly recommended for tablets that will be 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.

For Android tablet users:

The Android mobile secure browser requires the secure browser keyboard to be used because the default tablet keyboard includes a row for 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 following external keyboard contains a shortcut button that opens the default keyboard and should NOT be used with Android tablets:

- EZOWare Slim Full Size Keyboard

Headphones

All students will need headphones to listen to audio in online assessments.

- Some assessments contain several items that have recorded audio.
- Students with a text-to-speech can listen to stimuli or test items being read aloud.
- Students with a Braille accommodation can use the Job Access with Speech (JAWS[®]) screen reading software.

School Assessment Coordinators should determine how many students will need headphones prior to testing to ensure that there is an adequate supply on hand.

The following headphones are supported:

- Wired headphones with a 3.5 mm connector.
- USB headphones with a wired or wireless connection.
- The following Bluetooth headphones: Logitech H800, SoundBot SB270, and ECO Sound ECO-V300.

Wired headphones with a 3.5 mm connector or USB headphones (wired or wireless) are recommended over Bluetooth, as they provide better clarity and accuracy.



Note: USB headphones are recommended, as they are typically plug-and-play devices.

Text-to-speech requires the use of the secure browser. Students who require text-to-speech for the practice tests should use the secure browser.

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.