
Chapter 1. System Requirements

CALIFORNIA
Assessment of Student Performance and Progress

Technical Specifications and Configuration Guide for CAASPP Online Testing

◆ System Requirements ◆
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Summative and Interim Assessments
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Test Operations Management System
Online Reporting System
Interim Assessment Hand Scoring System



Supported Operating Systems for Student Testing

This section describes the supported operating systems for secure online testing. A secure online testing environment is a state in which a device is restricted from accessing prohibited computer applications (local or internet-based), or copying and/or sharing test data. The purpose of this environment is to maintain test security and provide a stable testing experience for students across multiple platforms.

For optimal performance, all systems should have the latest minor updates and patches installed. Major updates, including new versions, require review and testing prior to use in California Assessment of Student Performance and Progress (CAASPP) online testing.



Warning: Support for New Major Versions of Supported Operating Systems

- New major versions of supported operating systems must be tested by American Institutes for Research (AIR) before they can be used for online testing. Do not upgrade to new major versions before support is announced officially. AIR also recommends you disable auto-updates to keep systems from upgrading automatically. See [Appendix A](#) for the operating system support plan.

Desktops and Laptops



Note: ARM-powered devices, such as the Raspberry Pi, are not supported for online testing.

Table 2 lists the operating systems and devices required for student testing in 2017–18. Online testing functions effectively with the minimum requirements listed. However, the recommended specifications provide improved performance.

Table 2. Supported Desktop Operating Systems

Supported Operating System	Supported Versions	Minimum Requirements	Recommended Specifications
Windows	<ul style="list-style-type: none"> • 7 SP1 (Professional and Enterprise) • 8.0 (Professional and Enterprise) • 8.1 (Professional and Enterprise) • 10, 10 in S mode; versions 1507–1803 (Professional, Educational, and Enterprise) • 10, version 1809 (Professional, Educational, and Enterprise) (supported upon completion of version testing and acceptance) • Server 2008 R2, 2012 R2, 2016 R2 (thin client) 	<ul style="list-style-type: none"> • 1.1 GHZ processor • 1 GB RAM (32-bit) • 2 GB RAM (64-bit) • 16 GB hard drive (32-bit) • 20 GB hard drive (64-bit) 	<ul style="list-style-type: none"> • 1.4 GHZ processor • 2 or more GB RAM • 16 or more GB hard drive space
Mac OS X	<ul style="list-style-type: none"> • 10.9–10.13 • 10.14 (supported upon completion of version testing and acceptance) 	<ul style="list-style-type: none"> • 1 GHZ processor • 1 GB RAM (32-bit) • 2 GB RAM (64-bit) • 16 GB hard drive (32-bit) • 20 GB hard drive (64-bit) 	<ul style="list-style-type: none"> • 1.4 GHZ processor • 2 or more GB RAM • 16 or more GB hard drive space

System Requirements | Supported Operating Systems for Student Testing

Supported Operating System	Supported Versions	Minimum Requirements	Recommended Specifications
Linux (64-bit or 32-bit)	<ul style="list-style-type: none"> Fedora 27–28 LTS (Gnome) Ubuntu 14.04, 16.04 LTS (Gnome) 	<ul style="list-style-type: none"> 1.1 GHZ processor 1 GB RAM (32-bit) 2 GB RAM (64-bit) 16 GB hard drive space (32-bit) 20 GB hard drive space (64 bit) 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 	<ul style="list-style-type: none"> 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

Supported Operating System	Supported Versions	Minimum Requirements	Recommended Specifications
Linux (64-bit only)	<ul style="list-style-type: none"> • Ubuntu 18.04 LTS (Gnome) 	<ul style="list-style-type: none"> • 1 GHZ Processor • 2 GB RAM • 20 GB hard drive • 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 - GNOME 2.16 or higher - Sox - Net tools 	<ul style="list-style-type: none"> • 1.4 GHZ processor • 2 or more GB RAM • 16 or more GB hard drive space

Tablets



Note: Amazon Fire tablets are not supported for online testing.

Table 3 lists the supported tablets, operating systems, and related requirements. See [Chapter 3, Hardware Configuration](#), for information about configuring these devices for online testing.

Table 3. Supported Tablets and Operating Systems

Operating System	Supported Version	Supported Tablets
iOS (iPads)	<ul style="list-style-type: none"> • 10.3 • 11.4 • 12 (supported upon completion of version testing and acceptance) 	<ul style="list-style-type: none"> • 4th generation (retina display) • 5th generation (retina display) • 6th generation (retina display) • iPad Air • iPad Air 2 • iPad Pro
Android	<ul style="list-style-type: none"> • 7.1 • 8.1 • 9 (supported upon completion of version testing and acceptance) 	<ul style="list-style-type: none"> • Lenovo Yoga Tab 3 10 • Samsung Galaxy Tab S3 • Asus ZenPad Z10
Windows	<ul style="list-style-type: none"> • 8.0 (Professional and Enterprise) • 8.1 (Professional and Enterprise) • 10 (Professional, Educational, and Enterprise) 	Any tablet running these versions of Windows is supported, but extensive testing has been done only on Surface Pro, Surface Pro 3, Asus Transformer, and Dell Venue.

Chromebooks and Chromebases



Additional Resources:

- Android for Education Help | Auto Update Policy web page—
<https://support.google.com/edu/android/answer/6220366>



Cautions:

- While AIR actively works to support new versions of the Chrome operating system as they are released, automatic updates should be disabled 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 the Google Admin console.
- 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 the Chrome OS on hardware manufactured in 2016 or earlier.)
- Chrome OS includes 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 but does support touchscreen features on Chromebooks when available.

Table 4 lists the supported operating systems for Chromebooks and Chromebases.

Table 4. Supported Chromebooks

Supported Operating Systems	Related Requirements
Chrome OS 67+	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. See Google's Auto Update Policy web page for information on Google's auto update policy, including currently supported devices.

Thin Clients: NComputing and Terminal Servers for Windows

NComputing

Table 5 lists the supported hardware and software for NComputing solutions.

Table 5. Supported NComputing Solutions

Supported Server Host	Supported Server Software	Supported Terminals
<ul style="list-style-type: none"> Windows Server 2008 R2 	<ul style="list-style-type: none"> vSpace Server 8.4 	<ul style="list-style-type: none"> L300, firmware version 1.12.xx
<ul style="list-style-type: none"> Windows Server 2012 R2 Windows Server 2016 R2 Windows 10 	<ul style="list-style-type: none"> vSpace PRO 10 	<ul style="list-style-type: none"> L300, firmware version 1.13.xx L350, firmware version 1.13.xx M300, firmware version 1.13.xx

Terminal Servers

Table 6 lists the supported terminal servers for use with a thin client device.

Table 6. Supported Terminal Servers

Supported Terminal Servers	Supported Thin Client
<ul style="list-style-type: none"> Windows Server 2008 Windows Server 2012 Windows Server 2016 	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 because students can use their local devices to search for answers. Therefore, this installation scenario is not recommended for testing. See the "[Installing the Secure Browser on a Terminal Server or Windows Server](#)" subsection of [Chapter 4, Secure Browser Configuration](#), for more information.

Supported Web Browsers for Online Systems Associated with Testing

This section lists the supported web browsers for the 2018–19 California Assessment of Student Performance and Progress (CAASPP) administration functions. These are the non-test-taking functions associated with student testing such as assigning student test settings and accessing the Test Administrator Interface. **The only type of browser students use to take online assessments is the secure browser.**

Supported Web Browsers by Operating System

Table 7 lists the supported operating systems and corresponding web browsers for each application. It is recommended that you use 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, iOS 10.3 requires Safari 10.

Table 7. Supported Web Browsers by Test Administration Website

Operating System	Accepted Web Browser	TA Sites	Student Practice Test	TOMS	ORS	TIDE	IAHSS
Windows 7 SPI (Professional and Enterprise)	Chrome 67+	✓	✓	✓	✓	✓	✓
Windows 7 SPI (Professional and Enterprise)	Firefox 52+	✓	✓	✓	✓	✓	✓
Windows Version 8.0 (Professional and Enterprise) Version 8.1 (Professional and Enterprise)	Chrome 67+	✓	✓	✓	✓	✓	✓

System Requirements | Supported Web Browsers for Online Systems Associated with Testing

Operating System	Accepted Web Browser	TA Sites	Student Practice Test	TOMS	ORS	TIDE	IAHSS
Windows <ul style="list-style-type: none"> 8.0 (Professional and Enterprise) 8.1 (Professional and Enterprise) 	Firefox 52+	✓	✓	✓	✓	✓	✓
Windows <ul style="list-style-type: none"> 8.0 (Professional and Enterprise) 8.1 (Professional and Enterprise) 	Internet Explorer 11	✓	NA	✓	✓	✓	✓
Windows 10 (Professional, Educational, and Enterprise) <ul style="list-style-type: none"> Versions 1507–1803 Version 1809 (upon acceptance) 	Chrome 67+	✓	✓	✓	✓	✓	✓
Windows 10 (Professional, Educational, and Enterprise) <ul style="list-style-type: none"> Versions 1507–1803 Version 1809 (upon acceptance) 	Firefox 52+	✓	✓	✓	✓	✓	✓
Windows 10 (Professional, Educational, and Enterprise) <ul style="list-style-type: none"> Versions 1507–1803 Version 1809 (upon acceptance) 	Internet Explorer 11	✓	NA	✓	✓	✓	✓

System Requirements |
Supported Web Browsers for Online Systems Associated with Testing

Operating System	Accepted Web Browser	TA Sites	Student Practice Test	TOMS	ORS	TIDE	IAHSS
Windows 10 in S mode (Professional, Educational, and Enterprise) <ul style="list-style-type: none"> • Versions 1507–1803 • Version 1809 (upon acceptance) 	Edge	✓	✓	✓	✓	✓	✓
Mac OS X <ul style="list-style-type: none"> • Versions 10.9–10.14 	Chrome 67+	✓	✓	✓	✓	✓	✓
Mac OS X <ul style="list-style-type: none"> • Versions 10.9–10.14 	Firefox 52+	✓	✓	✓	✓	✓	✓
Mac OS X <ul style="list-style-type: none"> • Versions 10.9–10.14 	Safari 9+	✓	✓	✓	✓	✓	✓
Linux Fedora LTS (Gnome) <ul style="list-style-type: none"> • Versions 27–28 	Chrome 67+	✓	✓	✓	✓	✓	✓
Linux Fedora LTS (Gnome) <ul style="list-style-type: none"> • Versions 27–28 	Firefox 52+	✓	✓	✓	✓	✓	✓
Linux Ubuntu (LTS) (Gnome) <ul style="list-style-type: none"> • Version 14.04 • Version 16.04 • Version 18.04 	Chrome 67+	✓	✓	✓	✓	✓	✓
Linux Ubuntu (LTS) (Gnome) <ul style="list-style-type: none"> • Version 14.04 • Version 16.04 	Firefox 52+	✓	✓	✓	✓	✓	✓
iOS 10.3	Safari 10	✓	✓	NA	NA	NA	✓
iOS 11.4	Safari 11	✓	✓	NA	NA	NA	✓
iOS 12 (upon acceptance)	Safari 12 (upon release)	✓	✓	NA	NA	NA	✓

System Requirements | Supported Web Browsers for Online Systems Associated with Testing

Operating System	Accepted Web Browser	TA Sites	Student Practice Test	TOMS	ORS	TIDE	IAHSS
Android <ul style="list-style-type: none"> Version 7.1 Version 8.1 Version 9. (upon acceptance) 	Chrome 67+	✓	✓	NA	NA	NA	✓
Chrome OS <ul style="list-style-type: none"> Version 67+ 	Chrome 67+	✓	✓	NA	NA	NA	✓

Acronyms and initialisms used in this table are as follows:

IAHSS = Interim Assessment Hand Scoring System

DEI = Data Entry Interface

ORS = Online Reporting System

TA Sites = Test Administrator Sites

TOMS = Test Operations Management System

TIDE = Test Information Distribution Engine, comprised of Completion Status, Roster Management, and Appeals

Available Audio Settings by Web Browser

Some test items play audio files; 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—secure and web—and their associated capability to modify such settings. (In some cases, the audio files for practice tests will be accessible using a web browser; for Chrome, this must be enabled explicitly.) Use Table 8 to ensure that you deploy a browser with the required capability. Secure browsers are displayed in bold.

Table 8. Available Audio Settings by Browser

Operating System	Browser	System Volume	TTS Volume	TTS Pitch	TTS Rate	TTS Tracking	Pause	Resume
Windows	Secure browser	Y	Y	Y	Y	Y	Y	Y
Windows	Internet Explorer 11 web browser	N	N	N	N	Y	N	N
Windows	Edge web browser	N	N	N	N	Y	N	N
Windows	Chrome web browser	Y	Y	Y	Y	Y	N	N
Windows	Firefox web browser	N	N	N	N	Y	N	N
OS X	Secure browser	Y	Y	Y	Y	Y	Y	Y
OS X	Safari web browser	N	N	N	N	Y	N	N
OS X	Chrome web browser	Y	Y	Y	Y	Y	N	N
Linux	Secure browser	Y	Y	Y	Y	N	Y	Y
Linux	Firefox web browser	N	N	N	N	N	N	N
Linux	Chrome web browser	Y	Y	Y	Y	N	N	N
iOS	Mobile secure browser	N	Y	Y	Y	Y	N	N
iOS	Safari web browser	N	N	N	N	Y	N	N
Android	Mobile secure browser	N	N	N	N	Y	N	N
Android	Chrome web browser	Y	Y	Y	Y	Y	N	N
Chromebook	Secure browser	N	Y	Y	Y	Y	N	N
Chromebook	Chrome web browser	Y	Y	Y	Y	Y	N	N

Requirements for Peripheral Equipment

Additional Resources:

- California Department of Education (CDE) Matrix One: California Assessment of Student Performance and Progress (CAASPP) System Accessibility Resources web page—<http://www.cde.ca.gov/ta/tg/ai/caasppmatrix1.asp>
- *Accessibility Guide for CAASPP Online Testing* web document—<http://www.caaspp.org/rsc/pdfs/CAASPP.accessibility-guide.2018-19.pdf>

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 x 768
- Netbooks: 1024 x 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

External keyboards must be used with tablets used for testing. The intent of this requirement is to ensure the required display area is available to allow students to read multiple sources of complex item text and respond to source evidence for analytical purposes. Students may use mechanical or manual keyboards. Wireless and Bluetooth-based keyboards are not supported.

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. You are strongly cautioned against using keyboards that have these shortcut buttons.

Android Keyboards

The Android mobile secure browser requires the secure browser keyboard to disable predictive text.



Caution: 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. For example, the EZOWare Slim Full Size Keyboard contains a shortcut button that opens the default keyboard and should **not** be used with Android tablets during testing.

Mice

Mice on mobile devices are not supported. Wireless or wired two- or three-button 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 create an insecure testing environment and potentially pause or force an exit from the test.

Headsets and Headphones

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

- The English language arts/literacy assessments contain audio (recorded and/or device-based read-aloud), and students must be provided with headphones so they have the option to clearly listen to the audio in these tests.

System Requirements | Requirements for Peripheral Equipment

- Students with the text-to-speech test setting can use headphones to listen to stimuli or test items being read aloud. For more information about text-to speech and other test settings, refer to one of the following resources:
 - [Matrix One](#) web page
 - [Accessibility Guide for CAASPP Online Testing](#)
- Students with the streamline designated support can use headphones along with Job Access with Speech® or other screen-reading software to complete online tests.
- Each NComputing terminal used for testing must have a USB headphone or headset.

CAASPP test site 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	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
Logitech analog	3.5 mm	No	iOS, Android tablets with 3.5 mm port
Plantronics 326	3.5 mm	Yes	All supported desktops, laptops, and Chromebases with 3.5 mm port—except NComputing terminals
Sennheiser PC 151	3.5 mm	Yes	All supported desktops, laptops, and Chromebases with 3.5 mm port—except NComputing terminals
Plantronics 355	3.5 mm	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