Rhode Island Next Generation Science Assessment

Technical Specifications Manual for Online Testing

For Technology Coordinators

2018-2019

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Introduction to the Technical Specifications Manual

This manual provides information about hardware, software, and network configurations for running various testing applications provided by American Institutes for Research (AIR). All technical specifications outlined in this manual should be configured for the Rhode Island Next Generation Science Assessment (NGSA).

The *System Requirements for Online Testing* document lists the minimum hardware and software requirements for online testing. Ensure your hardware complies with those requirements before undertaking the tasks described in this manual.

Organization of this Manual

This document contains the following sections:

- Section I, Network Configuration and Testing, provides information about configuring networks and lists helpful networking diagnostic tools.
- Section II, Hardware Configuration, provides guidance regarding the proper infrastructure for printers and wireless access points (WAP).
- Section III, Software Configuration, outlines configurations for operating systems (desktop, laptop, and mobile).
- Section IV, Text-to-Speech Requirements, outlines configurations for enabling text-to-speech (TTS) settings on desktop operating systems. This section also lists the voice packs recognized by the Secure Browser on those operating systems.
- Appendix A, URLs Provided by AIR, lists AIR's URLs that should be whitelisted in your firewalls.
- Appendix B, Technology Coordinator Checklist, lists the activities required to prepare a facility for online testing.
- Appendix C, Scheduling Online Testing, provides a worksheet for estimating the required time to administer an online test.
- Appendix D, User Support, explains how to contact the Rhode Island Next Generation Science Assessment Program Help Desk.

Document Conventions

Table 1 describes the conventions appearing in this document.

Table 1. Document Conventions

Element	Description
	Note: This symbol accompanies helpful information or reminders.
	Warning: This symbol accompanies information regarding actions that may cause loss of data.
	Caution: This symbol accompanies information regarding conflicting or incorrect configurations.
	Tip: This symbol accompanies advice about performing a task efficiently.
text	**Boldface** text indicates an item you click or a drop-down list selection.
`filename`	`Monospaced` text indicates a directory, filename, or text you enter in a field or at the command line.

Intended Audience

This publication is intended for technology coordinators responsible for configuring the hardware, software, and network in a school's online testing environment. You should be familiar with the following concepts:

- Networking—Bandwidth, firewalls, whitelisting, and proxy servers.
- Configuring operating systems—Control Panel in Windows, System Preferences in Mac, Settings in iOS, and the Linux command line.
- Configuring web browsers—Settings in Chrome, Safari, and Firefox.

Additional Resources

- For information about supported operating systems, see the *System Requirements for Online Testing* document.
- For information about installing Secure Browsers, see the *Secure Browser Installation Manual*.
- For information about securing a computer before a test session, see the *Test Administrator (TA) User Guide*.
- For information about supported hardware and software for braille testing, as well as information about configuring JAWS, see the *Braille Requirements and Testing Manual*.

The above resources, as well as test administration manuals and user guides for other systems, are available on the Rhode Island Next Generation Science Assessment Portal.

Section I. Network Configuration and Testing

Your network's configuration has a significant impact on the Test Delivery System's (TDS) performance. An improperly configured network can slow the TDS's responsiveness, and possibly impact students' scores or an assessment's integrity. The following sections provide guidance on properly configuring your network, and list popular tools for diagnosing network bottlenecks.

Network Configuration

This section provides guidance or requirements pertaining to networking configurations for online testing.

Guidance for Determining Required Bandwidth

Bandwidth is the measure of a network's capacity or utilization, usually measured in terms of bits per second. Your network should have enough bandwidth to support online testing at the required performance level. For example, if a testing program requires that web browsers display test items within 10 seconds after sending a request, then the network must have enough bandwidth to support that requirement.

In an online testing environment, the following factors contribute to determining the required bandwidth:

- **Number of Students Simultaneously Testing**—As the number of students testing at one time increases, the required bandwidth also increases.

- **Size of the Test Content**—The size of a test's content is determined by two factors: (1) the number of items on the test and (2) the average size of each item. The more items a test contains and the larger the average test item, the higher the bandwidth requirement for a given test. For example, some writing tests have a few questions to which the student composes a response, and these tests are small. In contrast, some science tests have animations or simulations; these tests are large.

- **Hubs or Switches**—LAN performance can be hindered when hubs are used instead of switches. A hub broadcasts signals from various network devices to propagate across the network, potentially saturating the network and causing traffic competition or data collisions. If you use hubs, ensure they have enough bandwidth to handle the propagation.

- **ISP Router**—For Internet networks, the most common bottleneck is the ISP's router connection, which typically operates at speeds of between 1.5M bits per second and 100M bits per second. Network administrators should spend time prior to test administration determining if their Internet infrastructure has the capacity to accommodate online testing at the required performance level.

- **Encryption**—Encryption at WAPs may contribute to bandwidth usage. If you use encryption, ensure the WAPs have enough bandwidth to prevent degradation of performance.

- **Required Response Time**—When a network's bandwidth cannot service the amount of data requested by clients, latency starts to accumulate and the students experience delays. Ensure your network's bandwidth is high enough to support the required response times between the browsers and the servers.

Table 2 displays the estimated average bandwidth used by the Secure Browser for testing. When designing your network for online testing, ensure that the available bandwidth can support these values.

Table 2. Average Bandwidth Used by Secure Browser for Testing

Number of Students Testing Concurrently in School or Building	Average Estimated Bandwidth Consumed During Subsequent Startup of Secure Browser[a]	Average Estimated Bandwidth Consumed During Testing[b]
1	8K bits/second	5–15K bits/second
50	400K bits/second	250–750K bits/second (0.25–0.75M bits/second)
100	800K bits/second	500–1500K bits/second (0.5–1.5M bits/second)

[a] Bandwidth consumed when opening the Secure Browser and accessing an assessment for the first time is significantly more than when opening the Secure Browser and accessing an assessment subsequently. This is because the initial launch of the Secure Browser downloads non-secure cacheable content (not test content) that can be immediately accessed upon opening the Secure Browser later.

[b] The values in this column are based on averages from tests in a variety of subjects.

Required Ports and Protocols

Table 3 lists the ports and protocols used by the Test Delivery System. Ensure that all content filters, firewalls, and proxy servers are open accordingly.

Table 3. Ports and Protocols for Test Delivery System

Port/Protocol	Purpose
80/TCP	HTTP (initial connection only)
443/TCP	HTTPS (secure connection)

Whitelisting Test Site URLs

If the school's filtering system has both internal and external filtering, the URLs for the testing sites (see URLs for Testing Sites) must be whitelisted in both filters. Please see your vendor's documentation for specific instructions. Also, be sure to whitelist these URLs in any multilayer filtering system (such as local and global layers).

Configuration for Domain Name Resolution

Appendix A, URLs Provided by AIR, lists the domain names for AIR's testing and non-testing applications. Ensure the testing machines have access to a server that can resolve those names.

Configuring Session Timeouts

Session timeouts on proxy servers and other devices should be set to values greater than the average time it takes a student to participate in a test session or to complete a given test. For example, if your school determines that students will test in 60-minute sessions, then consider setting the session timeout to 65 or 70 minutes.

Data Caching

Data caching is a technique by which an intermediate server checks if it can serve the client's requests instead of a downstream server. While data caching is a good strategy in some situations, its overhead is detrimental in the online testing environment. Ensure all intermediate network elements, such as proxy servers, do not cache data.

Configuring Quality of Service and Traffic Shaping

If your testing network includes devices that perform traffic shaping, packet prioritization, or Quality of Service (QoS), ensure the URLs in Appendix A, URLs Provided by AIR, have high priority.

Configuring for Certificate Revocations

AIR's servers present certificates to the clients. The following sections discuss the methods used to check those certificates for revocation.

Online Certificate Status Protocol

To use the Online Certificate Status Protocol (OCSP), ensure your firewalls allow the domain names listed in Table 4. The values in the Patterned column are preferred because they are more robust.

Table 4. Domain Names for OCSP

Patterned	Fully Qualified
*.thawte.com	oscp.thawte.com
*.geotrust.com	oscp.geotrust.com
*.ws.symantec.com	oscp.ws.symantec.com

If your firewall is configured to check only IP addresses, do the following:

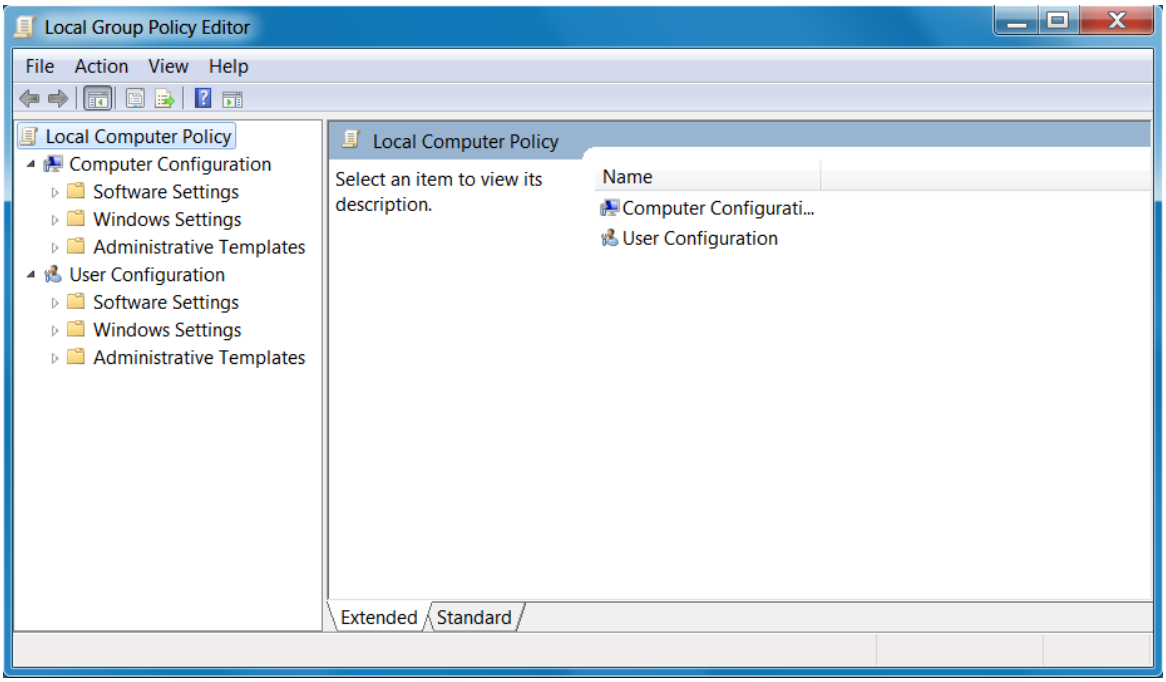
1. Get the current list of OCSP IP addresses from Symantec. The list is available at https://www.symantec.com/content/en/us/enterprise/other_resources/OCSP_Upgrade_-_New_IP_Addresses.txt.

2. Add the retrieved IP addresses to your firewall's whitelist. Do not replace any existing IP addresses.

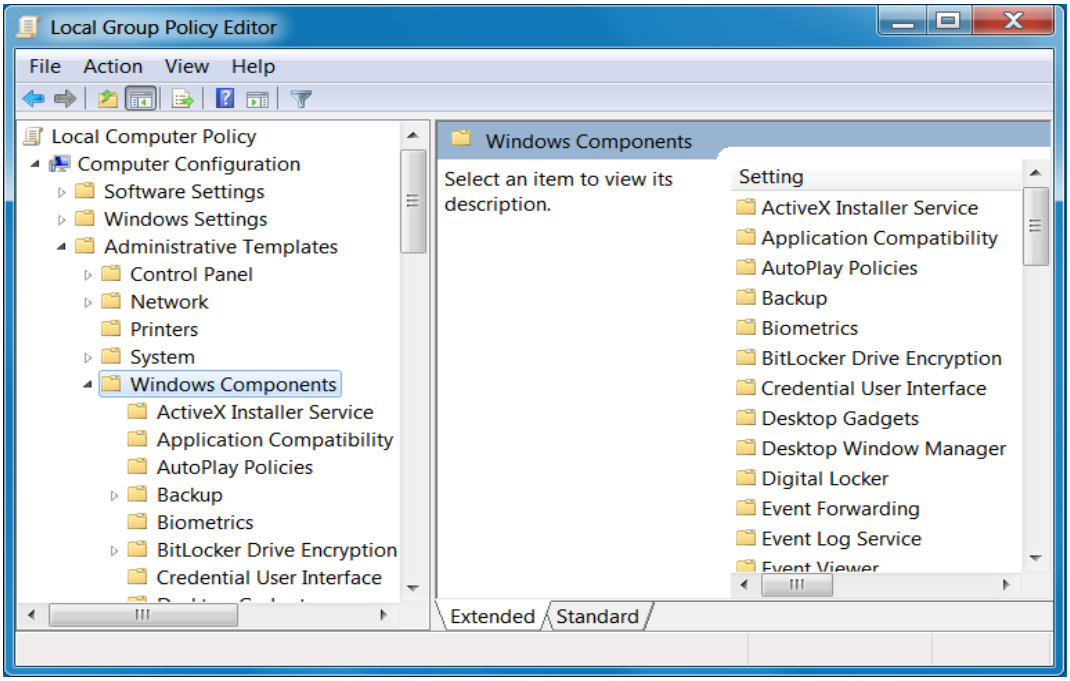
Blocking Device Touch Input Using the Group Policy Editor

Some tablets and devices have Touch features that may need to be disabled before testing. The following procedure describes how to disable the Touch feature on these devices using the Group Policy Editor:

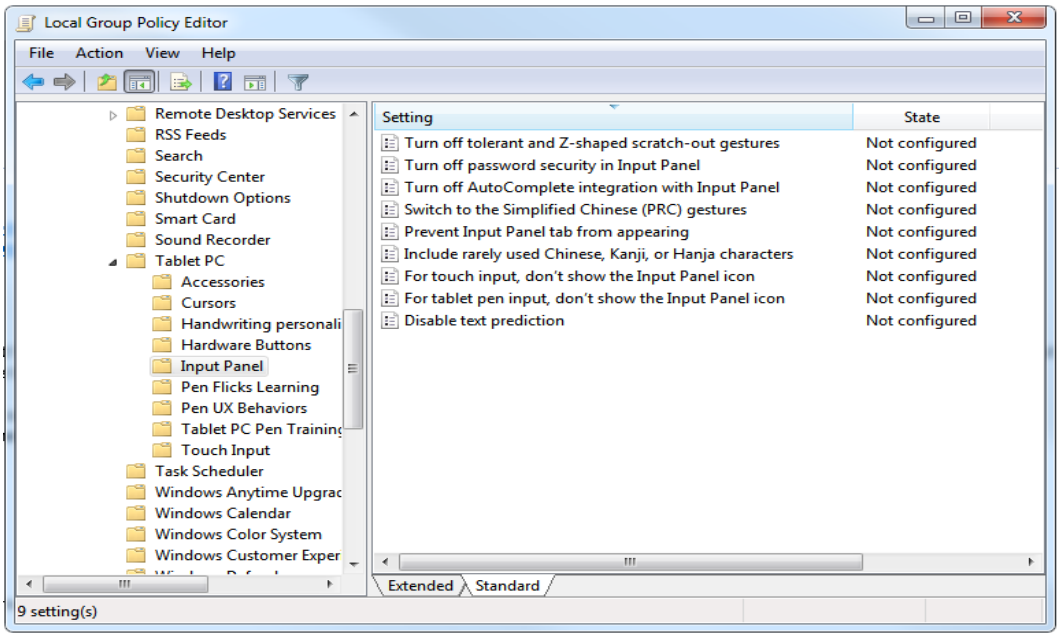
1. Type gpedit.msc in the *Search* box on the **Start** menu. The ***Local Group Policy Editor*** window appears.



2. Navigate to **Computer Configuration\Administrator Templates\Windows Components.**

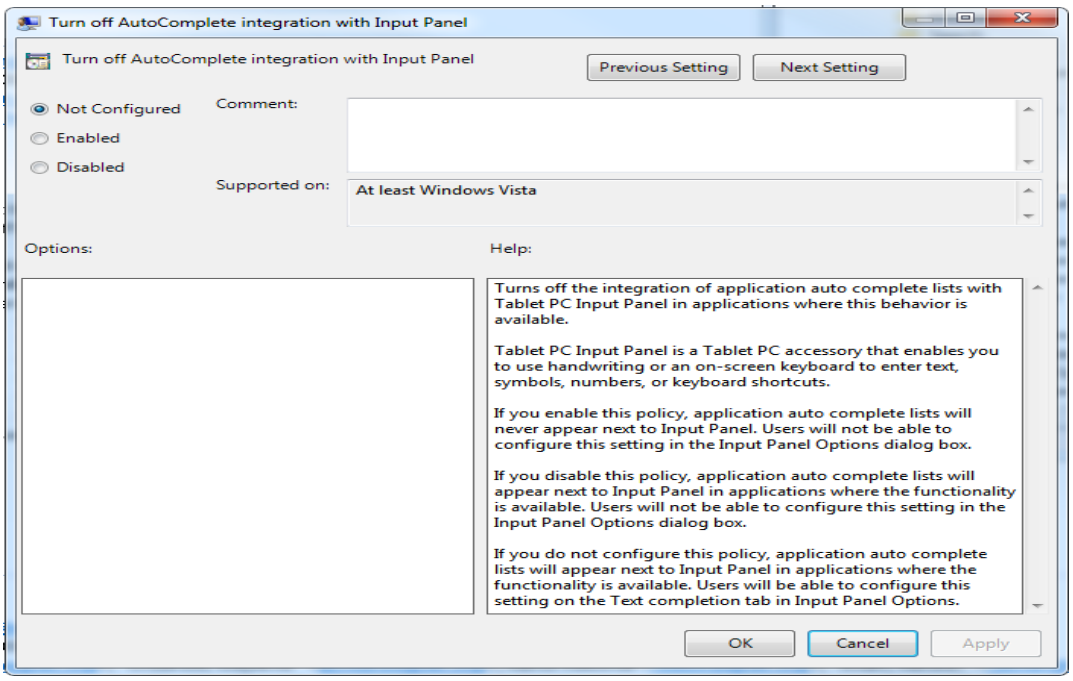


3. Scroll down to the **Tablet PC** folder, then select **Input Panel**. The following screen displays.



4. Enable the following items in the *Setting* column:
    a. Turn off AutoComplete integration with Input Panel
    b. Prevent Input Panel tab from appearing
    c. For tablet pen input, don't show the Input Panel icon
    d. For touch input, don't show the Input Panel icon
    e. Disable text prediction

5. To enable an item in the *Setting* column, double-click on that item. The following screen will allow you to enable or disable your selected item as required.



6. Select **Enabled**, and click **OK**.
7. Close the ***Local Group Policy Editor*** window.

Configuring Network Settings for Online Testing

Local Area Network (LAN) settings on testing machines should be set to automatically detect network settings.

To set LAN settings to auto-detect on Windows machines:

1. Open **Control Panel**.

2. Open **Internet Options**.

3. Click **Connections** tab.

4. Click **LAN Settings**.
5. Click the **Automatically detect settings** checkbox.
6. Click **OK** to close **Local Area Network (LAN) Settings** window.
7. Click **OK** to close **Internet Properties** window.
8. Close **Control Panel**.

To set LAN settings to auto-detect on Mac machines:

1. Open **System Preferences**.
2. Open **Network**.
3. Select **Ethernet** for wired connections or **WiFi** for wireless connections.
4. Click **Advanced**.
5. Click **Proxies** tab.
6. Click **Auto Proxy Discovery** checkbox.
7. Click **OK** to close window.
8. Click **Apply** to close **Network** window.
9. Close **System Preferences**.

To set LAN settings to auto-detect on Linux machines:

1. Open **System Settings**.
2. Open **Network**.
3. Select **Network Proxy**.
4. From the **Method** dropdown, select **None**.
5. Click **X** to close **Network** window.

Network Diagnostic Tools

You should do a performance analysis of your networking infrastructure to identify any bottlenecks that may impact test performance. The choice of diagnostic tool depends on the operating system running the tool, the network administrator's technical knowledge, and the

desired level of network analysis. A number of network diagnostic tools are available, as described in the following sections.

AIR's Network/Bandwidth Diagnostic Tool

AIR provides a diagnostic tool that can be directly accessed from the student practice test login page.

1. On the practice test login page, click **Run Diagnostics**. The ***Diagnostic Screen*** page opens.
2. In the *Network Diagnostics* section, select a test.
3. Select the approximate number of students who may take that test *at one time*.
4. Click **Run Network Diagnostics Tests**.

The tool displays your current upload and download speed as well as a general idea of whether you can reliably test the number of students you entered in Step 3. You may want to run this test several times throughout the day to verify that your upload and download speeds remain relatively consistent.

Windows-Specific Tools

PRTG Traffic Grapher

PRTG (www.paessler.com/prtg) monitors bandwidth usage and other network parameters via Simple Network Management Protocol (SNMP). It also contains a built-in packet sniffer. A freeware version is available.

NTttcp

NTttcp (https://gallery.technet.microsoft.com/NTttcp-Version-528-Now-f8b12769) is a multithreaded, asynchronous application that sends and receives data between two or more endpoints and reports the network performance for the duration of the transfer.

Pathping

Pathping is a network utility included in Windows. It combines the functionality of the `ping` and `tracert` commands by providing details of the path between two hosts and ping-like statistics for each node in the path based on samples taken over a time period.

Mac-Specific Tools

Network Utility app

This tool is built into Mac OS.

Multi-Platform Tools

Wireshark

Wireshark (www.wireshark.org) is a network protocol analyzer. It has a large feature set and runs on most platforms including Windows, Mac, and Linux.

TCPDump

TCPDump (http://sourceforge.net/projects/tcpdump) is a common packet sniffer that runs from the command line on Linux and Mac. It can intercept and display data packets being transmitted or received over a network. A Windows version WinDump is available (www.winpcap.org/windump/).

Ping, NSLookup, Netstat, Traceroute

This is a set of standard UNIX network utilities. Versions of these utilities are included in Linux, Windows, and Mac.

Iperf

Iperf (http://sourceforge.net/projects/iperf/) measures maximum TCP bandwidth, allowing the tuning of various parameters and User Datagram Protocol (UDP) characteristics. Iperf reports bandwidth, delay jitter, and datagram loss.

Section II. Hardware Configuration

This section provides topology guidance for printers and WAPs. It also provides a reference for hardware configurations that support braille testing.

Connections Between Printers and Computers

Test Administrators can print test session information and approve students' requests to print stimuli or test items (for students with the print-on-request accommodation). Nevertheless, to maintain a secure test environment, the Test Administrator's computer should be connected to a single local or network printer in the testing room, and only the Test Administrator's computer should have access to that printer.

Wireless Networking and Determining the Number of Wireless Access Points

Wireless networking standards have evolved over the years, with the following being the most commonly deployed:

- 802.11ac has a theoretical throughput of up to 1G bits per second.
- 802.11n has a throughput of up to 300M bits per second.
- 802.11g has a theoretical throughput of up to 54M bits per second.
- 802.11b has a theoretical throughput of 11M bits per second.

The recommended number of devices supported by a single wireless connection depends on the standard used for the connection. The two most common networking standards are 802.11g (54Mbps) and 802.11n (300Mbps). Table 5 lists recommendations for network topology in which the WAP provides 802.11g and the testing devices provide 802.11g, 802.11n, or a mixture of the two. Refer to your WAP documentation for specific recommendations and guidelines for these or other standards.

Table 5. Recommended Ratios of Devices to Wireless Access Points

Testing Device	Ratio of Devices to 802.11g WAP	Ratio of Devices to 802.11n WAP
802.11g	20	40
802.11n	20	40
Mix of 802.11g and 802.11n	20	40–50 (depending on the mix of wireless cards used)

Recommendations for 802.11ac routers are under investigation.

Regardless of the number of WAPs, each should be configured to use WPA2/AES data encryption.

Hardware for Braille Testing

For information about braille hardware and software requirements, refer to the *Braille Requirements and Testing Manual*, which is available on the Rhode Island Next Generation Science Assessment Portal.

Section III. Software Configuration

This section describes how to configure the operating systems and web browsers for online testing.

Configuring Commercially Available Browsers

This section describes how to configure commercially available browsers (Chrome, Safari, and Firefox) for online testing.

Enabling Pop-Up Windows

Systems that AIR offers provide informational messages or warnings using pop-up windows. Therefore, enable pop-up windows on those web browsers using AIR's systems.

The following list describes how to enable pop-up windows on many browsers. If your browser is not on this list, consult its user documentation.

Enabling Pop-Up Windows for All Domains

The following instructions enable pop-up windows for *all domains*. If you prefer to limit pop-up windows to only those coming from AIR's domains, use the instructions in Enabling Pop-Up Windows Only for AIR domains.

- **Firefox (Windows):** Tools > Options > Content > clear **Block pop-up windows**. (Firefox on Mac and Linux is similar.)
- **Chrome:** Menu > Settings > Show advanced settings (at the bottom of the screen) > Privacy > Content Settings > Pop-ups > mark **Allow all sites to show pop-ups**.
- **Chrome browser on Android tablets**: Menu > Settings > Advanced > Content Settings > Block pop-ups > clear checkbox.
- **Safari:** Safari > clear **Block Pop-Up Windows**.
- **iOS (iPad) Safari:** Settings > Safari > Block Pop-ups (toggle to "off" mode).

Enabling Pop-Up Windows Only for AIR domains

You can allow pop-up windows only from AIR's domains. The following list describes how to enable domain-specific pop-up windows on many browsers. If your browser is not on this list, consult its user documentation. The list of AIR domains to use in these instructions appears in Appendix A, URLs Provided by AIR.

- **Firefox:** Tools > Options > Content > click **Exceptions**. Enter domain names and select **Allow** for each.

- **Chrome:** Menu > Settings > Show advanced settings (at the bottom of the screen) > Privacy > Content Settings > Pop-ups > click **Manage Exceptions**. Enter the domain names and select **Allow** for each.
- **Safari and iOS Safari:** N/A
- **Chrome on Android tablets:** N/A

Optimal Installation Scenario for Secure Browsers

The *Secure Browser Installation Manual* includes several options for installing the Secure Browser. Some of these options describe installing the Secure Browser on a shared network drive, from which students would then run the Browser. However, there are significant drawbacks in this method. Running the Secure Browser from a shared network drive creates contention among the students' client machines for two resources: LAN bandwidth and shared drive I/O. This performance impact can be avoided by installing the Secure Browser locally on each machine. **Specialists at AIR strongly discourage the use of network shared drive installation for the Secure Browser, as this setup can compromise the stability and performance of the browser, especially during peak testing times.**

Configuring Windows for Online Testing

This section describes how to configure Windows for online testing.

Disabling Fast User Switching

Microsoft Windows (7, 8, 8.1, and 10) has a "Fast User Switching" feature that allows more than one user to be logged in at the same time. This is a security risk because students can potentially start a new Windows session during the test and use that session to search the Internet for answers. The following sections describe how to disable Fast User Switching for different versions of Windows.

Disabling Fast User Switching in Windows 7

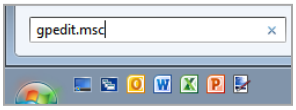
This section describes how to disable Fast User Switching under Windows 7. The process is similar for later versions of Windows.

Option A: Access the Group Policy Editor

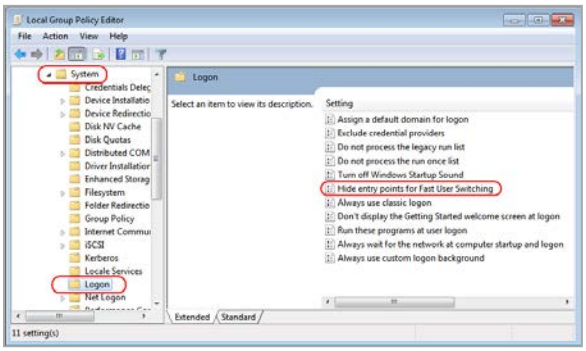
The following procedure describes how to disable Fast User Switching using the Group Policy Editor. You can also configure Fast User Switching through the registry. See Option B below for instructions.

---

1. Click **Start**, type `gpedit.msc` in the search box.
   The Local Group Policy Editor window appears.

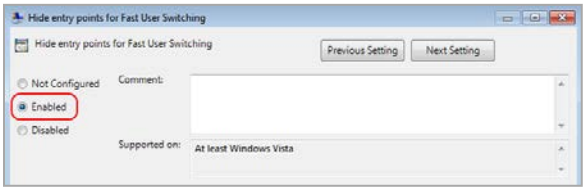


2. Navigate to `Local Computer Policy > Computer Configuration > Administrative Templates > System > Logon`.



3. Double-click **Hide entry points for Fast User Switching**.

4. Select **Enabled**, and click **OK**.

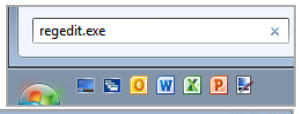


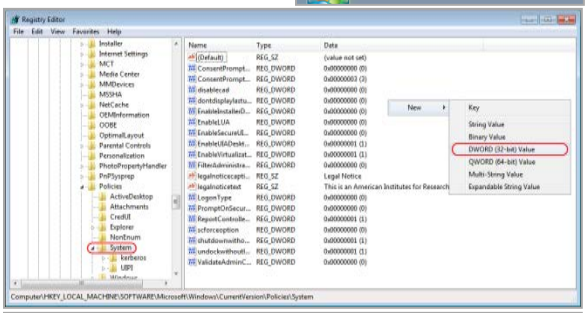
5. Close the Local Group Policy Editor window.

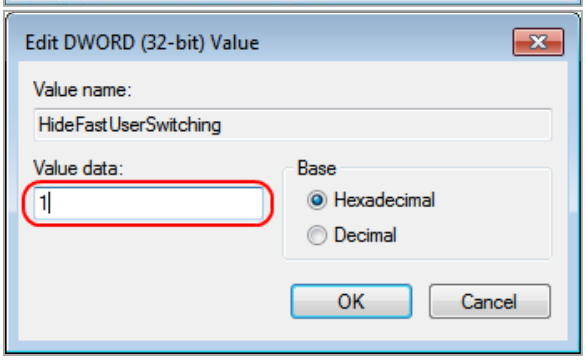
Option B: Access the Registry

The following procedure describes how to disable Fast User Switching using the Windows registry.

1. Click **Start**, type `regedit.exe` in the **Start Search** dialog box, and press **Enter**.
2. Navigate to `HKEY_LOCAL_MACHINE > SOFTWARE > Microsoft > Windows > CurrentVersion > Policies > System`.
3. Right-click the **System** folder.
4. Click **New, DWORD (32-bit) value**.
5. Type `HideFastUserSwitching` and press Enter.
6. Double-click the **HideFastUserSwitching** value.
7. In the **Value data** field, enter `1`.
8. Click **OK**.
9. Close the Registry Editor.



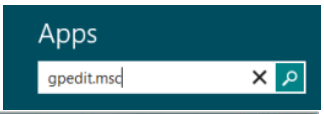


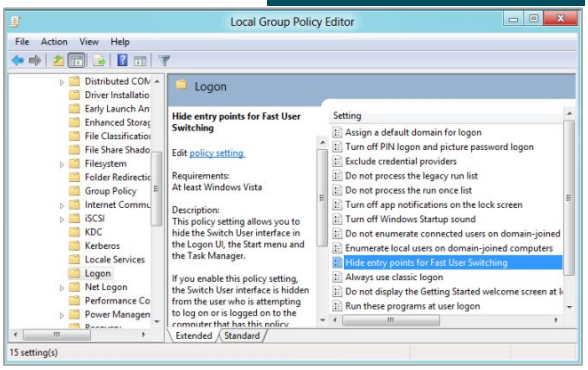


Disabling Fast User Switching in Windows 8.0 and 8.1

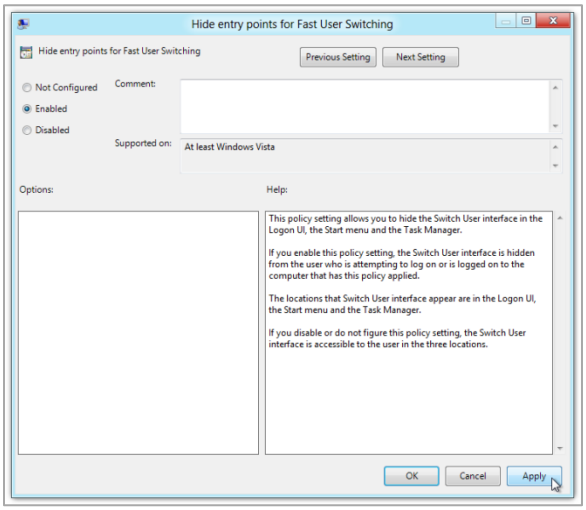
The following procedure describes how to disable Fast User Switching under Windows 8.0 and 8.1.

1. In the Search charm, type `gpedit.msc`. Double-click the gpedit icon in the Apps pane. The Local Group Policy Editor window opens.
2. Navigate to `Computer Configuration > Administrative Templates > System > Logon`.
3. In the Setting pane, double-click **Hide entry points for Fast User Switching**.



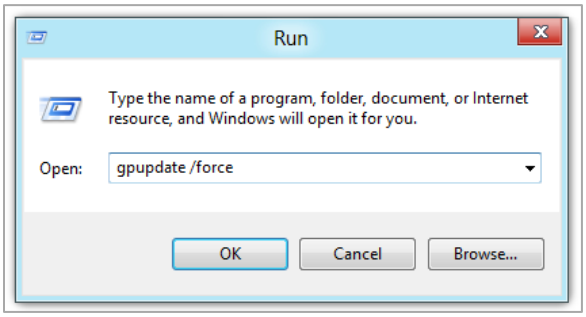


4. Select **Enabled** and then click **OK**.

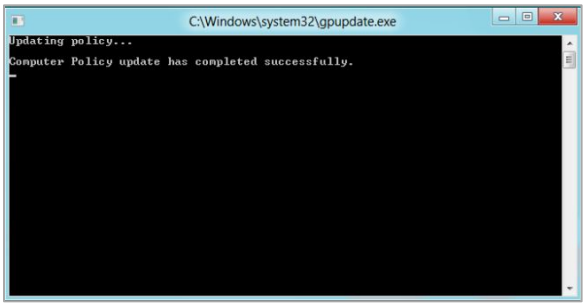


5. In the Search charm, type `run`. The Run dialog box opens.

6. Enter the command `gpupdate /force` into the text box and then click **OK**. (Note the space before the backslash.)



7. The command window opens. When you see the message `Computer Policy update has completed successfully`, this will be your notification that Windows has successfully disabled Fast User Switching.



Disabling Task Manager

The Windows Task Manager allows users to switch to applications running in the background. This is a security risk because students can switch to other applications while running the Secure Browser. The following sections describe how to disable the Task Manager.

Disabling Task Manager using the Local Group Policy Editor

This section describes how to disable the Task Manager using the Local Group Policy Editor.
Note: Computers running Windows 7 Home Edition cannot access the Local Group Policy Editor and should disable the Task Manager using the Registry Editor, as shown below.

1. Open the **Start Menu**.
2. Type **gpedit.msc** and hit **Enter**. The **Local Group Policy Editor** window will open.
3. Navigate to **User Configuration\Administrative Templates\System\Ctrl+Alt+Del Options**.
4. Double-click **Remove Task Manager**. The **Remove Task Manager** window will open.
5. Click **Enable**.
6. Click **OK**.

Disabling the Task Manager using the Registry Editor

This section describes how to disable the Task Manager using the Registry Editor.

1. Open the **Start Menu**.
2. Type **regedit.exe** and hit enter. The **Registry Editor** window will open.
3. Navigate to **HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Policies\System**.
4. Double-click **DisableTaskMgr**.
5. Change the value data to **1**.
6. Click **OK**.

Installing Windows Media Pack for Windows 8.1 N and KN

Some versions of Windows 8.1 are not shipped with media software installed. As a result, you may need to install software to enable students to listen to audio as well as watch videos.

Microsoft provides additional information as well as a download package for computers with the following Windows 8.1 versions:

- Windows 8.1 N
- Windows 8.1 N/K with Bing
- Windows 8.1 Enterprise N

- Windows 8.1 Pro N
- Windows 8.1 Pro N/K for EDU

Specialists from AIR encourage districts and schools encouraged to download this software and ensure that it works with sample websites and video and audio files prior to installing the Windows Secure Browser. Installation instructions are provided on Microsoft's download page.

Microsoft Resources:

- About the Media Feature Pack for Windows 8.1 N and Windows 8.1 KN Editions: April 2014 (http://support.microsoft.com/kb/2929699/en-us)
- Download Media Feature Pack for N and KN Versions of Windows 8.1 (http://www.microsoft.com/en-us/download/details.aspx?id=42503)

Configuring ZoomText to Recognize the Secure Browser

When displaying a test with a print-size accommodation above 4× magnification, the Secure Browser automatically enters streamlined mode. If you want to retain the standard layout of a test, but display it with a print magnification above 4×, then consider using ZoomText—a magnification and screen-reading software that you can use with the Secure Browser. Use the following procedure to ensure ZoomText recognizes the Secure Browser.

1. If ZoomText is running, close it.
2. In the Windows Explorer, go to the installation directory for your version of ZoomText. For example, if you have ZoomText version 10.1:
   - Go to `C:\Program Files (x86)\ZoomText 10.1\` (Windows 64-bit)
   - Go to `C:\Program Files\ZoomText 10.1\` (Windows 32-bit).
3. In a text editor, open the file `ZoomTextConfig.xml`.
4. Search for line containing the `D2DPatch` property, similar to the following:

   ```
   <Property name="D2DPatch" value ="*,~dwm,~firefox,~thunderbird"/>
   ```

5. In the `value` attribute, add the prefix for your state's Secure Browser:

   ```
   <Property name="D2DPatch" value
   ="*,~dwm,~firefox,~risecurebrowser,~thunderbird"/>
   ```

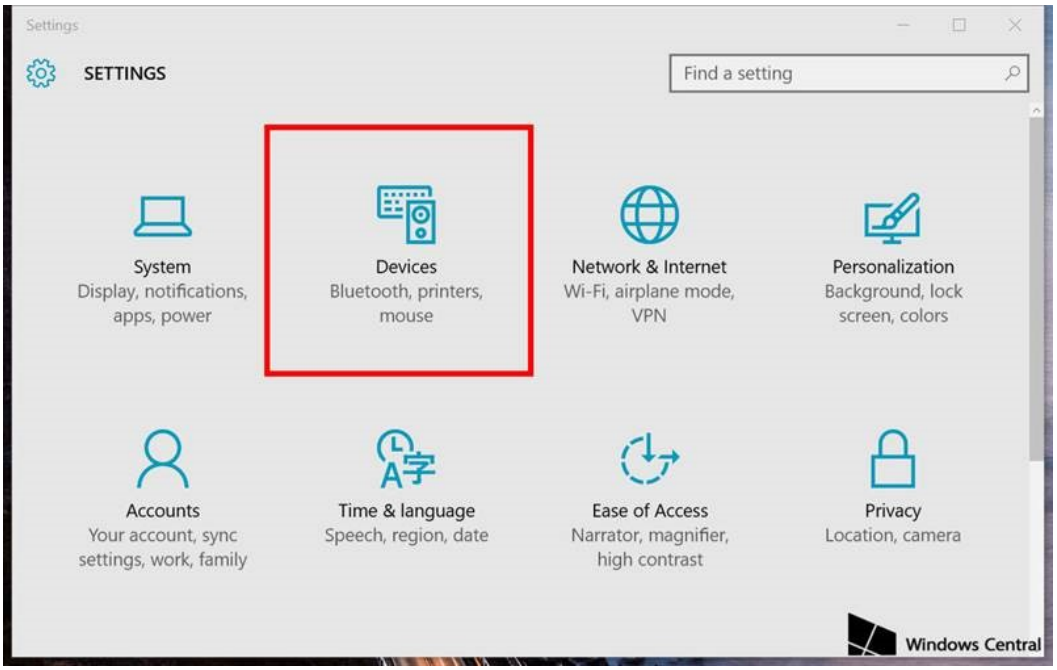
6. Save the file, and restart ZoomText.

Touch Keyboard on Microsoft Surface Pro Tablet

Some Surface Pro users accessing the touch keyboard are seeing the touch keyboard disappear when they click outside a text box or when they type an answer into a text box and then click next. The keyboard fails to reappear when users click back inside the next text box. To avoid these issues, users must set the touch keyboard to automatically show up.

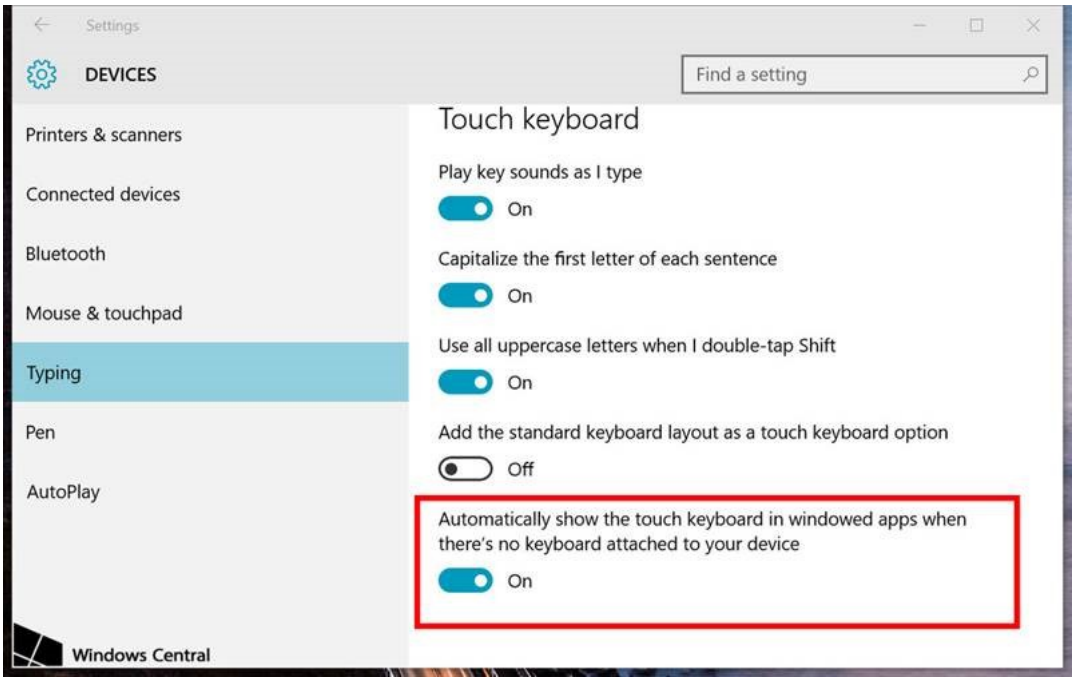
To set the touch keyboard to automatically show up:

1. Go to **Settings** (keyboard shortcut: **Windows + I**)



2. Go to **Devices** > **Typing**

3. Scroll down and toggle on: *Automatically show the touch keyboard in windowed apps when there's no keyboard attached to your device*.



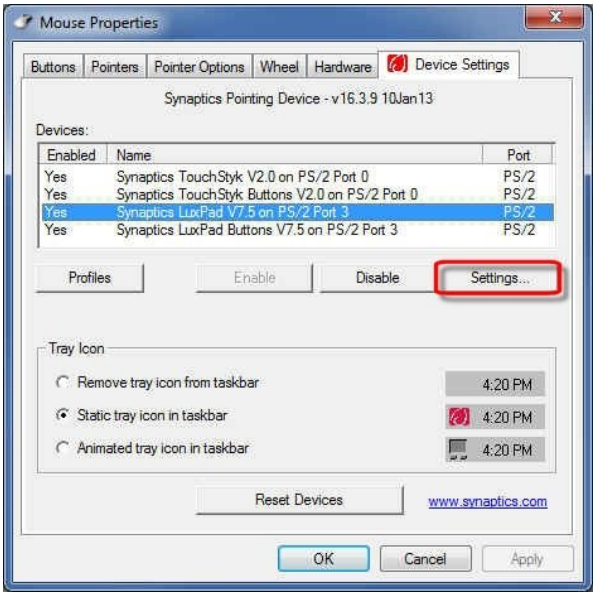
Disabling Two-finger Scrolling Feature in HP Notebooks with Synaptics TouchPad

The trackpad software on the HP stream notebooks can cause the Secure Browser to close and display an "environment not secure" error. This can occur when a student tries to use the advanced trackpad features, such as scrolling gesture, with the trackpad. The Synaptics Touchpad driver is the driver that allows full use of all features of the trackpad. To avoid this error and the closing of the Secure Browser, disable the TouchPad two-finger scrolling Feature.

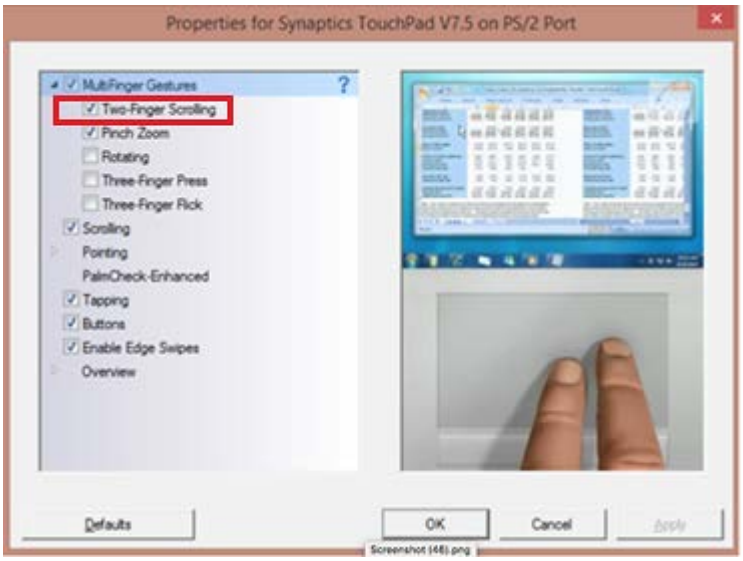
To disable the TouchPad feature in HP notebooks with Synaptics TouchPad:

1. Click the **Start** menu (), and then type mouse in the search field.
2. Select **Mouse** from the list of options.
3. Click the **Device Settings** tab.

4. From the **Devices** list, select **Synaptics LuxPad V7.5**, and then click **Settings...**.



5. Uncheck **Two-Finger Scrolling**.



6. Click **Close**, and then click **OK**.
7. In the **Mouse Properties** window, click **Apply**.

Disabling Automatic Volume Reduction

A feature in Windows automatically lowers or mutes the volume of some apps if Windows detects audio recording. This section describes how to disable automatic volume reduction.

To disable automatic volume reduction:

1. Open the **Start Menu**.
2. Open the **Control Panel**.
3. Select **Sound**. The **Sound** window will open.
4. Select the **Communications** tab.
5. By default, the option to "Reduce the volume of other sounds by 80%" is selected. Change this to **Do nothing**.
6. Select **OK**.

Configuring a Mac for Online Testing

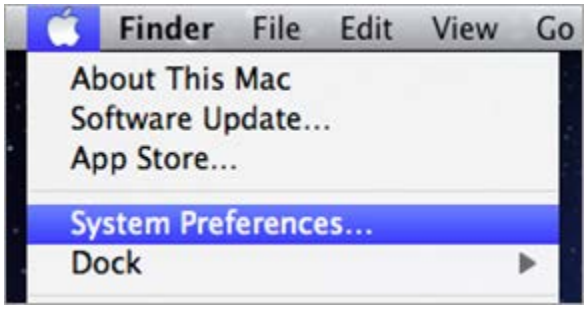
This section describes how to configure a Mac for online testing.

Disabling Exposé or Spaces

Mac OS X 10.9 and later includes an Exposé or Spaces feature that allows running more than one desktop session. This is a security risk because students can potentially start a new desktop session during the test, and use that session to search the Internet for answers. The following procedure explains how to disable Exposé or Spaces on Mac OS. (You can disable Spaces quickly from the command line; see Disabling Spaces and Application Launches from the Command Line for details.)

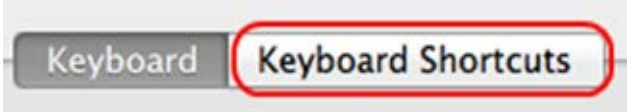
To disable Exposé or Spaces:

1. Choose Apple menu > **System Preferences**.



2. Click **Keyboard**. The Keyboard window opens.

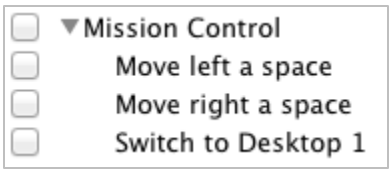
3. Click the **Keyboard Shortcuts** or **Shortcuts** tab.



4. In the left panel, click **Mission Control**. The right panel lists all Mission Control options.

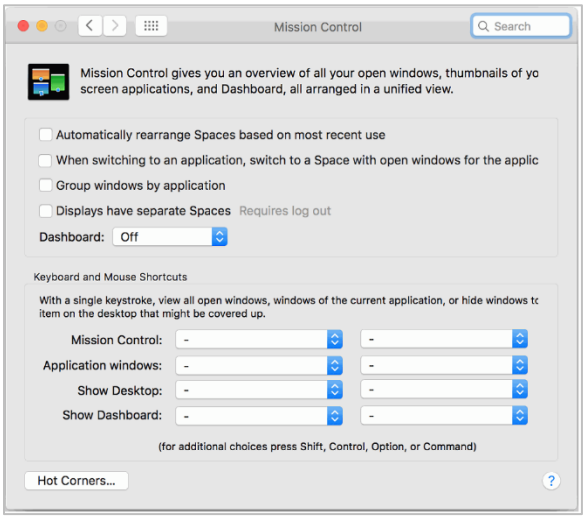
5. In the right panel, clear the following checkboxes:

   - Move left a space
   - Move right a space
   - Switch to Desktop 1



6. Return to the System Preferences window and click **Mission Control**. The Mission Control window opens.

7. In the top part of the window, ensure that all checkboxes are cleared. In the *Keyboard and Mouse Shortcuts* section, set all drop-down lists to "–" (as necessary).



To re-enable Exposé or Spaces, follow Steps 1–4, and mark the boxes for spaces.

Disabling Application Launches from Function Keys

When students use the Secure Browser for testing, the Test Delivery System conducts regular checks to ensure that other applications are not open. These checks help maintain the integrity of the secure test environment.

Starting with OS X versions 10.9 and later, some Mac computers are factory configured to launch iTunes and other applications by pressing the function keys (e.g., F8) on the keyboard. If a student accidentally presses the function key, the Secure Browser assumes that a forbidden application is running and pauses the student's test. To avoid this scenario, disable the use of function keys to launch applications.

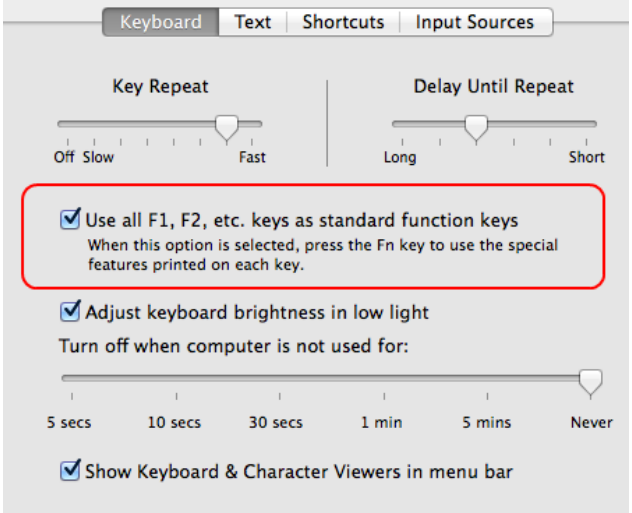
The following instructions are based on OS X 10.9; similar instructions apply for other versions of Mac OS. (You can disable application launches quickly from the command line; see Disabling Spaces and Application Launches from the Command Line for details.)

To disable application launches from function keys:

1. Choose Apple menu > **System Preferences**.
2. In System Preferences, click **Keyboard**. The Keyboard window opens.

3. In the Keyboard window, mark **Use all F1, F2, etc. keys as standard function keys**.

If you need to launch iTunes or another application, press the Fn key and then press the desired function key. This combination will launch the application. (Doing so while taking a test causes the Secure Browser to pause the test.)

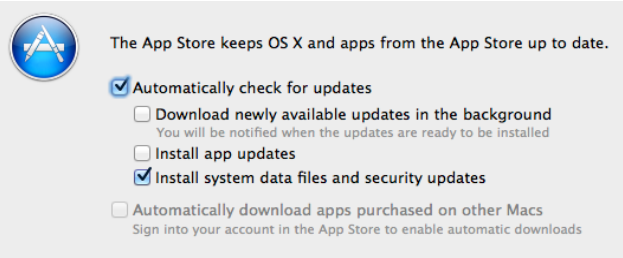


Disabling Updates to Third-Party Apps

Updates to third-party apps may include components that compromise the testing environment. This section describes how to disable updates to third-party apps.

The following instructions are based on OS X 10.9; similar instructions apply for other versions of Mac OS.

To disable updates to third-party apps:



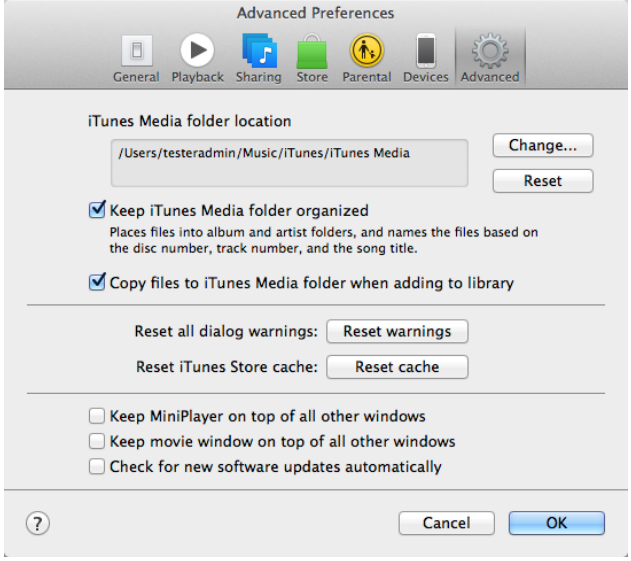
1. Log in to the student's account.
2. Choose Apple menu > **System Preferences**. The ***System Preferences*** dialog box opens.
3. Click **App Store**. The ***App Store*** window opens.
4. Mark **Automatically check for updates**.
5. Clear **Download newly available updates in the background**.
6. Clear **Install app updates**.
7. Mark **Install system data files and security updates**.

Disabling Updates to iTunes

Updates to iTunes may be incompatible with the Secure Browser. This section describes how to disable updates to iTunes.

The following instructions are based on OS X 10.9; similar instructions apply for other versions of Mac OS.

To disable updates to iTunes:



1. Log in to the student's account.
2. Start iTunes.
3. Select **iTunes > Preferences**.
4. Under the **Advanced** tab, clear **Check for new software updates automatically**.
5. Click **OK**.

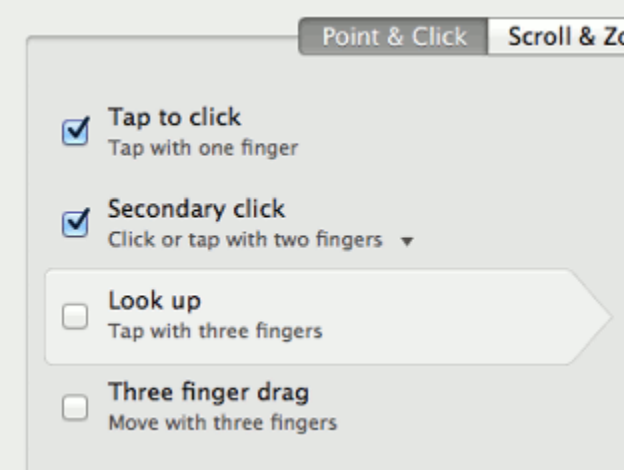
Disabling Look-up Gesture

OS X versions 10.9 and later include a look-up gesture; highlighting a word and then tapping with three fingers on the trackpad displays a dictionary for the highlighted word—a feature that can compromise testing security. This section describes how to disable the look-up gesture.

The following instructions are based on OS X 10.9; similar instructions apply for other versions of Mac OS.

To disable the look-up gesture:

1. Choose Apple menu > **System Preferences**.
2. Click **Trackpad**. The Trackpad window opens.
3. Click the **Point and Click** tab.
4. Clear the **Look up** checkbox.



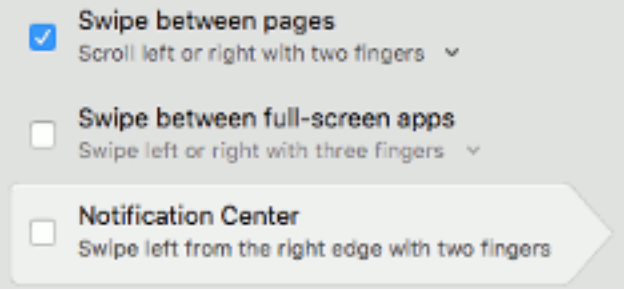
Disabling Display of Notification Center

OS X versions 10.10 and later include Notification Center, which displays system information when swiping to the left with two fingers from the right edge of the trackpad. Depending on its contents, Notification Center can compromise testing security. This section describes how to disable the gesture for displaying Notification Center.

The following instructions are based on OS X 10.10; similar instructions apply for later versions of Mac OS.

To disable the gesture for displaying Notification Center:

1. Choose Apple menu > **System Preferences**.
2. Click **Trackpad**. The Trackpad window opens.
3. Click the **More Gestures** tab.
4. Clear the **Notification Center** checkbox.



Disabling Spaces and Application Launches from the Command Line

The sections Disabling Exposé or Spaces and Disabling Application Launches from Function Keys describe how to configure Mac OS through the desktop. This section describes how to perform those configurations from the command line, which can be faster than working through the desktop. To perform this task, you need to be familiar with logging in to Mac machines through Terminal or other terminal emulator.

To disable spaces and application launches from the command line:

1. Log in to the machine as the user that runs the Secure Browser.

2. Enter the following commands:

```
defaults write com.apple.symbolichotkeys AppleSymbolicHotKeys -dict-add 79
"{enabled = 0; value = {parameters = (65535,123, 262144); type = standard; }; }"

defaults write com.apple.symbolichotkeys AppleSymbolicHotKeys -dict-add 80
"{enabled = 0; value = { parameters = (65535, 123, 393216); type = 'standard'; };
}"

defaults write com.apple.symbolichotkeys AppleSymbolicHotKeys -dict-add 81
"{enabled = 0; value = { parameters = (65535, 124, 262144); type = 'standard'; };
}"

defaults write com.apple.symbolichotkeys AppleSymbolicHotKeys -dict-add 82
"{enabled = 0; value = { parameters = (65535, 124, 393216); type = 'standard'; };
}"
```

Tip: Disable Spaces and Application Launches from the Command Line
You can paste these lines into a text file, and run the file from the command line.

These commands modify the file `~/Library/Preferences/com.apple.symbolichotkeys.plist`.

3. If you logged in to a computer running OS X 10.9 or later, log out and then log back in.

If you need to restore Spaces and the default application launchers, repeat Steps 1–3. In Step 2, change `enabled = 0` to `enabled = 1`.

Disabling Spaces and Application Launches on Remote Machines

The sections Disabling Exposé or Spaces, Disabling Application Launches from Function Keys, and Disabling Spaces and Application Launches from the Command Line describe procedures for configuring a secure test environment in Mac OS. This configuration is stored in the file `~/Library/Preferences/com.apple.symbolichotkeys.plist`. If you have many Mac testing

machines, it may be easier to push this file to those machines instead of configuring each one individually.

You can push the configuration file to remote machines using a variety of tools, such as the following:

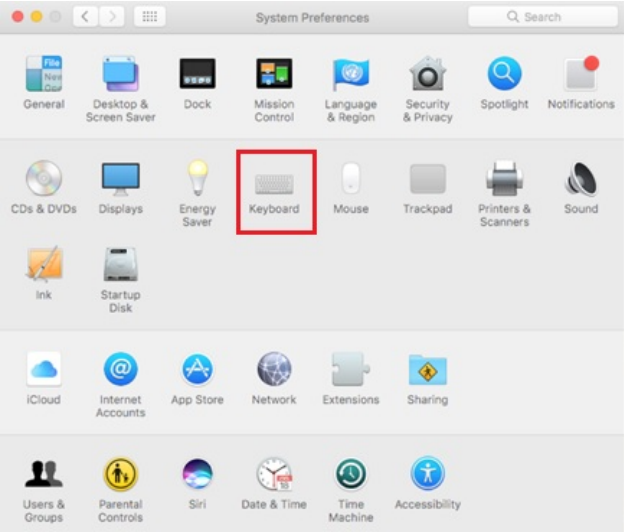
- File Distributor
- Apple's Active Directory Client and Directory Utility
- Apple's Open Directory and Profile Manager
- Centrify & PowerBrokers Identity Enterprise
- Apple Remote Desktop

Disabling Dictation and Siri

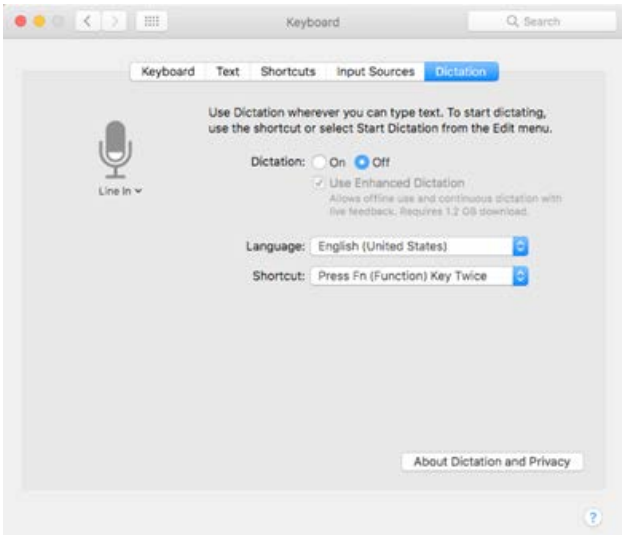
Students can speak into a Mac device utilizing the dictation feature, which suggests words or spellings that may compromise testing security. Use the following procedure to disable dictation.

*To disable **Dictation** in a Mac device:*

1. Go to **System Preferences** and click **Keyboard**, then click **Dictation**.

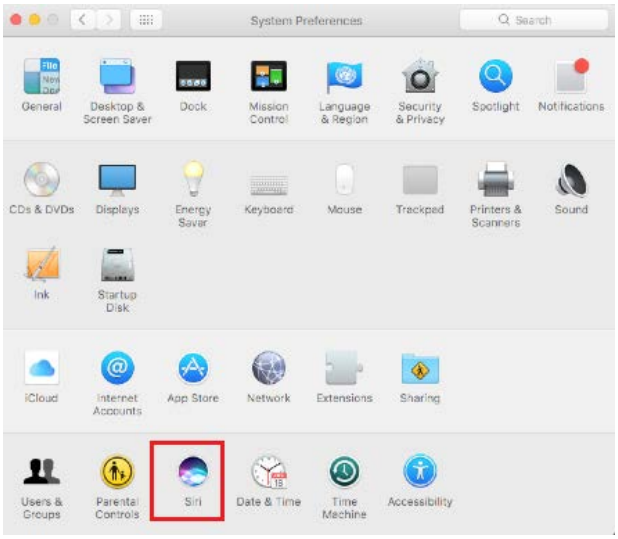


2. Turn the **Dictation** option to **Off**.

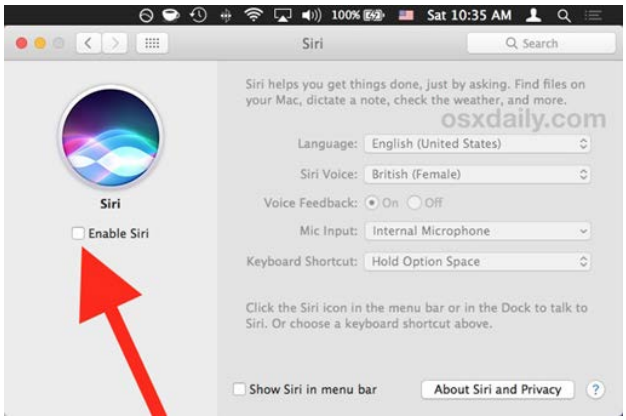


To disable the Siri feature:

1. Go to **System Preferences** and choose **Siri** from the control panel options.



2. Uncheck the box next to **Enable Siri**.



With Siri disabled, the menu bar icon is removed. Depending on your Mac, Siri can still be activated from the dock or the Touch Bar. It’s important to note that while in a test, the AIRSecureBrowser app will detect if a user tries to enable Siri during testing and the app will disconnect the student from the test.

Disabling Dashboard

Students testing on Secure Browser 10.3 can access Dashboard by using the Function+F12 keyboard shortcut. The following procedure explains how to disable Dashboard.

To disable Dashboard:

1. Launch **System Preferences**.
2. Open **Mission Control**.
3. From the **Dashboard** drop-down, select **Off**.

Disabling Custom Keys

Some Mac users have encountered “Error Code 11673 – Custom Keys Enabled” after installing the newest Secure Browser. The following procedure explains how to disable custom keys.

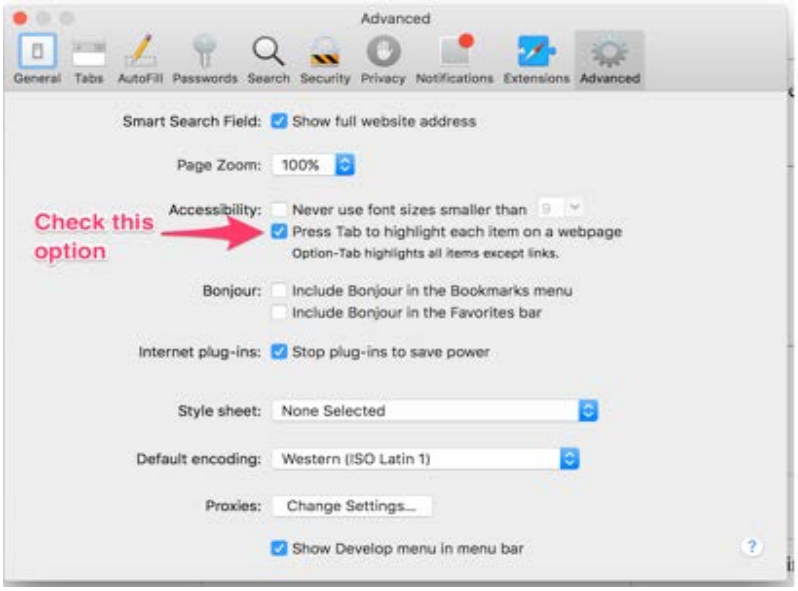
To disable custom keys:

1. Launch **System Preferences**.
2. Open **Keyboard**.
3. Click **Keyboard Shortcuts** tab.
4. Uncheck all boxes under **Mission Control** and **Screen Shots**.

Keyboard Navigation to Tool Menu Using a Safari Browser

Students can use any public browser for practice tests, and navigate to the Tool menu using standard methods, with the exception of Safari. To access the Tool menu using Safari, enable the "Press tab to highlight each item on a webpage" option in Safari Preferences, as shown below.

Note: Students that have the text-to-speech (TTS) accommodation enabled for practice tests will need to use the Secure Browser.



Disabling Text-to-Speech Keyboard Shortcut

A feature in macOS 10.12 (Sierra) and macOS 10.13 (High Sierra) allows users to have any text on the screen read aloud by selecting the text and hitting a preset key or set of keys on the keyboard. By default, this feature is disabled and must remain disabled so as not to compromise test security. This section describes how to toggle this feature.

To toggle text-to-speech keyboard shortcut:

1. From the Apple menu, select **System Preferences**.
2. Select **Accessibility**.
3. Select **Speech**.
4. To enable this feature, check the **Speak selected text when the key is pressed** checkbox. To disable, deselect the checkbox.

Configuring Linux for Online Testing

This section describes how to configure Linux for online testing.

On Linux systems, all keyboard shortcuts are disabled while taking an assessment with the Secure Browser. In the event of an abnormal browser exit, those shortcuts will be reset to the default.

Adding Verdana Font

Some tests have content that requires the Verdana TrueType font. Therefore, ensure that Verdana is installed on Linux machines used for testing. The easiest way to do this is to install the Microsoft core fonts package for your distribution.

- Fedora—Follow the steps in the "How to Install" section of the following website: http://corefonts.sourceforge.net/.
- Ubuntu—In a terminal window, enter the following command to install the msttcorefonts package:

  ```
  sudo apt-get install msttcorefonts
  ```

Disabling On-Screen Keyboard

Fedora and Ubuntu feature an on-screen keyboard that should be disabled before online testing. This section describes how to disable the on-screen keyboard.

To disable the on-screen keyboard:

1. Open **System Settings**.
2. Select **Universal Access**.
3. In the *Typing* section, toggle **Screen Keyboard** to **Off**.

Configuring iOS

This section describes how to configure mobile devices running iOS.

For details on iPad device management and configuration for assessments, see the Assessment with iPad document at https://images.apple.com/education/docs/Assessment_with_iPad.pdf.

Configuring Using Autonomous Single App Mode

iPads running iOS 10 or higher can use Autonomous Single App Mode (ASAM) to quickly create a secure testing environment. To set up ASAM, you must also have access to a desktop or laptop running Mac OS X 10.10 or higher.

Tip: Save Time with Automatic Assessment Configuration

If you are using iPads with iOS 10 or later, you can use the automatic assessment configuration that comes with the AIRSecureTest app. For details, see Using Automatic Assessment Configuration.

Overview of Autonomous Single App Mode and the Secure Testing Environment

To manage multiple iPads using ASAM, you need to do the following:

Step 1: Creating a Mobile Device Management Profile

Step 2: Restricting Features in iOS 10 or later

Step 3: Creating a Supervisory Profile

Step 4: Placing iPads in Autonomous Single App Mode

After completing these steps, each time a student starts a test, the iPad enters ASAM and the test environment is secure.

Step 1: Creating a Mobile Device Management Profile

The first step in provisioning iPads with ASAM is to create an MDM profile. Any profile with default settings is compatible with the Secure Browser. However, you may wish to restrict certain features in devices with iOS 10 or later (see Step 2: Restricting Features in iOS 10 or later). Deploy the profile to a host that the iPads can access.

Creating an MDM profile is beyond the scope of this specification manual. The following references provide introductory information:

- *IT in the Classroom*, available at https://www.apple.com/education/it/mdm/.
- *Apple Configurator Help*, available at https://help.apple.com/configurator/mac/2.0/.
- *Pro tip: Use OS X Server Profile Manager for MDM*, available at http://www.techrepublic.com/article/pro-tip-use-os-x-server-profile-manager-for-mdm/.

Step 2: Restricting Features in iOS 10 or later

You must restrict features in supervised devices with iOS 10 or later that may give students an unfair testing advantage, including the dictionary, predictive keyboard, spell check, auto-correction, and share selected text.

Note: The current version of Apple Configurator does not allow you to restrict these features. You must use a third-party MDM solution such as Casper or AirWatch to create a profile that implements these restrictions.

To restrict features in iOS 10 or later:

- In the Custom Settings section of the MDM solution, insert the profile key for each of the features listed in Table 6.

Table 6. Profile Keys for Features in iOS 10 or Later

Feature	Profile Key	Value
Dictionary, Share Selected Text[a]	`<key>allowDefinitionLookup</key>`	`False`
Predictive Keyboard	`<key>allowPredictiveKeyboard</key>`	`False`
Spell Check	`<key>allowSpellCheck</key>`	`False`
Auto-Correction	`<key>allowAutoCorrection</key>`	`False`

[a] Share Selected Text is available since iOS 10. Disabling Dictionary also disables this feature.

The following snippet turns off the iPad's auto-correction feature. The snippets for dictionary, predictive keyboard, and spell check are similar.

```
<dict>
   <key>allowAutoCorrection</key>
   <false />
   <key>PayloadDisplayName</key>
   <string>Restrictions</string>
   <key>PayloadDescription</key>
   <string>RestrictionSettings</string>
   <key>PayloadIdentifier</key>
   <string>31eb53ac-3a08-46f7-8a0a-82e872382e15.Restrictions</string>
   <key>PayloadOrganization</key>
   <string></string>
   <key>PayloadType</key>
   <string>com.apple.applicationaccess</string>
   <key>PayloadUUID</key>
   <string>56199b2c-374d-4152-bc50-166d21fa9152</string>
   <key>PayloadVersion</key>
   <integer>1</integer>
</dict>
```

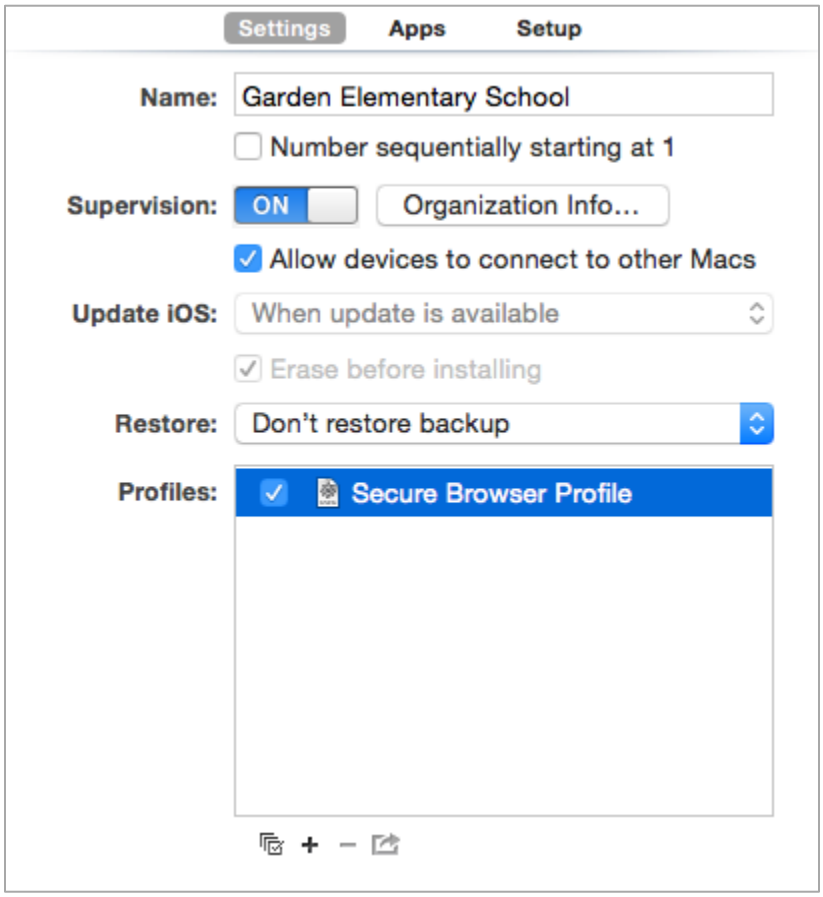
Step 3: Creating a Supervisory Profile

To create a supervisory profile:

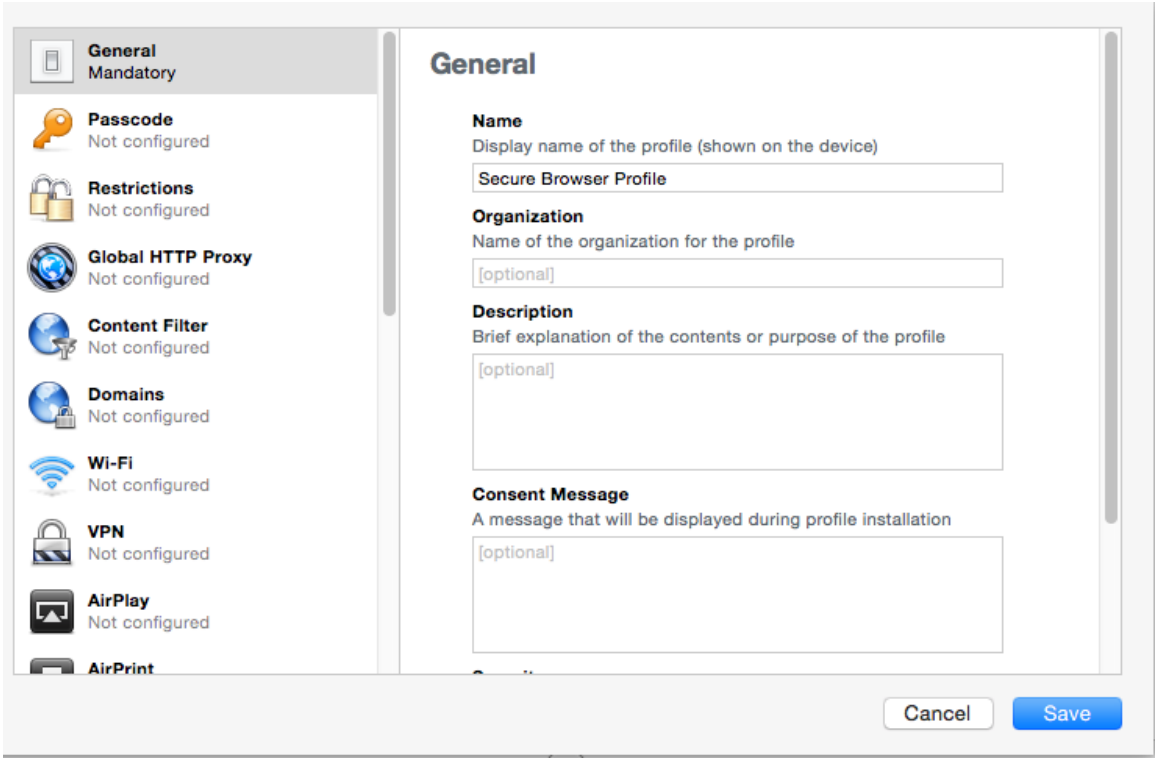
1. On a Mac 10.10 or later, download and install Apple Configurator from the Mac App Store. When the installation completes, open Apple Configurator.

2. Click **Prepare**, then **Settings**. The Settings window appears.

Figure 1. Settings Window in Apple Configurator



3. Click **+** below the Profiles list and select **Create New Profile…**. A configuration window appears.



4. In the **General** section, in the *Name* field, enter a name for the profile.

5. In the **Restrictions** section, click **Configure**. A list of restrictions appears.

6. Make any required changes to the restrictions, or retain the default settings.

7. Click **Save**. You return to the Settings tab, and the profile appears in the Profiles list.

8. Click to export the profile to the Mac.

Creation of the supervisory profile is complete.

Step 4: Placing iPads in Autonomous Single App Mode

Tip: Installing on Multiple iPads at Once

Before starting this procedure, connect the iPads to the Mac through a USB hub. That way you can perform the installation on many of them at one time.

To install the MDM profile, supervisory profile, and Secure Browser:

1. On the Mac where you performed Step 3: Creating a Supervisory Profile, open the Apple Configurator.

2. From the **Apple Configurator** menu, select **Preferences**. The ***Preferences*** window opens.

3. Under **General**, clear the **Automatically refresh** and **Remove apps and profiles Configurator did not install** checkboxes.

4. Close the ***Preferences*** window.

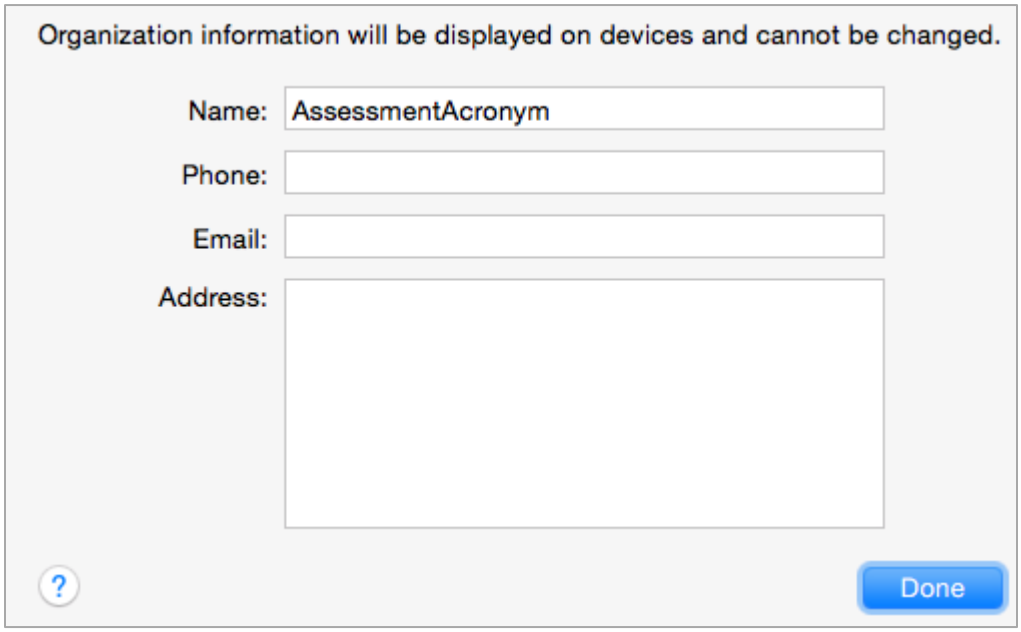
5. Back in Apple Configurator, click **Prepare**, then **Settings**. The Settings window appears (see Figure 1).

6. In the *Name* field, enter a name to apply to the iPads.

7. *Optional:* Mark the **Number sequentially starting at 1** checkbox. This adds a number to each iPad's name. For example, if the Name field is Garden Elementary School, and if three iPads are connected, each device receives the name `Garden Elementary School 1`, `Garden Elementary School 2`, and `Garden Elementary School 3`.

8. Set *Supervision* to **On**.

9. Click **Organization Info…** The ***Organization Info*** window appears.



10. In the *Name* field, enter NGSA and then click **Done**. The ***Organization Info*** window closes.

11. If the profile you created in Step 3: Creating a Supervisory Profile does not appear in the Profiles list, import it by doing the following:

    a. Click **+** below the Profiles list and select **Import Profile…**.

    b. Navigate to the profile you saved in Step 8 and then click **Open**.

12. Mark the checkbox for the profile you want to prepare onto the iPads (see Figure 1).

13. Connect each iPad to the Mac via a USB cable or USB hub.

14. On each connected iPad, uninstall any existing versions of the Secure Browser.

15. In the Apple Configurator, under the Prepare tab, click **Prepare** at the bottom of the window. A confirmation message appears.

16. Click **Apply** in the confirmation message. Preparation starts and may take several minutes, after which the iPad restarts. The Apple Configurator displays progress messages during the preparation.

Note: iOS Upgrade

Apple Configurator may force the iPads to upgrade to the latest version of iOS.

17. After the iPad restarts, follow the prompts on the iPad to configure it until the home screen appears.

18. *Optional:* Confirm the supervisory profile is installed on the iPad. Go to **Settings > General > Profiles**. The profile name you used in Step 4 appears under Configuration Profiles.

19. On the iPad, download and install the MDM profile you created in Step 1: Creating a Mobile Device Management Profile.

20. After the MDM profile installation completes, install the Secure Browser onto the iPad. You can take a copy of the Secure Browser for iOS from the Rhode Island Next Generation Science Assessment Portal. (Detailed instructions for installing the Secure Browser are in the section "Installing the Secure Browser on iOS" of the *Secure Browser Installation Manual*.)

21. *Optional:* After installation completes, test it by doing the following:

    a. Open the Secure Browser.

    b. Log in to a test site.

    c. Select a test, have the TA approve the test.

    d. Start the test. The iPad enters ASAM.

22. Repeat Steps 13–21 to prepare additional iPads.

23. In the Apple Configurator, click **Stop** and close the Apple Configurator.

Setting the iPad into ASAM is complete. When a student starts a test, the iPad enters ASAM mode.

Using Automatic Assessment Configuration

Note: Use of Automatic Assessment Configuration

Apple strongly recommends that schools use Automatic Assessment Configuration to prepare iPads for online testing.

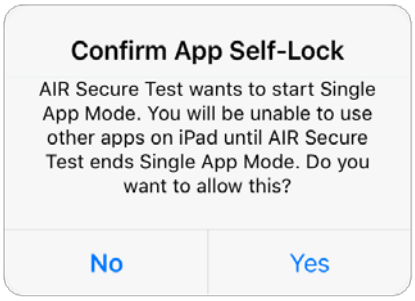
If you are using iPads with iOS 10 or later, you can use Automatic Assessment Configuration. This configuration includes a preset profile in the AIRSecureTest app that automatically suppresses the features listed in Table 6.

Caution: Conflicting MDM Profiles

MDM profiles for managed iPads override the automatic assessment configuration. If you want to use automatic assessment configuration, delete any existing MDM profiles from the Apple Configurator.

When a student taps **Begin Test Now** on an iPad with Automatic Assessment Configuration, a message similar to Figure 2 appears.

Figure 2. Notification When Starting Test with Automatic Assessment Configuration

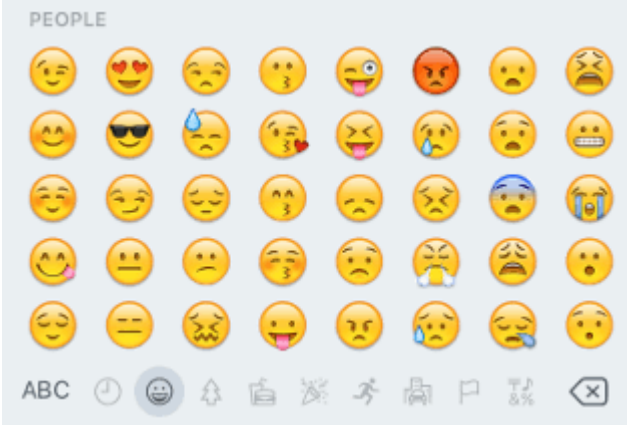


Removing the Emoji Keyboard

Emoticons are characters that express an emotion or represent a facial expression, such as a smile or a frown. Some text messaging apps replace sequences of characters with an emoticon, such as replacing `:-)` with ☺.

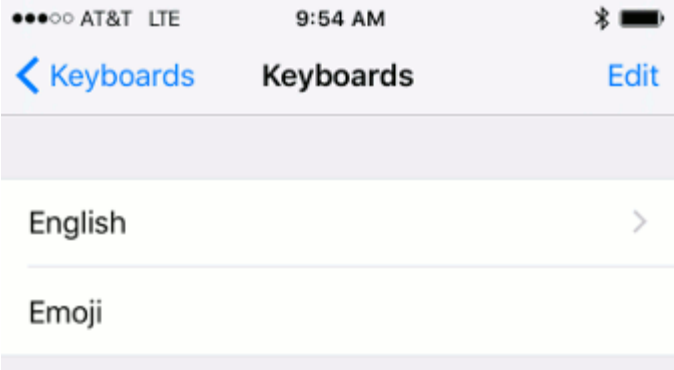
There is an Emoji keyboard in iOS that contains emoticons. This keyboard, if activated, can be confusing for test-takers or scorers. Use the following procedure to remove the emoji keyboard from an iOS device.

Figure 3. Emoji Keyboard



To remove the Emoji keyboard:

1. Tap **Settings**.
2. Navigate to **General > Keyboard**.
3. Tap **Keyboards**.
4. Delete `Emoji` from the list by sliding it to the left.

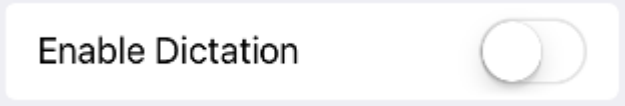


Disabling Dictation

The dictation feature is available on iOS versions 10 and higher. As students speak into an iOS device, the dictation feature suggests words or spelling that may compromise testing security. Use the following procedure to disable dictation.

To disable dictation:

1. Tap **Settings**.
2. Navigate to **General > Keyboard**.
3. Turn off `Enable Dictation`.



Disabling Siri on iOS

Siri is a virtual assistant that uses voice commands to answer questions and perform actions on an iPad. This section describes how to disable Siri on an iPad.

To disable Siri on an iPad:

1. Open **Settings**.
2. Open **Siri**.
3. Toggle the switch to the **Off** position.
4. Confirm by tapping **Turn Off Siri**.

Configuring Android

This section describes how to configure mobile devices running Android.

Enabling the Secure Browser Keyboard

The default keyboard for the Android allows predictive text, which may provide students with hints for answers to tests. For this reason, the Secure Browser for Android requires that a mobile Secure Browser keyboard be configured for the Secure Browser itself. The Secure Browser keyboard is a basic keyboard, with no row for predictive text functionality.

To enable the Secure Browser keyboard:

1. Open **Settings**.
2. Open **General management**.
3. Open **Language and input**.
4. Open **On-screen keyboard**.
5. Select **Manage keyboards**.
6. Set AIR Secure Test to **On**. A popup will appear.
7. Select **OK**. Another popup will appear.
8. Select **OK**.

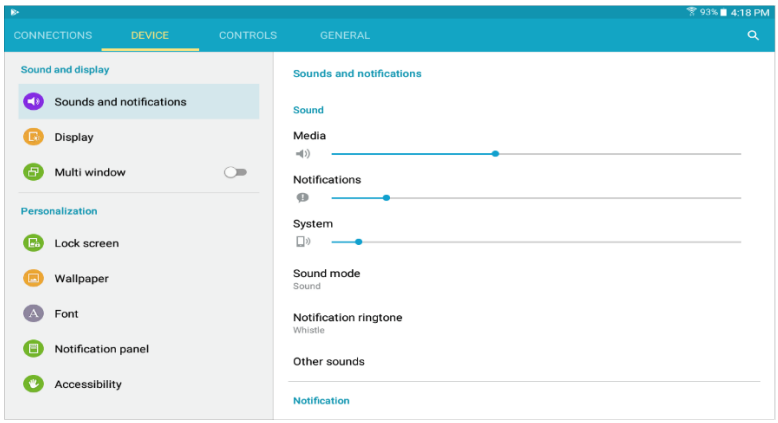
Disabling the Multi Window Feature on Samsung Tablets

Samsung tablets are equipped with a multi window feature to display app launchers. Depending on the available app launchers, the multi window can compromise testing security. To avoid this scenario, disable the multi window on Samsung tablets.

The following instructions are based on Android 5.0.2 on a Samsung Galaxy Tab4; similar instructions apply for other versions of Android on Samsung tablets.

To disable the multi window:

1. Tap **Settings**.
2. Navigate to **Device > Sound and display**.
3. Turn off **Multi window**.

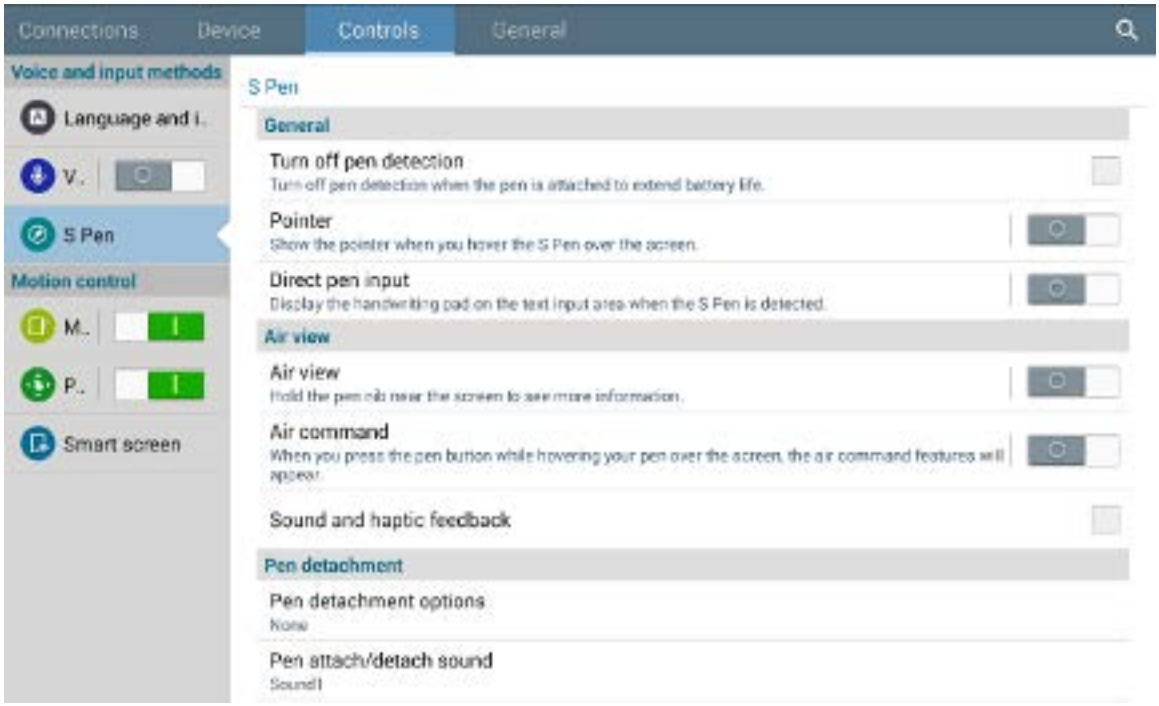


Disabling the Stylus on Samsung Galaxy Note

The Samsung Galaxy Note stylus is capable of launching apps—a situation that can compromise testing security. To avoid this scenario, disable the stylus feature.

To disable the stylus:

1. Tap **Settings**.
2. Navigate to **Controls > Voice and input methods**.
3. Tap **S Pen**.
4. Disable all of the available features.



Configuring Chrome OS

This section describes how to configure auto-updates to Chrome OS.

Managing Chrome OS Auto-Updates

This section describes how to manage Chrome OS auto-updates. AIR recommends disabling Chrome OS auto-updates or limiting updates to a specific version used successfully before summative testing begins.

Disabling Auto-Updates for Chrome OS

This section describes how to disable auto-updates for Chrome OS.

To disable auto-updates for Chrome OS:

1. Display the Device Settings page by following the procedure in ***Manage device settings***, https://support.google.com/chrome/a/answer/1375678?hl=en. The steps in that procedure assume that your Chromebooks are managed through the admin console.

2. From the *Auto Update* list, select **Stop auto-updates**.

3. Click **Save**.

Limiting Chrome OS Updates to a Specific Version

This section describes how to limit Chrome OS updates to a specific version.

To limit Chrome OS updates to a specific version:

1. Display the Device Settings page by following the procedure in ***Manage device settings***, https://support.google.com/chrome/a/answer/1375678?hl=en. The steps in that procedure assume that your Chromebooks are managed through the admin console.

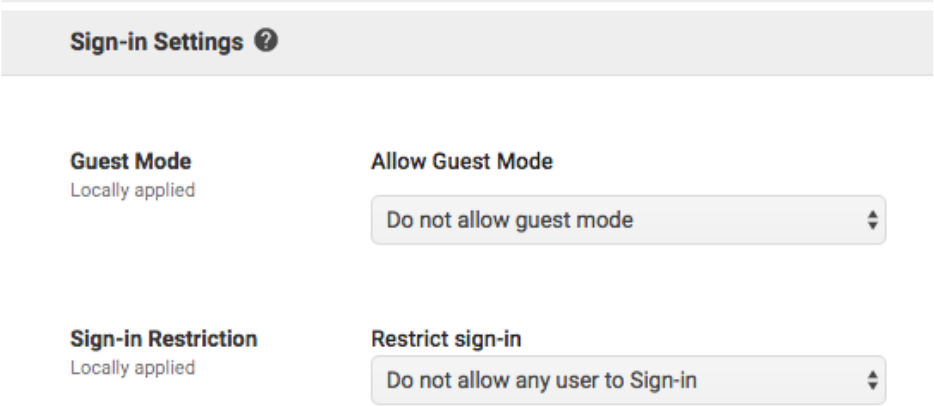
2. From the *Auto Update* list, select **Allow auto-updates**.

3. From the *Restrict Google Chrome version to at most* list, select the required version.

4. Click **Save**.

Securing Chrome OS for High-stakes Assessments

Go to Google Admin Console: Device Management > Chrome management > Device settings > Sign-in restriction, and set it to "Do not allow any user to Sign-in".



Installing CloudReady on PCs and Macs

CloudReady is a reduced-feature operating system, built on the same technology as Chrome OS, that runs on hardware with limited resources. If your school or district has older hardware that does not run newer versions of Windows or Mac OS, consider installing CloudReady on those machines. This installation can postpone or prevent a costly hardware upgrade.

Warning: Loss of Data

The procedure described in this section erases all data on the computer on which you are installing CloudReady. Be sure to back up all necessary data before starting this procedure.

To install CloudReady:

1. Ensure the computer on which you are installing CloudReady—
   - is one of the supported models listed in https://guide.neverware.com/supported-devices.
   - has a USB port.
   - can boot from a USB drive.
2. Purchase a Neverware license for the computer. Licenses are available from http://www.neverware.com/. (Bulk licenses may be available.)
3. If you received a USB drive from Neverware with the CloudReady image, proceed to Step 18. Otherwise, prepare a bootable image by following Steps 4 through 17. Ideally, perform these steps on a computer on which the Google Chrome web browser is already installed.

4. Obtain a blank 8 GB USB drive.

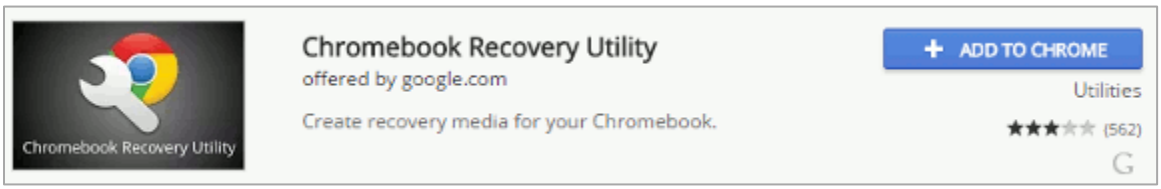
5. Install Google Chrome if it is not already installed.

6. In a web browser, go to the URL for the image file provided to you by Neverware. This URL downloads a file with a name similar to `cloudready_site646.bin`. Note the location of the file on your computer.

7. Insert the USB drive into the computer.

8. Start Chrome, and navigate to the Chrome web store at https://chrome.google.com/webstore/.

9. Search for the app *Chromebook Recovery Utility*.



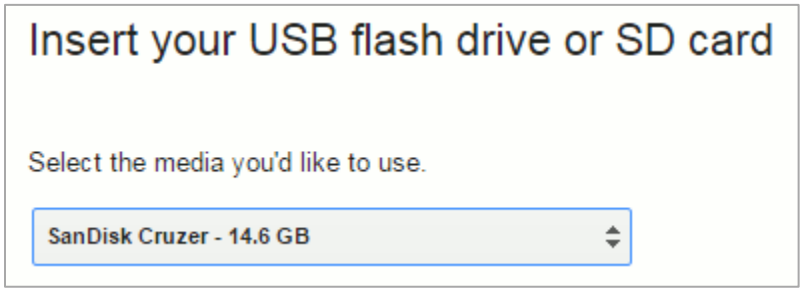
10. Click **ADD TO CHROME**, and in the confirmation prompt click **Add app**.

11. After installation, click **Launch App**.

12. Click ⚙ in the top-right corner and select **Use local image**.

13. Navigate to the file image file that you downloaded in Step 6.

14. In the next screen, select the USB drive you inserted in Step 7.



15. Click **Continue**.

16. In the next screen, click **Create Now**. The recovery utility creates a bootable image of CloudReady onto the USB drive. This operation takes 15–30 minutes.

17. When copying is complete, eject the USB drive from the computer.

18. On the computer where you are installing CloudReady, do the following:

    a. Back up all files you want to save. The installation procedure erases all data on the computer.

    b. Boot the computer from the USB drive. Booting and installation take 10–15 minutes, depending on your hardware. When the installation is complete, your computer turns off.

    c. Remove the USB drive and power on the computer.

    d. Install the AIRSecureTest Kiosk App; see the *Secure Browser Installation Guide* for details.

Configurations for Braille Requirements

For information about configuring operating systems and software for braille testing, see the *Braille Requirements and Testing Manual*, which is available on the Rhode Island Next Generation Science Assessment Portal.

Section IV. Text-to-Speech Requirements

This section contains information about text-to-speech requirements.

Overview of Text-to-Speech

Using text-to-speech requires at least one voice pack to be installed on testing computers.

A number of voice packs are available for desktop computers, and AIR researches and tests voice packs for compatibility with the Secure Browsers. Additionally, not all voice packs that come pre-installed with operating systems are approved for use with online testing. The voice packs listed at the end of this section have been tested and are whitelisted by the Secure Browser.

Using Text-to-Speech

Students using text-to-speech for the practice tests must log in using a supported Secure Browser. Students can also verify that text-to-speech works on their computers by logging in to a practice test session and selecting a test for which text-to-speech is available.

Note: We strongly encourage schools to test the text-to-speech settings before students take operational tests. You can check these settings through the diagnostic page. From the student practice test login screen, click the **Run Diagnostics** link, and then click the **Text-to-Speech Check** button.

Note: Text-to-speech (TTS) tracking does not function correctly on Linux OS. If students require the use of this accommodation (TTS with tracking), they must use a different operating system.

How the Secure Browser Selects Voice Packs

This section describes how AIR's Secure Browsers select which voice pack to use.

Voice Pack Selection on Desktop Versions of Secure Browsers

When a student who is using text-to-speech starts a test, the Secure Browser looks for voice packs on the student's machine. Upon recognizing an approved voice pack, the Secure Browser uses the one with the highest priority.

If any of the approved voice packs has also been set as the default voice on the computer, then that voice pack will always get the highest priority.

Voice Pack Selection on Mobile Versions of Secure Browsers

The Mobile Secure Browser uses either the device's native voice pack or a voice pack embedded in the Secure Browser. Additional voice packs downloaded to a mobile device are

not recognized by the Mobile Secure Browser. Table 7 lists the voice packs used by mobile versions of the Secure Browser.

Table 7. Voice Packs on Mobile Versions of the Secure Browser

Platform	Voice Pack Used by Secure Browser
iOS	Native iOS voice pack.
Android	Native Android voice pack.
Chrome OS	Native Chromebook voice pack.

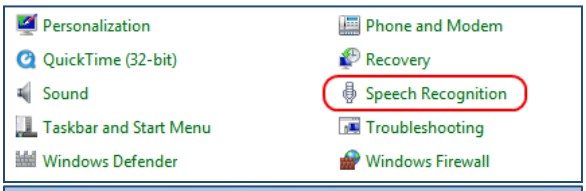
Configuring Windows Text-to-Speech Settings

This section explains how to configure Windows for using text-to-speech with the Secure Browser. The text-to-speech feature is available on Windows versions as listed in the *System Requirements for Online Testing* document.

The instructions in this section are for Windows 7. The process is similar for other versions of Windows.

Note: The following instructions apply only to voice packs supplied with Windows and possibly other third-party voice packs.

1. Open the Control Panel window and select **Speech Recognition**.
2. In the Speech Recognition window, select **Text to Speech**.



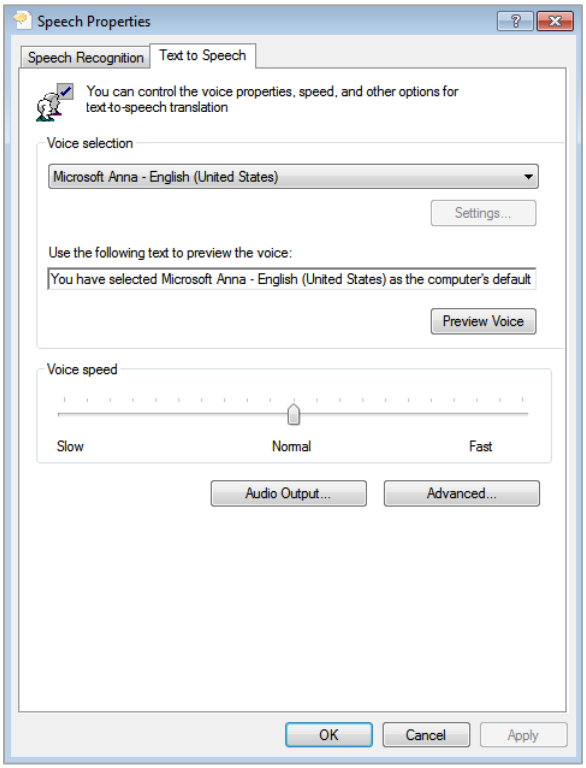
3. Configure default text-to-speech preferences.

   a. *Voice selection:* If multiple voice packs are available, select the default voice.

   b. Select **Preview Voice** to see whether the selected voice requires a rate adjustment.

   c. *Voice speed:* If necessary, adjust the voice speed. Drag the slider to make the voice speak slower or faster. To listen to the rate, select **Audio Output**.

   d. When you are done, click **OK** to save your settings and then close the Speech Properties window.

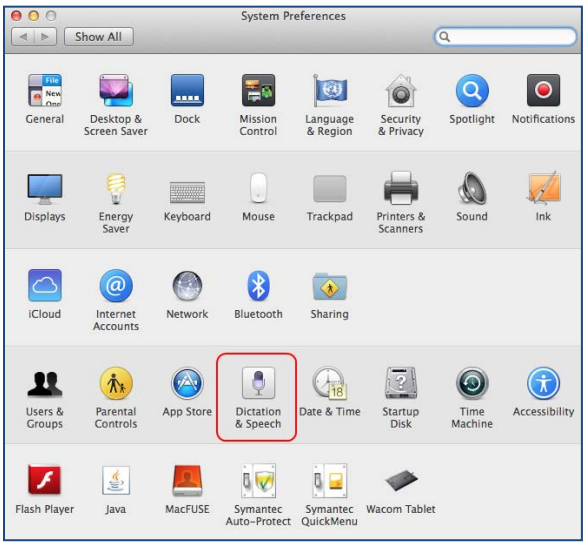


Configuring Mac Text-to-Speech Settings

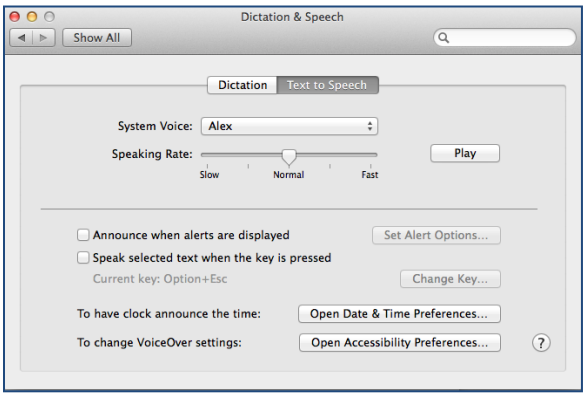
This section explains how to configure Mac OS for using text-to-speech with the Secure Browser. The text-to-speech feature is available on Mac OS versions as listed in the *System Requirements for Online Testing* document.

The instructions in this section are for OS X 10.9. The process is similar for other versions of Mac OS.

1. Open System Preferences, and select **Dictation & Speech**.



2. In the Text to Speech section, configure your default text-to-speech preferences.
   - *System Voice:* If multiple voice packs are available, select the default voice.
   - Select **Play** to see whether the selected voice requires a rate adjustment.
   - *Speaking Rate:* If necessary, adjust the voice speed. Drag the slider to make the voice speak slower or faster. To listen to the rate, select **Play**.
   - When you are done, click the red **X** in the upper left corner to save your settings and close the Speech window.



Text-to-Speech and Mobile Devices

Text-to-speech (TTS) includes a feature that allows students to pause and then resume TTS in the middle of a passage. The pause feature does not work on mobile devices. Consequently, consider testing students who require TTS on desktop or laptop computers.

Voice Packs Recognized by Desktop Secure Browsers

The tables in this section display the voice packs for Windows and Mac that are currently recognized by the Secure Browser.

Voice Packs for Windows

Table 8. Voice Packs Recognized by Secure Browsers—Windows

Vendor	Voice Pack	Language
Windows (pre-installed)	Kate	English
Windows (pre-installed)	Michael	English
Windows (pre-installed)	Michelle	English
Windows (pre-installed)	MSAnna	English
Windows (pre-installed)	MS_EN-GB_HAZEL	English
Windows (pre-installed)	MS_EN-US_DAVID	English
Windows (pre-installed)	MS_EN-US_ZIRA	English
Windows (pre-installed)	MSMary	English
Windows (pre-installed)	MSMike	English
Windows (pre-installed)	MSSam	English
Windows (pre-installed)	Paul	English
Cepstral (commercial)	Cepstral_David	English
Cepstral (commercial)	Cepstral_Marta	Spanish
Cepstral (commercial)	Cepstral_Miguel	Spanish
NeoSpeech (commercial)	VW Julie	English
NeoSpeech (commercial)	VW Violeta	Spanish

Voice Packs for Mac

Table 9. Voice Packs Recognized by Secure Browsers—Mac

Vendor	Voice Pack	Language
Mac (pre-installed)	Agnes	English
Mac (pre-installed)	Alex	English
Mac (pre-installed)	Bruce	English
Mac (pre-installed)	Callie	English
Mac (pre-installed)	David	English
Mac (pre-installed)	Fred	English
Mac (pre-installed)	Jill	English
Mac (pre-installed)	Junior	English
Mac (pre-installed)	Kathy	English
Mac (pre-installed)	Princess	English
Mac (pre-installed)	Ralph	English
Mac (pre-installed)	Samantha	English
Mac (pre-installed)	Tom	Spanish
Mac (pre-installed)	Vicki	English
Mac (pre-installed)	Victoria	English
Mac (pre-installed)	Diego	Spanish
Mac (pre-installed)	Javier	Spanish
Mac (pre-installed)	Marta	Spanish
Mac (pre-installed)	Monica	Spanish
Mac (pre-installed)	Paulina	Spanish
Infovox (commercial)	Heather Infovox iVox HQ	English
Infovox (commercial)	Rosa Infovox iVox HQ	Spanish

Appendix A. URLs Provided by AIR

This appendix presents information about the URLs that AIR provides. Ensure your network's firewalls are open for these URLs.

URLs for Non-Testing Sites

Table 10 lists URLs for non-testing sites, such as Test Information Distribution Engine, Online Reporting System, and Learning Point Navigator.

Table 10. AIR URLs for Non-Testing Sites

System	URL
Portal and Secure Browser Installation Files	https://ri.portal.airast.org/
Single Sign-On System	https://ri.sso.airast.org/
Test Information Distribution Engine (TIDE)	https://ri.tide.airast.org/

URLs for Testing Sites

Testing sites provide test items as well as support services such as dictionaries and thesauruses.

TA and Student Testing Sites

Testing servers and satellites may be added or modified during the school year to ensure an optimal testing experience. As a result, AIR strongly encourages you to whitelist at the root level. This requires using a wildcard.

Table 11. AIR URLs for Testing Sites

System	URL
TA and Student Testing Sites Assessment Viewing Application	*.airast.org *.tds.airast.org *.cloud1.tds.airast.org *.cloud2.tds.airast.org

Online Dictionary and Thesaurus

Some online assessments contain an embedded dictionary and thesaurus provided by Merriam-Webster. The Merriam-Webster URLs listed in Table 12 should also be whitelisted to ensure that students can use them during testing.

Table 12. AIR URLs for Online Dictionaries and Thesauruses

Domain Name	IP Address
media.merriam-webster.com	64.124.231.250
www.dictionaryapi.com	64.124.231.250

Appendix B. Technology Coordinator Checklist

This checklist can be printed out and referred to during review of networks and computers used for testing.

	Activity	Estimated Time to Complete	Target Completion Date	Reference
☐	Verify that all of your school's devices that will be used for online testing meet the operating system requirements.	5–10 hours	3–4 weeks before testing begins in your school	*System Requirements for Online Testing*
☐	Verify that your school's network and Internet are properly configured for testing, conduct network diagnostics, and resolve any issues.	5–10 hours	3–4 weeks before testing begins in your school	Network Configuration and Testing
☐	Install the Secure Browser on all devices that will be used for testing.	5–10 hours	3–4 weeks before testing begins in your school	*Secure Browser Installation Manual*
☐	Enable pop-up windows and review software requirements for each operating system.	5–10 hours	1–2 weeks before testing begins in your school	Software Configuration
☐	On **Windows** computers, disable Fast User Switching. If a student can access multiple user accounts on a single computer, you are encouraged to disable the Fast User Switching function.	5–10 hours	1–2 weeks before testing begins in your school	Disabling Fast User Switching
☐	On **Mac** computers, disable Spaces in Mission Control.	5–10 hours	1–2 weeks before testing begins in your school	Disabling Exposé or Spaces
☐	Install any required text-to-speech software on devices that will be used for testing, and verify that installation.	5–10 hours	1–2 weeks before testing begins in your school	Text-to-Speech Requirements
☐	On **iPads**, ensure AAC is enabled.	5–10 hours	1–2 weeks before testing begins in your school	Using Automatic Assessment Configuration
☐	On **Android** tablets, ensure that the Secure Browser keyboard is enabled.	5–10 hours	1–2 weeks before testing begins in your school	Enabling the Secure Browser Keyboard

Appendix C. Scheduling Online Testing

Number of Computers and Hours Required to Complete Online Tests

We recommend that schools arrange their computer resources to accommodate the number of students who will be testing at the same time for ease of test administration. The Sample Test Scheduling Worksheet below shows how to estimate the number of testing hours needed to administer one testing opportunity.

Note: This worksheet may need to be modified based on your network setup. You may want to work with your Test Administrator to adapt this worksheet as necessary so that you do not risk overloading your wired or wireless network.

Sample Test Scheduling Worksheet

For each school, enter the following for each online test:

Number of computers available for testing at once:

Number of students who need to take the test:

Number of Test Administrators who need a computer:

Estimated number of hours needed per student to complete the test: (This estimate should include approximately 15 minutes for students to get set up and logged in, as well as the average estimated time to complete the test.)

Number of hours that must be scheduled to administer the test:
(students + TAs) x hours ÷ computers =

Example:

- School A has a total of 60 student computers available for testing at once.
- 120 students in grade 5 will need to take the Math assessment.
- Number of hours needed to administer test: 120 students x 1 hour per student ÷ 60 computers = 2 hours (plus 15 minutes for setup).

Appendix D. User Support

If this document does not answer your questions, please contact the Rhode Island Next Generation Science Assessment Help Desk.

The Help Desk will be open Monday–Friday from 7:00 a.m. to 7:00 p.m. ET during the summative testing window and Monday–Friday from 7:00 a.m. to 4:00 p.m. ET outside of the summative testing window (except holidays).

Rhode Island Next Generation Science Assessment Help Desk

Toll-Free Phone Support: 1.866.757.9437

Email Support: rihelpdesk@air.org

If you contact the Help Desk, you will be asked to provide as much detail as possible about the issues you encountered.

Include the following information:

- Test Administrator name and IT/network contact person and contact information
- SSIDs of affected students
- Results ID for the affected student tests
- Operating system and browser version information
- Any error messages and codes that appeared, if applicable
- Information about your network configuration:
    - Secure Browser installation (to individual machines or network)
    - Wired or wireless Internet network setup

Appendix E. Change Log

Change	Section	Date