DRC INSIGHT™
ONLINE LEARNING SYSTEM

Supported System Requirements

Effective June–October 2019

This document describes the current system requirements for the DRC INSIGHT Online Learning System, including student-testing devices and Central Office Services (COS) Service Devices. These requirements cover the following items:

- Hardware devices
- Accessories and peripherals
- Operating systems and levels
- Processor, disk space, and memory
- Screen size and resolution
- Certain testing accommodations

DRC aggressively seeks out, validates, and adopts new technology to offer the best testing solutions to our customers while keeping pace with constantly changing and evolving technology standards. In general, DRC software applications offer Best Effort Support of new versions of a supported operating system within one month of public availability of the new version and Full Support within three months of public availability of the new version, or by the next release date of the DRC application, whichever duration is greater.

Current Update: June 27, 2019
Next Update: October 2019

This document is updated three times each calendar year.

DRC INSIGHT Supported System Requirements

Table of Contents

UPDATE: Support Starting and Ending

The following is a quick overview of upcoming changes to the hardware and software supported for DRC INSIGHT and COS Service Devices. For details, see the appropriate section of this document.

IMPORTANT: Testing Site Manager (TSM) Downloads Ended in May and TSM Support Ends by the End of August

As of May 2019, TSM software downloads were removed from the DRC INSIGHT Portal. In addition, all support for the TSM software ends by the end of August 2019. All sites that plan to test by or after the summer of 2019 should be installing and configuring the Central Office Services (COS) software and replacing TSMs with COS Service Devices. Note that a Service Device can support more testers than a TSM device can, so fewer COS Service Devices are required for testing.

IMPORTANT: Windows 7 and Windows Server 2008 Support Is Extended Through the 2019–2020 Testing Season

Microsoft ended mainstream support for Windows 7 in January of 2015 and switched to extended support. In January of 2020, Microsoft is planning to end extended support for Windows 7, as well as support for Windows Server 2008.

DRC will continue to support both Windows 7 software and Windows Server 2008 software throughout the 2019–2020 school year.

Device Support Beginning

DRC does not list specific supported devices for Windows and Chrome OS. DRC will support devices (including touch-screen devices) that meet the minimum system requirements.

Software Support Beginning

iPadOS (anticipated fall of 2019)
On June 3, 2019, at their Worldwide Developers Conference, Apple announced the launch of their new operating system, iPadOS. Apple plans to have this operating system, designed specifically for iPads, available in the fall of 2019. Although Apple did not provide details during the conference, it is expected that the first release of iPadOS will have most of the features of iOS 12. In the future, the current iOS operating system will be dedicated to iPhones and iPods.

In the interim, DRC will work actively with Apple to determine any impacts iPadOS may have on the DRC INSIGHT Secure App for the iPad, as well as which iPad models iPadOS will support and how DRC will handle this change. We will provide more detailed information as soon as it is available.

Device Support Ending or Ended

Please note that with the addition of iOS 12 and iPadOS as supported OS levels, the minimum level of memory required for iPads used as testing devices has been increased to 2 GB RAM (see DRC INSIGHT Testing Device Requirements).

Software Support Ending

Mac OS X 10.11 (July 2019)
Ubuntu 14.04 (July 2019)
iOS 11.x (July 2019)

Minimum vs. Recommended

Throughout this document, the Minimum level of requirements represents a low compliance threshold. DRC advises using the Recommended level or above. The Recommended level is required for testing with accommodations such as Human Voice Audio (HVA), Text-To-Speech (TTS), and Video Sign Language (VSL).

DRC Device Support Policy

Typically, when a hardware vendor, such as Dell or Lenovo, discontinues a hardware device, the software vendor that provides the operating system support for that device continues supporting the device for a period of time. Therefore, for any device that DRC adds to its fully supported device list, DRC will continue to support the device until the software vendor officially discontinues support for the device.

Device Categories

DRC's approach is to test and certify our software on the devices most commonly used in the classroom. As a result of its testing, DRC groups devices into the three categories described in the table below.

Device Category	Description
Fully Supported	DRC has evaluated and tested the device. It is suitable for testing with DRC INSIGHT and COS Service Devices.*
Not Suitable for Online Testing	DRC has evaluated and tested the device. For various reasons, it is unacceptable for testing with DRC INSIGHT and/or COS Service Devices.
Other	Any device that does not fit into the other categories falls into this category. DRC has neither evaluated nor tested the device—it may or may not be suitable for testing with DRC INSIGHT and/or COS Service Devices. Device manufacturers use different methods to implement touch-enabled screens for their devices, with the technology evolving over time. DRC typically tests DRC INSIGHT with touch devices made by the most common manufacturers for educational settings. Generally speaking, DRC INSIGHT will operate effectively on similar touch-screen models and DRC will provide best effort support for these models.

*Certain devices, such as iPad devices or Chrome devices, can be used for DRC INSIGHT, but not for COS Service Devices.

DRC INSIGHT Testing Device Requirements

The table below indicates the current DRC INSIGHT testing device requirements, as well as the testing devices that DRC fully supports and the devices that are known to be unsuitable for online testing.

Fully Supported Devices	Processor	Available Memory	Unused Disk Space	Screen Size	Resolution
Windows Both touch-screen and non-touch-screen devices that meet the requirements in this table **Mac (OS X and macOS) and Linux** Non-touch-screen devices only	**Minimum** Intel 4th Generation Core i3 4005U (or equivalent) Intel 5th Generation Celeron N3050 (or equivalent) **Recommended** Intel 6th generation product family or greater (or equivalent)	**Minimum** 2 GB RAM **Recommended** 4 GB RAM	**Minimum** 10 GB **Recommended** 20 GB or more	**Minimum** 9.5"	**Minimum** 1024 x 768
Chrome OS Both touch-screen and non-touch-screen devices that meet the requirements in this table	**Minimum** Intel 4th Generation Celeron 2955U (or equivalent) **Recommended** Intel 6th generation product family or greater (or equivalent)	**Minimum** 2 GB RAM or more **Recommended** 4 GB RAM or more	NA–See the **Important Notes** that follow the table.		
Apple iOS iPad 2017 iPad 2018 iPad Air devices iPad Pro Devices: 9.7", 10.5", and 12.9" **Note:** iPad mini devices **are not** supported.	NA	**Minimum** 2 GB RAM or more See the **Important Notes** that follow the table.	NA–See the **Important Notes** that follow the table.	**Minimum** 9.7" or greater	

Important Notes

PCs and MACs to Chromebooks—Neverware CloudReady and DRC INSIGHT

CloudReady from Neverware is a reduced-feature operating system, built on the same technology as Chrome OS, that runs on hardware with limited resources. DRC and Neverware have tested CloudReady and have confirmed that it meets the requirements for testing. Sites will need to partner with Neverware for this solution.

Neverware and DRC offer full support for CloudReady for testing with DRC INSIGHT on testing devices that meet the DRC Chrome OS system requirements (see DRC INSIGHT Testing Device Requirements for details). Sites using CloudReady will follow the Chrome OS installation instructions and the Chrome OS system requirements.

Tablet/Netbook/Chromebook Devices

Because tablet/Netbook/Chromebook devices are not easily configurable for memory and storage (disk space) upgrades, DRC recommends that these devices be streamlined for the DRC INSIGHT App when used for testing.

To achieve this goal, all applications and features that are unnecessary for testing should be removed, turned off, or disabled to ensure that the maximum amount of device memory is available for testing. This includes services such as Bluetooth (unless a Bluetooth keyboard or mouse is needed), GPS, and power saving modes that reduce performance to maximize battery life. DRC also recommends rebooting these devices before testing. These activities help free available memory. Devices that lack sufficient memory during testing may experience issues.

IPA Software

Intelligent personal assistant (IPA) software, such as Siri for iOS and macOS, or Cortana for Windows 10, should be disabled during testing for the appropriate devices. In some cases, this functionality can be disabled automatically using administrator controls such as Mobile Device Management (MDM) software. If IPA software is not disabled, the testing site is responsible for ensuring the security and integrity of the test by actively monitoring that students are not using this capability during the test.

Automatic Operating System Updates and Other Background Processes

Operating system vendors such as Google, Microsoft, and Apple are moving to a model where operating system updates occur automatically in the background. Update processes running in the background on testing devices consume CPU and memory and can affect the testing experience—audio playback may be choppy and Speaking test responses may be distorted. To avoid this situation, verify that no background processes are running on testing devices during testing. Also, if a testing device is set to accept operating system updates automatically, verify that it has the most current DRC-supported version of the operating system *before* the test session starts.

Additional DRC INSIGHT Device Specifications

Supported Accessories	
o Mouse o English language keyboard (internal and external, wired and wireless) o Touchpad o Headphones o Microphone	o Earphones o Earbuds o Stylus for touch devices o Other input devices as supported for accommodations (determined in conjunction with each state department of education)
The input device must allow students to select and deselect; drag items; highlight text, objects, and areas; enter letters, numbers, and symbols; use the Shift, Tab, Return, Delete, and Backspace keys.	

Other
Smart Board interfaces are not supported.

Internet Connectivity
Devices must be able to connect to the Internet using wired or wireless networks.

Wi-Fi Recommendations
The maximum number of devices a Wireless Access Point (WAP) can support varies depending on the manufacturer and model of the WAP device being used for testing. DRC recommends never exceeding 80% of the maximum capacity of the WAP specified by the manufacturer. For example, for a WAP device with a maximum capacity of 20 concurrently connected devices, DRC recommends that no more than 16 devices be connected concurrently. If the number of concurrently connected devices is expected to exceed this threshold, additional WAPs should be implemented. Note that all other networking hardware must be able to accommodate the maximum number of devices that could potentially be connected to the wireless network concurrently. If you plan to test using a wireless network, complete a wireless site survey to ensure that there is sufficient wireless coverage in testing areas. This survey should address coverage and verify that students can take the test in the same area of the building at one time (device density). The survey should account for Internet bandwidth and other traffic in the building at the time of testing, including LAN (wireless and wired) traffic and WAN traffic.

Power Supply	
Minimum For battery devices, a fully charged battery with a two-hour life.	**Recommended** A device connected to a plugged-in power supply.

Accommodations
A COS Service Device is required for HVA, TTS, and VSL, which have increased memory and disk space requirements (see DRC COS Service Device Requirements).

DRC COS Service Device Requirements

The table on the following page describes the processor, available memory (RAM), and available disk space requirements for a COS Service Device (available in 64-bit only—COS Service Device software is not available for 32-bit operating systems) based on the number of concurrent testers. The Recommended level is required for testing with accommodations such as HVA, TTS, and VSL because of the size of media files. The 64-bit COS Service Device software works with non-touch Windows desktop and laptop devices, non-touch Mac (OS X and macOS) desktop and laptop devices, and Linux desktop and laptop devices.

The DRC COS Service Device software requirements are generally the same as the DRC INSIGHT software requirements with the exceptions listed below:

- The COS Service Device software **cannot** be installed on an iOS or Chrome device.

  Note: Both iOS and Chrome *testing devices* with the secure DRC INSIGHT software installed on them can be associated with any COS Service Device regardless of the operating system the COS Service Device is running. For example, an iPad or Chromebook testing device can connect to a Windows COS Service Device for testing. The same is true for Windows, macOS, and Linux testing devices—these devices can connect to any COS Service Device for Content Hosting.

- The COS Service Device software **should not** be installed on mobile or touch-screen devices.
- The COS Service Device **should** be connected to the network through a wired connection.

DRC COS Service Device Requirements (cont.)

Supported OS/Devices	Number of Concurrent Testers	Processor		Available Memory	Available Disk Space
64-bit Windows	Up to 450	Minimum Dual-core i3 at 2.4 GHz or equivalent Recommended Dual-core i5 at 2.4 GHz or equivalent		Minimum 2 GB RAM Recommended and Media Accommodations 4 GB RAM	Minimum 10 GB Recommended and Media Accommodations 20 GB or more
	Up to 900	Recommended 2x dual-core i5 at 2.4 GHz or equivalent			
	Over 900	Recommended 4x dual-core i5 at 2.4 GHz or equivalent		Recommended and Media Accommodations 8 GB RAM	
64-bit macOS	Up to 400	Minimum Dual-core i3 at 2.4 GHz or equivalent Recommended Dual-core i5 at 2.4 GHz or equivalent		Minimum 2 GB RAM Recommended and Media Accommodations 4 GB RAM	Minimum 10 GB Recommended and Media Accommodations 20 GB or more
	Up to 900	Recommended 2x dual-core i5 at 2.4 GHz or equivalent		Recommended and Media Accommodations 16 GB RAM	
64-bit Linux	Up to 450	Minimum Dual-core i3 at 2.4 GHz or equivalent Recommended Dual-core i5 at 2.4 GHz or equivalent		Recommended and Media Accommodations 7.5 GB RAM for 14.04 3.6 GB RAM for 16.04	Minimum 10 GB Recommended and Media Accommodations 20 GB or more
	Up to 600	Recommended 2x dual-core i5 at 2.4 GHz or equivalent			

DRC INSIGHT Network Requirements

The table below describes the available LAN bandwidth requirements for a COS Service Device based on the number of concurrent testers.

Number of Concurrent Testers	Minimum Available LAN Bandwidth
Up to 50	50 Mbps
Up to 150	100 Mbps
Up to 300	200 Mbps
Up to 500	400 Mbps
Up to 600	500 Mbps
Up to 750	600 Mbps
Up to 900	800 Mbps

Notes:

- Shared bandwidth *includes* the LAN, WAN, and Internet Service Provider (ISP) bandwidth. *Each of these bandwidths* should meet or exceed the minimum bandwidth listed.

- Shared bandwidth *does not include* the minimum bandwidth from the testing device to the network because that bandwidth is shared by other testing devices. The minimum bandwidth from the testing device to the network is about 3-5 Mbps.

DRC Software Support Policy

When a software vendor, such as Microsoft or Apple, ends support for an operating system (or level), they discontinue free security updates for that software. This can present large and immediate security and support risks to the software's users. As a result, DRC strongly recommends that all clients affected by the end of support process begin the transition as soon as possible to allow sufficient time for the process.

Support Timeline

INCOMING/CURRENT   **OUTGOING/ENDING**

To accomplish the dual goals of minimizing security risks to DRC clients while making necessary software changes, DRC has established a multi-phase support timeline for the transition from an unsupported operating system or level to a supported operating system or level.

Note: DRC assumes no responsibility or liability for software transition processes at testing sites.

Phases 1 and 3: Best Effort Support

The DRC Support team will help troubleshoot issues reported concerning the operating system or level and DRC software applications as best we can, but DRC cannot guarantee a resolution.

If a problem is uncovered, DRC Support will report the issue to DRC Development. Again, we cannot guarantee a fix, software update, or resolution timeline for software fixes or updates. If DRC determines that an issue is related to a client's network, hardware, or third‑party software, the client must obtain support directly from the software vendor or the hardware manufacturer.

Best Effort Support occurs at both ends of the software lifecycle.

- o *Phase 1: After DRC software testing begins and before the software is fully supported by DRC.* DRC offers Best Effort Support for any new version of a supported operating system (OS) product within 30 days of public availability of the OS product version, or by the next planned common or client-specific release date of the DRC application, whichever duration is greater.

- o *Phase 3: After the software is no longer supported by the vendor and before the end of DRC support.* Once the OS product version has reached the end of vendor support, DRC offers Best Effort Support until the next planned common or client-specific release date of the DRC application, at which point it is restricted from use unless DRC chooses to extend support.

Phase 2: Fully Supported

When an OS product is on the DRC supported product list, DRC performs application testing for all major versions of the product publicly supported by the product vendor and for all minor versions of the product when DRC deems testing is necessary. Any new version of a supported OS product will be Fully Supported by all DRC applications within 90 days of public availability of the version of the OS product, or by the next planned common or client-specific release date of the DRC application, whichever duration is greater.

Phase 4: End of Support

The next release of DRC software applications will not work with the unsupported operating system or level. It is restricted from use.

The table that follows indicates the current supported operating system levels for DRC INSIGHT. It also provides a timeline for changes in terms of the various support phases.

DRC INSIGHT Software: Supported Operating System Levels and Support Timeline

Operating System	Level	Incoming/Current		Outgoing/Ending	
		Phase 1: Best Effort Support	Phase 2: Fully Supported (1)	Phase 3: Best Effort Support	Phase 4: End of Support (2)
Windows	Windows 7, SP1		X		
	Windows 8.1		X		
	Windows 10 Semi-Annual Channel servicing options (3)(4)		X		
	Windows 10 in S mode		X		
	Windows Server 2008, R2 SP1		X		
	Windows Server 2012		X		
	Windows Server 2012, R2		X		
	Windows Server 2016		X		
	Windows Server 2019		X		
Mac (OS X and macOS) **Note:** Mac server software is not supported.	OS X 10.11				X
	macOS 10.12		X		
	macOS 10.13		X		
	macOS 10.14		X		
Linux **Note:** Linux server software is not supported.	Ubuntu 14.04, LTS version, with 64-bit Gnome 3.4, Unity Shell				X
	Ubuntu 16.04, LTS version, with 64-bit Gnome 3.4, Unity Shell		X		
	Ubuntu 18.04, LTS version with Gnome Shell		X		
iOS (5)	11.x latest version				X
	12.x latest version		X		
	iPadOS	X (anticipated Fall of 2019)			
Chrome (6)	Chrome OS recent stable channel		X	(7)	

Note: See the following page for details regarding the numbered table notes.

Table Notes

(1) DRC recommends using operating system levels that are Fully Supported.

(2) When End of Support occurs during a typical testing cycle, DRC will continue to provide Best Effort Support until the testing cycle ends. DRC recommends that sites upgrade to a fully supported level before the testing cycle begins.

(3) DRC fully supports the most recent version of Windows 10 available for the Semi-Annual Channel servicing options within 90 days of public availability of the new version. DRC will offer Best Effort support for previous versions of Windows 10 available for the Semi-Annual Channel servicing options that Microsoft maintains support for with servicing updates. For details, see the Microsoft Windows 10 version support website and https://support.microsoft.com/en-us/help/13853/windows-lifecycle-fact-sheet.

(4) DRC currently supports the Home, Pro, Enterprise, and Education editions of Windows 10.

(5) See iOS Releases and DRC Support on the following page.

(6) See Chrome OS Support and Chrome Devices on the following page.

(7) DRC offers Best Effort Support for unmanaged Chrome devices (the DRC INSIGHT Secure Chrome App was manually installed) that meet the system device and supported operating system requirements.

iOS Releases and DRC Support

The iOS release strategy provides both major and minor release versions.

- Major release versions are indicated by the number to the left of the decimal point. For example, release 11.x and release 12.x are major release versions.
- Minor release versions are indicated by the number to the right of the decimal point. For example, release 11.1 and release 11.2 are minor release versions of major release version 11.

DRC supports both types of release versions.

- DRC provides **Full Support** for the most recent **major release version** of iOS within 90 days of public availability of the new version. During the 90 days of testing/verification, DRC provides Best Effort Support of the new major release version.
- DRC provides **Best Effort Support** for **minor release versions** of iOS as soon as they are made available to the public and will fully support these versions as soon as DRC completes testing/verification. DRC will attempt to fully support minor release versions within 30 days of their release.

Note: DRC offers Best Effort Support for any previous versions of iOS for which Apple maintains support.

Chrome OS Support and Chrome Devices

- DRC offers the following levels of support for Chrome OS for the 2019–2020 testing season:

    o **Full Support** for the current stable channel level.
    o **Best Effort Support** for stable channel levels between level 74 and the current stable channel level.

    Note: DRC also offers Best Effort Support for unmanaged Chrome devices (the DRC INSIGHT Secure Chrome App was manually installed) that meet the system device and supported operating system requirements.

    o **End of Support** (no support) for stable channel levels below 74.

- **IMPORTANT: End of Automatic Update Support for Older Chrome Devices**
  Each Google Chrome device has an Auto Update Expiration (AUE) date. Before reaching this date, the device receives new software updates from Google automatically. As Google's Auto Update policy for Chrome OS devices states, C*hrome devices receive automatic updates regularly that enhance both the device itself and the software on the device. …However, end-to-end updates for all our devices to ensure the highest levels of security requires dependencies on many third-party hardware and software providers so we cannot indefinitely ensure that older Chrome devices will receive updates to enable new OS and browser features*.

Many districts and sites receive operating system updates automatically for their Chrome devices, and older devices may be approaching their AUE date. **When a device reaches its AUE date, Google considers the device obsolete, software updates from Google are no longer guaranteed, the device may not receive necessary security and functionality upgrades, and Google suspends the ability to manage it using the Google Management Console.**

Therefore, DRC recommends replacing any Chrome devices that have reached or will reach their AUE date within the 2018-2019 school year.

To determine the AUE date for a specific Chrome device, use the following link to Google's Auto Update policy and the list of Chrome devices with their AUE dates: https://support.google.com/chrome/a/answer/6220366.

Trademarks

The following are trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries:

Internet Explorer
Microsoft
Microsoft Edge
Windows
Windows Vista
Windows XP
Windows 7
Windows 8
Windows 10
Windows 10 in S mode

The following are trademarks or registered trademarks of Apple Corporation in the United States and/or other countries:

Apple
iOS*
iPad
Macintosh
Mac
OS X and macOS
Safari

*iOS is a trademark or registered trademark of Cisco in the United States and other countries and is used under license.

The following are trademarks or registered trademarks of Google Corporation in the United States and/or other countries:

Chrome
Chrome OS
Chromebook
Google Play

Firefox is a trademark or registered trademark of Mozilla Corporation in the United States and/or other countries.

Linux is a registered trademark of Linus Torvalds.
Ubuntu and Canonical are registered trademarks of Canonical Ltd.
Gnome is a trademark of the Gnome Foundation.