The Florida Department of Education (FDOE) is pleased to provide these technology guidelines to inform schools and districts as they make technology decisions to best meet the instructional and assessment needs of their students. The information in this document is intended to answer questions about whether existing computer inventories and new computer purchases will support future Florida Comprehensive Assessment Test 2.0 (FCAT 2.0) and Florida End-of-Course (EOC) Assessments, as well as the implementation of the FDOE requirements for computer-based assessment administration under the Florida Standards. Please note that the specifications and guidance in this document are not necessarily aligned with or supported by the current FCAT 2.0/EOC testing platform (TestNav 6.9) that will be used through the termination of the contract (Summer 2015). Current specifications for these assessments can be found at www.FLAssessments.com/MinimumSpecs. The new Request for Proposals (RFP) that will be released for the development of FCAT 2.0/EOC assessments beginning in the fall of 2015 contains technical specifications and requirements consistent with those in this document.

RECOMMENDED SPECIFICATIONS

The recommended specifications outline the levels of computer and network capacity that are more likely to meet growing demands for school technology that supports digital learning, assessment and administrative uses simultaneously across classrooms.

- The recommended specifications apply to both existing inventory and new hardware purchases.

- Computers meeting the recommended specifications can be expected to satisfy the FDOE Florida Standards guidelines through the 2018-2019 school year.

TECHNOLOGY GUIDANCE FOR DECISION-MAKING

While the ongoing processes for assessment and technical platform design continue, **this guide is intended to help districts inform their own readiness preparations and decision-making.** As test components are piloted, FDOE will continue to supplement the guidance in this document to reflect current knowledge about what technology districts will need to administer computer-based assessments and digital learning components.

BANDWIDTH RECOMMENDATIONS

Minimum bandwidth requirements will be determined based on the final specifications from the assessment delivery platform and the level of multimedia and technology enhanced items in the final assessment design.

As schools plan for the Florida Standards assessments concurrent with enhancing bandwidth to support instructional needs, FDOE is modeling their recommended specifications on those advanced by the State Educational Technology Directors Association in its May 2012 publication *The Broadband Imperative: Recommendations to Address K-12 Education Infrastructure Needs* (http://www.setda.org/web/guest/broadbandimperative).

Recommended Bandwidth Specifications	
External Connection to Internet	100 kbps per student or faster
Internal School Network	1000 kbps per student or faster

SECURITY REQUIREMENTS

Eligible devices of any type (desktop, laptop, netbook, tablet, thin client) or operating system (Windows, Mac, Linux, iOS, Android, Chrome) must have the administrative tools and capabilities to "lock down" the device to temporarily disable features, functionalities and applications that could present a security risk during test administration, and should not prevent a FDOE secure browser or other test software to place the computer into lock down mode. Features that will need to be controlled during test administration include, but are not limited to, unrestricted Internet access, cameras (still and video), screen capture (live and recorded), email, instant messaging, Bluetooth connections, application switching and printing.

The operating systems listed here, as approved for the FDOE Florida Standards, meet this security requirement, but provide different mechanisms for managing user security settings at the individual device and/or enterprise levels. School technology administrators should be familiar with the particular requirements of the systems they will be using for the FDOE Florida Standards assessments to ensure test security is maintained.

TESTING PLATFORM SOFTWARE / WEB BROWSER REQUIREMENTS

The FDOE recommends that software and browser platforms follow the growing demands for school technology that supports digital learning, the FDOE Florida Standards assessments, and administrative users simultaneously across classrooms. The FDOE's statewide assessment contractor will support the current version of the web browsers listed on the Web Browser Support List below for FCAT 2.0 and EOC assessments within six months of release, as well as two prior versions of the web browsers, as of June 2013.

Web Browser Support List:
- Apple Safari;
- Google Chrome;
- Microsoft Internet Explorer; and
- Mozilla Firefox.

DEVICE SPECIFICATIONS

Desktops, laptops, netbooks (Windows, Mac, Chrome, Linux), thin client, and tablets (iPad, Windows and Android) will be compatible devices provided they meet the established hardware, operating system and networking specifications — and are able to address the security requirements described in the Security Requirements section of the Technology Guidelines.

Desktop, Laptop, Netbook & Thin Client / Virtual Desktop Infrastructure	
Operating System	**Recommended Specifications**
Windows	Windows 7 or newer
Mac OS	Mac OS 10.7 or newer
Linux	Linux: Ubuntu 11.10, Fedora 16 or newer
Chrome OS	Chrome OS 19 or newer
Memory	1gb RAM or greater
Connectivity	Computers must be able to connect to the Internet via wired or wireless networks.
Screen Size	9.5 inch screen size or larger
Screen Resolution	1024 x 768 resolution or higher
Input Device Requirements	Keyboard, Mouse, Touchpad or Touchscreen
	The input device must allow students to select/deselect, drag, and highlight text, objects, and areas. The input device must allow students to enter letters, numbers, and symbols and shift, tab, return, delete, and backspace. To meet security guidelines, each Bluetooth/wireless keyboard and/or mouse must be configured to pair with only a single computer during assessment administration. Other assistive technologies may be needed for students requiring accommodations.
Headphone/Earphone and Microphone Requirements	Headphones/earphones where applicable to eliminate noise distractions. Some student accommodations may also require headphones/earphones (e.g., text to speech). Microphones are required for all students taking the Speaking and Listening Assessment. Some student accommodations may also require microphones (e.g., speech to text, voice controls) for other parts of the FDOE Florida assessments.

Desktop, Laptop, Netbook & Thin Client / Virtual Desktop Infrastructure	
Operating System	**Recommended Specifications**
Additional Guidance	1) Each computer operating in a thin client environment must meet or exceed recommended hardware specifications, as well as bandwidth and security requirements.
	2) Windows XP will no longer be supported by Microsoft after April 8, 2014, presenting security and support risks for schools (http://windows.microsoft.com/en-US/windows/end-support-help).
	3) Computers running Windows XP-Service Pack 3 may require a web browser other than Internet Explorer due to HTML5 compatibility limitations.
	4) Computers must accommodate the 1024 x 768 screen resolution minimum without panning. FDOE recognizes that some netbook computers may have screen resolutions slightly less than the 1024 x 768 minimum, yet may meet all other recommended requirements. Depending on netbook model specifics, school technology administrators may be able to reset screen resolution to meet the guidelines. FDOE will identify a means for schools to evaluate if particular netbook devices are able to display the FDOE Florida Standards assessment items without requiring students to scroll or pan.

Tablets	
Operating System	**Recommended Specifications**
Android	Android 4.0 or newer (with 1GB RAM or greater)
Apple OS	iPad 2 or newer running iOS6 or newer (with 512 MB RAM or greater)
Windows	Windows 8 or newer (with 1GB RAM or greater)
Chrome OS	Chrome OS 19 or newer
Memory	By operating system, see above
Connectivity	Devices must be able to connect to the Internet via wireless networks.
Screen Size	9.5 inch screen size or larger
Screen Resolution	1024 x 768 resolution or higher
Input Device Requirements	Keyboard, Mouse, Touchpad or Touchscreen
	The input device must allow students to select/deselect, drag, and highlight text, objects, and areas. The input device must allow students to enter letters, numbers, and symbols and shift, tab, return, delete, and backspace. To meet security guidelines, each Bluetooth/wireless keyboard and/or mouse must be configured to pair with only a single computer during assessment administration. Other assistive technologies may be needed for students requiring accommodations.
Headphone/Earphone and Microphone Requirements	Headphones/earphones where applicable to eliminate noise distractions. Some student accommodations may also require headphones/earphones (e.g., text to speech). Microphones are required for all students taking the Speaking and Listening Assessment. Some student accommodations may also require microphones (e.g., speech to text, voice controls) for other parts of the FDOE Florida assessments.

Tablets	
Operating System	**Recommended Specifications**
Additional Guidance	1) FDOE has not yet evaluated the compatibility of Windows RT for 2014-2015. Further information will be issued on Windows RT. 2) Smaller tablets (screen size less than 9.5"), e-readers, and smart phones will not be supported and will not be compatible with the FDOE Florida Standards assessments.