

# Mobile productivity without the fuss.



The Intel® Atom™ processor-powered Acer ICONIA W510-1422 easily handled common office scenarios.

The Apple® iPad® failed on some and was slower on others.

The popularity of tablets in the workplace is rising as employees seek lighter, sleeker, more portable devices to use in the office, at meetings, and when traveling. Not all tablets fit successfully into a business culture, and it is essential to select a device that lets workers complete everyday tasks with ease.

In the Principled Technologies labs, we compared the user experiences that two tablets provide: an Acer ICONIA W510-1422 tablet powered by an Intel Atom processor and Microsoft® Windows® 8 and a third-generation Apple iPad. Our tests looked at the tablets' abilities to perform common tasks such as opening email, opening and editing attachments, connecting to network file shares, collaborating with colleagues, connecting to a VPN, and working with a WebEx video conference. The verdict? We found that the Intel Atom processor-based Windows 8 tablet was able to meet the needs of a typical enterprise worker for the scenarios we tested, while the Apple iPad presented a number of obstacles to completing basic tasks.

Tablets for the workplace should make office life easier for the worker, not add roadblocks to performing everyday activities. When selecting a tablet for the office, the most easily integrated tablet provides the greatest benefit to your workers and your organization.

## IT'S ABOUT MORE THAN JUST NUMBERS

To learn about the enterprise compatibility of the tablets, we created scenarios reflecting everyday work tasks. We measured the amount of time it took to complete these scenarios; in all cases, the Acer ICONIA W510-1422 tablet powered by the Intel Atom processor and Windows 8 took less time. In some cases, the time difference was slight, and in others, it was dramatic. For example, the Intel Atom processor-based tablet opened a large Excel file in just 7 seconds, compared to 4 minutes for the iPad.

However, in many cases time was only part of the story. It is vital that a document retains its formatting and looks the way it is supposed to. No one wants to be the person who ruined a client deliverable because his or her app couldn't handle a certain font or formatting type and altered a collaborative document. And if your device doesn't allow you to be a full participant in a Web conference, but limits your role to that of a viewer, it becomes a serious problem.

In this report, we provide both the time the tablets took to complete the scenarios and the issues they encountered. For detailed system configuration descriptions, see [Appendix A](#). [Appendix B](#) provides detailed results and [Appendix C](#) details our test procedure. [Appendix D](#) includes the characteristics of our test files.

## THE RIGHT TOOL FOR THE JOB

A big advantage in choosing an Intel Atom processor-based Windows 8 tablet is that it supports familiar, frequently used programs that typical offices use. This allows such tablets to integrate into the existing environment while maintaining easy collaboration with other devices.

The experience with the Apple iPad, in contrast, can be quite different. With over 700,000 apps currently available in the App Store, choosing the right one for the job can be a challenge. What works for some users may not work for others depending on how they use the application and the specific environment in which they intend to use it. Because we couldn't test every app, we chose for each scenario what we believed were the most likely applications a user would choose based on popularity and our test usage scenario. Because we wanted to avoid penalizing the iPad for the possible shortcomings of an application, for office productivity-related tasks on the iPad, we chose both Quickoffice Pro HD and Apple's Productivity offerings—Pages, Numbers, and Keynote.

# WHAT WE FOUND

The Intel Atom processor-based Acer ICONIA W510-1422 tablet with Microsoft Office 2010 encountered few issues performing our test scenarios. It completed them more quickly than the Apple iPad and required no extra steps to complete the tasks. When handling documents, the Intel Atom processor-based Windows 8 tablet introduced no formatting problems; the files appeared as intended, and saving files created no new issues. With the Apple iPad, that was not always the case.

With the iPad, we encountered several issues, including crashing applications, Excel files not opening because they contained too many rows, formatting problems that rendered documents unusable, the inability to collaboratively work on a shared Excel file, the inability to be a WebEx conference presenter, and more. While the Apple iPad was an adequate viewing device and could perform some tasks with relative ease, our findings suggest that it would present several issues for tasks that employees perform on a daily basis when using file types commonly used in the workplace.

Figure 1 shows a Microsoft Word DOCX version of a Principled Technologies test report when viewed on both the Acer ICONIA W510-1422 and the Apple iPad using Apple Pages. The Apple iPad was unable to display the document correctly, removing the header, footer, and main graphic, and altering the text font. Such dramatic formatting issues mean that employees would be unable to use the Apple iPad to handle this document format for work.

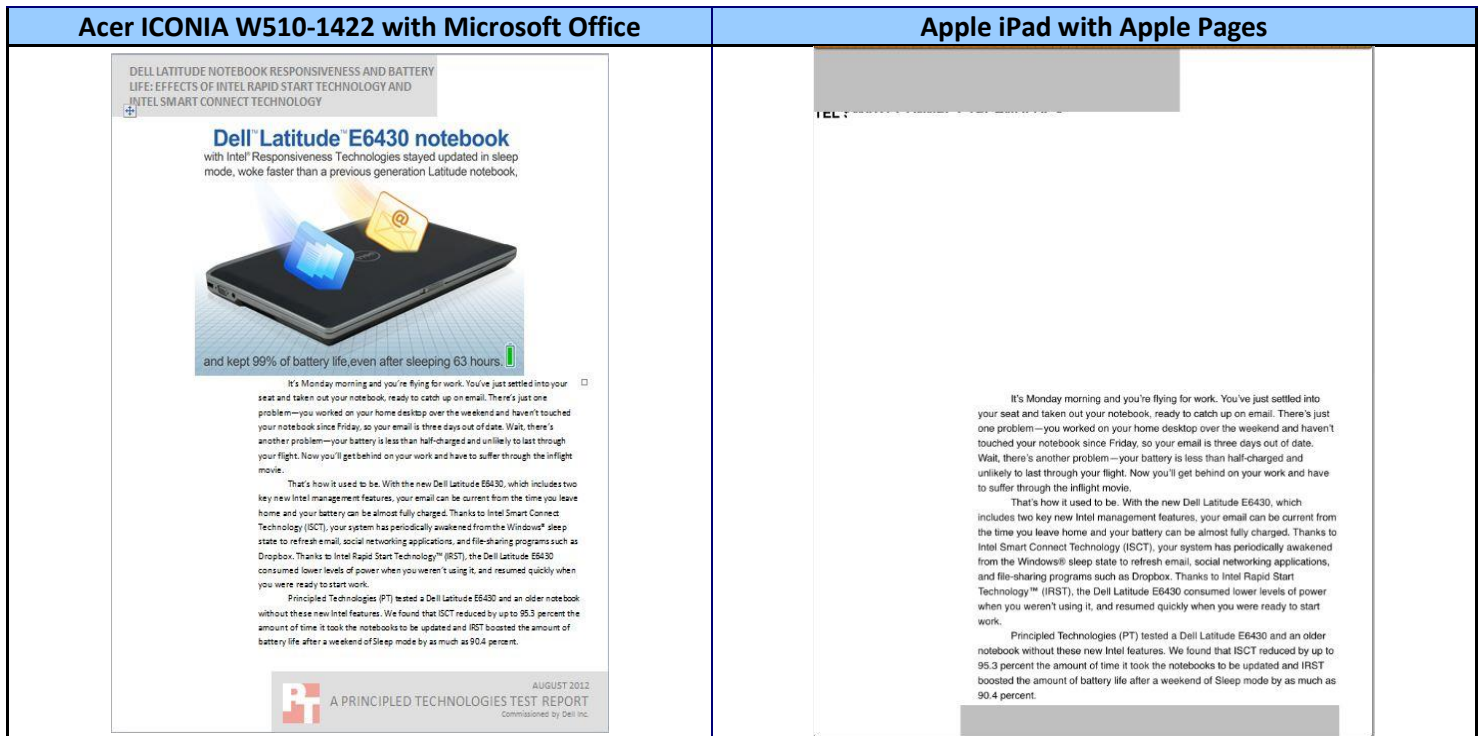


Figure 1: How one Word DOCX document appeared on the two tablets.

## TEST SCENARIOS

### Scenario 1 – Working with Microsoft Word documents and Excel spreadsheets

An employee comes to work and checks email. She opens an email attachment (Word DOCX), makes changes to the attachment, and emails the file back to the sender. She then connects to the company's network file share and opens, edits, and saves a spreadsheet (Excel XLSX) on the network.

#### Tasks

- Opening/editing/saving a DOCX file from email
- Opening/editing/saving an XLSX file from a file server

#### What we encountered

It is important to note that the reason we used two Word DOCX files and two Excel XLSX files was that neither Quickoffice Pro HD nor Apple Pages/Numbers could otherwise complete the scenario on the Apple iPad.

The Intel Atom processor-based Acer ICONIA W510-1422 tablet with Windows 8 successfully completed the scenario, taking less time than the Apple iPad to complete the tasks while encountering no problems completing them.

We encountered multiple issues using the iPad to complete this scenario (17 issues using Quickoffice Pro HD and 39 issues using Apple Pages), including two “showstoppers” that left us unable to continue. For a complete list of issues that the tablets encountered, see [Appendix B](#).

We attempted to edit the Word DOCX1 file with Quickoffice Pro HD but when we scrolled to page 3 of the document, the Quickoffice Pro HD application crashed, preventing us from editing it and saving it as outlined in the methodology. We were able to open and edit the document with the Apple Pages application, but it introduced several formatting issues that altered the document and made it difficult to use.

We encountered another showstopper when we attempted to open the Excel XLSX1 file using the Apple Numbers application. After several seconds, we received an error message that read, “Numbers was unable to open the spreadsheet because it contained ‘too many cells.’” The Quickoffice Pro HD application on the Apple iPad was able to open the Excel XLSX1 file, but it took 5 minutes to do so, while the Intel Atom processor-based Acer ICONIA W510-1422 tablet with Windows 8 and Microsoft Office took just 15 seconds to open the same file.

Figure 2 details the times, in minutes:seconds, that it took the tablets to complete the first scenario for Word and Excel documents. For a full list of compatibility issues we encountered, see [Appendix B](#).

<b>Word DOCX1 and Excel XLSX1 times</b>			
	<b>Acer ICONIA W510-1422 (with Microsoft Office)</b>	<b>Apple iPad (with Quickoffice Pro HD)</b>	<b>Apple iPad (with Apple Pages)</b>
Time to open email and open Word DOCX1 attachment	00:10.66	00:06.18	00:13.64
Time to edit and email edited Word DOCX1 attachment	00:29.25	FAIL (application crashed)	00:33.37
Time to connect to network file server and open an Excel XLSX1 file	00:15.79	05:00.06	FAIL (application could not open a spreadsheet with "too many cells")
Time to edit and save the Excel XLSX1 file to the network file server	00:06.34	05:58.80	FAIL
<b>Total time</b>	<b>1:02.04</b>	<b>Incomplete scenario 11:05.04</b>	<b>Incomplete scenario 00:47.01</b>

Figure 2: Times, in minutes:seconds, that it took the tablets to complete the scenario.

Figure 3 details the times, in minutes:seconds, that it took the tablets to complete the second scenario for Word and Excel documents.

<b>Time to complete scenario with Word DOCX2 and Excel XLSX2</b>			
	<b>Acer ICONIA W510-1422 (with Microsoft Office)</b>	<b>Apple iPad (with Quickoffice Pro HD)</b>	<b>Apple iPad (with Apple Pages)</b>
Time to open email and open Word DOCX2 attachment	00:09.78	00:07.34	00:14.55
Time to edit and email edited Word DOCX2 attachment	00:29.40	00:44.68	00:32.03
Time to connect to network file server and open an Excel XLSX2 file	00:09.12	00:16.87	00:39.22
Time to edit and save the Excel XLSX2 file to the network file server	00:05.87	00:30.03	00:41.68
<b>Total time</b>	<b>0:54.17</b>	<b>01:38.92</b>	<b>02:07.48</b>

Figure 3: Times, in minutes:seconds, that it took the tablets to complete the scenario.

## Scenario 2 – Working with PowerPoint presentations

An employee opens a PowerPoint PPTX file from the SharePoint server. After editing it, he saves the PPTX deck locally to the tablet. He prints multiple copies of it to distribute at the upcoming presentation, and then connects the tablet to the wireless projector for the presentation.

### Tasks

- Opening/editing/saving PPTX file from SharePoint server
- Connecting to a network printer (Brother MFC-8860DN) and printing PPTX
- Connecting to a wireless projector and presenting PPTX

### What we encountered

The Intel Atom processor-based Acer ICONIA W510-1422 tablet with Windows 8 had no issues connecting to the SharePoint server, editing and saving the PPTX file, connecting to the network printer, printing out the PPTX in a little over a minute, and then connecting to the wireless projector and displaying the presentation. Everything worked the way the user intended without the need for a separate PC.

In contrast, the Apple iPad created several hurdles to completing this scenario. On the iPad, the SharePlus Pro application allowed us to access the SharePoint server with no issues, but SharePlus Pro allowed us to only view the PowerPoint PPTX file, not edit it. To edit the PPTX file, we had to use either QuickOffice Pro HD or Keynote, which lead to further compatibility issues we detail in [Appendix B](#).

To print from the iPad to the networked Brother MFC-8860DN printer, we used the PrintCentral Pro application. However, we were unable to print directly because the Brother MFC-8860DN is not an Apple AirPrint-supported printer. This issue required us to use a separate PC acting as a print server to print the document. This limited our print options, forcing the PPTX deck to print in portrait mode, with no gray-scale option. Once we set up the print capability in this manner, it took over 6 minutes for the printout to finish. Also, the printout did not look as intended - after the first few pages, the slides started to slip, so that the bottom of each slide included the top of the following slide (See Figure 4). It was not a document worthy of passing out at a conference.


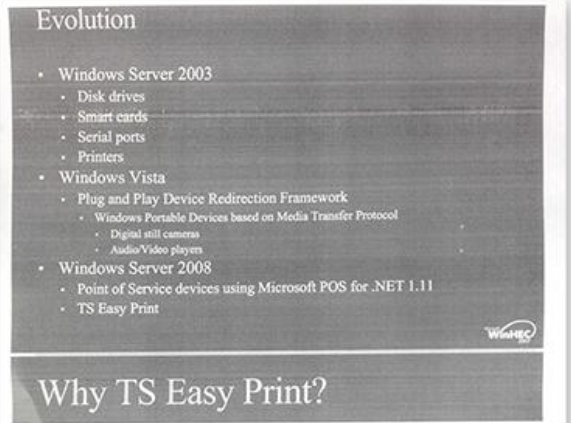

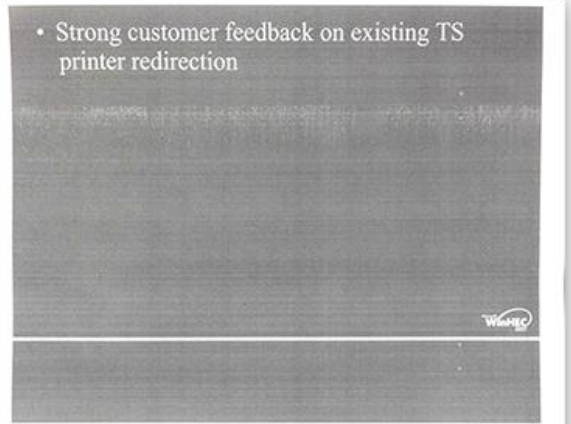
Acer ICONIA W510-1422 with Microsoft Office	Apple iPad with Apple Pages
 <p><b>TS Device Redirection Evolution</b></p> <ul style="list-style-type: none"> <li>• Windows Server 2003 <ul style="list-style-type: none"> <li>• Disk drives</li> <li>• Smart cards</li> <li>• Serial ports</li> <li>• Printers</li> </ul> </li> <li>• Windows Vista <ul style="list-style-type: none"> <li>• Plug and Play Device Redirection Framework <ul style="list-style-type: none"> <li>• Windows Portable Devices based on Media Transfer Protocol <ul style="list-style-type: none"> <li>• Digital still cameras</li> <li>• Audio/Video players</li> </ul> </li> </ul> </li> </ul> </li> <li>• Windows Server 2008 <ul style="list-style-type: none"> <li>• Point of Service devices using Microsoft POS for .NET 1.11</li> <li>• TS Easy Print</li> </ul> </li> </ul>	 <p><b>Evolution</b></p> <ul style="list-style-type: none"> <li>• Windows Server 2003 <ul style="list-style-type: none"> <li>• Disk drives</li> <li>• Smart cards</li> <li>• Serial ports</li> <li>• Printers</li> </ul> </li> <li>• Windows Vista <ul style="list-style-type: none"> <li>• Plug and Play Device Redirection Framework <ul style="list-style-type: none"> <li>• Windows Portable Devices based on Media Transfer Protocol <ul style="list-style-type: none"> <li>• Digital still cameras</li> <li>• Audio/Video players</li> </ul> </li> </ul> </li> </ul> </li> <li>• Windows Server 2008 <ul style="list-style-type: none"> <li>• Point of Service devices using Microsoft POS for .NET 1.11</li> <li>• TS Easy Print</li> </ul> </li> </ul> <p><b>Why TS Easy Print?</b></p>
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Figure 4: How the PowerPoint slides appeared when printed from the two tablets.

Finally, connecting and presenting wirelessly to the Dell M110 wireless projector using the Apple iPad was a very complicated endeavor. To use the iPad wirelessly with the Dell M110 projector required using the MobiShow Pro application. Using MobiShow Pro meant that we had to first convert the entire PowerPoint presentation from the PPTX file format to the PtG2 file format on a separate PC. This introduced the extra steps of moving the edited PPTX file from the iPad back to a PC for conversion and then back to the iPad where MobiShow Pro could then connect to the wireless projector and show the presentation. The extra equipment and many extra steps the Apple iPad required for a PowerPoint presentation created quite a hassle.

Figure 5 details the times, in minutes:seconds, that it took the tablets to complete this scenario. The Acer ICONIA W510-1422 tablet powered by an Intel Atom processor and Windows 8 took just over 2 minutes to complete the tasks, while it took the Apple iPad over 12 minutes to do the same using either application. For a full list of issues we encountered, see [Appendix B](#).

<b>Time to complete scenario</b>			
	<b>Acer ICONIA W510-1422 (with Microsoft Office)</b>	<b>Apple iPad (with Quickoffice Pro HD)</b>	<b>Apple iPad (with Apple Pages)</b>
Time to open PPTX file on SharePoint server	00:08.80	00:01.40	00:01.40
Time to edit and save the PPTX file to the tablet	00:29.51	00:32.15	00:40.93
Time to print out presentation	01:14.53	06:22.53	06:22.53
Time to prepare/convert slide presentation	0:00.00 (no additional preparation time needed)	04:52.78	04:52.78
Time to connect to wireless projector	00:25.46	00:31.54	00:31.54
<b>Total time</b>	<b>2:18.3</b>	<b>12:20.40</b>	<b>12:29.18</b>

Figure 5: Times, in minutes:seconds, that it took the tablets to complete the scenario.



## Scenario 3 – Collaborating with multiple file types

One employee gives another employee a USB Flash drive with eight types of documents on it. The second employee copies the files onto her tablet and opens, edits, and saves each one locally. She then copies one of the files, a shared Excel spreadsheet, to the network, where she collaborates on it with a third colleague.

### Tasks

- Transferring files from a USB flash drive onto the tablet
- Opening/editing/saving different file types locally
- Sharing and collaborating in Excel

### What we encountered

The Intel Atom processor-based Acer ICONIA W510-1422 tablet with Windows 8 had no issues retrieving files from a USB flash drive, editing and saving multiple file types, or allowing collaboration.

The Apple iPad was, again, much more difficult to work with. The iPad has no USB port and the USB adapter kits on the market work with only digital photo and video cameras to transfer pictures and video files, other file types. To copy the files from the flash drive to the iPad, we chose to use Dropbox, which required us to have a separate PC with Dropbox installed. Once we got the files onto the iPad, many elements of the files were not rendered, formatted, or even opened the way that the original files on a PC were. Figure 6 shows how a PowerPoint animated slide was presented using Quickoffice Pro HD on screen, and the issues that the Apple iPad presented. For a full list of the issues we encountered on the tablets, see [Appendix B](#).

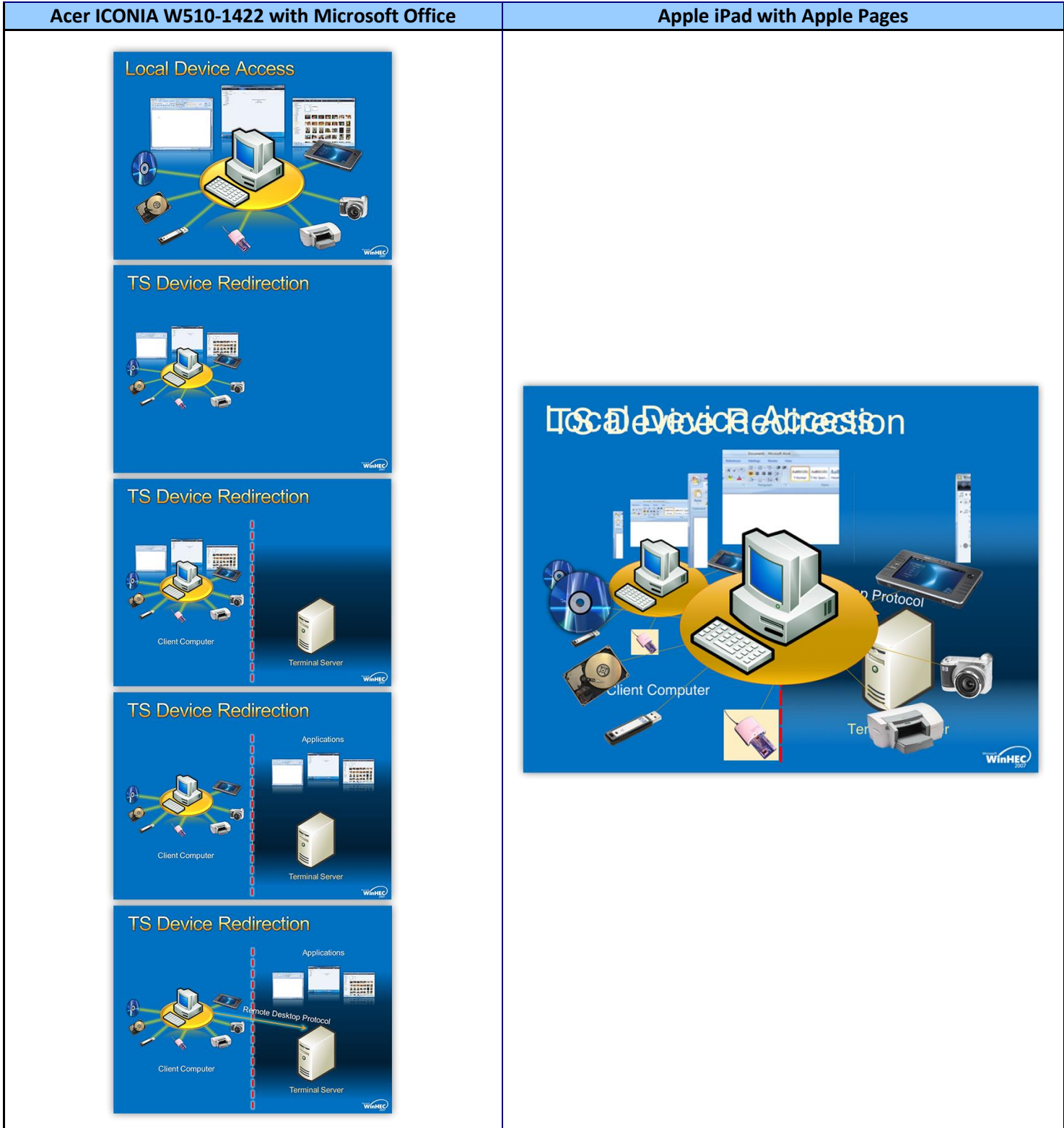


Figure 6: How a PowerPoint slide animation appeared on the two tablets.

Another reason we were unable to complete this scenario with the Apple iPad was that Quickoffice Pro HD and Apple Numbers do not allow users to work collaboratively at the same time on shared Excel spreadsheets. A user must work on it, save and close it, and then notify the next user that the file is available for editing. This of course was not an issue with the Intel Atom processor-based Acer tablet equipped with Microsoft Office.

Figure 7 details the time it took the tablets to complete this scenario. The Acer ICONIA W510-1422 tablet powered by the Intel Atom processor and Windows 8 took just over 3 minutes to complete the tasks, while it took the Apple iPad up to 26 minutes while encountering as many as 38 issues with the documents. For a complete list of the issues we encountered completing this scenario, see [Appendix B](#).

Time to complete scenario			
	Acer ICONIA W510-1422 (with Microsoft Office)	Apple iPad (with Quickoffice Pro HD)	Apple iPad (with Apple Pages, Numbers, and Keynote)
Time to transfer the files from USB flash drive to tablet	00:14.00	01:21.20	01:21.20
Time to open Excel XLS	00:03.78	00:04.58	00:33.21
Time to edit and save Excel XLS	00:07.65	00:14.29	00:13.12
Time to open Excel XLSX1	00:07.02	04:32.40	<b>FAIL</b> The document can't be opened because it contains too many cells.
Time to edit and save Excel XLSX1	00:06.41	05:42.73	<b>FAIL</b> The document can't be opened because it contains too many cells.
Time to open Excel XLSX2	00:03.74	00:10.36	00:30.50
Time to edit and save Excel XLSX2	00:06.39	00:22.69	00:13.07
Time to open Word DOC	00:04.92	00:04.31	00:12.43
Time to edit and save Word DOC	00:21.43	00:30.67	00:17.87
Time to open Word DOCX1	00:05.31	00:04.93	00:12.09
Time to edit and save Word DOCX1	00:19.28	<b>FAIL</b> Quickoffice crashed	00:18.39
Time to open Word DOCX2	00:04.87	00:05.95	00:12.01
Time to edit and save Word DOCX2	00:21.18	00:27.03	00:17.40
Time to open PowerPoint PPT	00:05.57	00:08.59	00:12.59
Time to edit and save PowerPoint PPT	00:06.79	00:18.17	00:08.77
Time to open PowerPoint PPTX	00:04.69	00:09.65	00:18.63
Time to edit and save PowerPoint PPTX	00:06.68	00:20.80	00:10.37
Time to connect to network file	00:10.10	00:28.68	<b>FAIL</b>

Time to complete scenario			
	Acer ICONIA W510-1422 (with Microsoft Office)	Apple iPad (with Quickoffice Pro HD)	Apple iPad (with Apple Pages, Numbers, and Keynote)
server and copy a shared Excel XLSX1 file to the network			The document can't be opened because it contains too many cells.
Time to open, edit, and save the Excel XLSX1 file to the network file server	00:24.60	10:13.78	<b>FAIL</b> The document can't be opened because it contains too many cells.
Time to connect to network file server and copy a shared Excel XLSX2 file to the network	00:06.62	00:28.07	00:51.02
Time to open, edit, and save the Excel XLSX2 file to the network file server	00:15.36	00:50.41	01:12.40
<b>Total time</b>	<b>03:26.39</b>	<b>Incomplete scenario 26:39.29</b>	<b>Incomplete scenario 07:15.07</b>

Figure 7: Times, in minutes:seconds, that it took the tablets to complete the scenario.

## Scenario 4 – Connecting to the VPN and participating in a video conference

An employee working from home needs to access a file from work, a conference agenda, before participating in a WebEx video conference. She connects through the VPN to open the file, make a change to it, and save it both on the network and on her local device. She then connects to a WebEx video conference and shares the file during the call. During the conference, she, like each of the other attendees, takes a turn as presenter.

### Tasks

- Connecting to VPN
- Opening, editing, and saving files directly over the VPN
- Connecting to a WebEx video conference, sharing a file with other conference participants, and taking a turn as presenter

### What we encountered

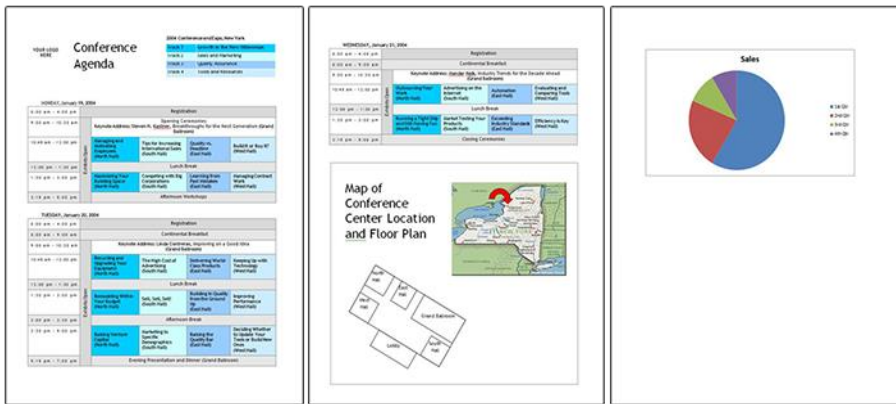
While the iPad could connect through the VPN and access the agenda document with no issues, there were problems with editing and saving the file. Most importantly, the iPad prevents users from acting as full WebEx conference participants—they cannot present information.

Even if the user did have the ability to take a turn as a presenter, the document itself would be unsuitable for sharing—it contained simply too many formatting errors using both Quickoffice Pro HD and Pages. The document header was either partially or entirely missing and tables were incorrectly formatted. The Quickoffice version was

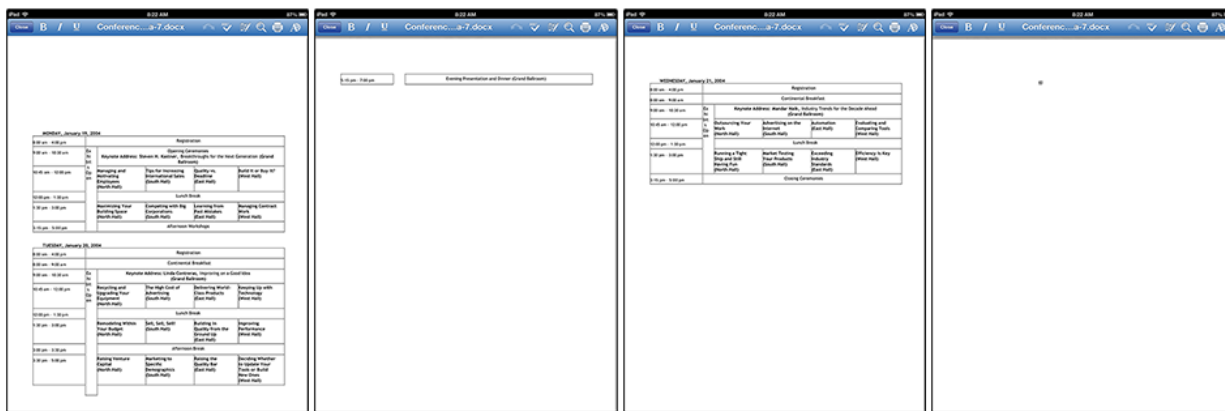
missing a conference center map graphic and pie chart. The Pages version reorganized the tables and incorrectly inserted the third table after the incomplete conference center map graphic.

Our simple editing task, adding one word to the document title, posed a problem because neither iPad application rendered the title correctly. Even after we added a title back into the document, other elements remained missing—the company logo and one table. While Quickoffice displayed some of the document’s existing tables, it did not permit us to add new ones. Figure 8 shows how the tablets rendered the document. Both iPad apps rendered it in such a way that it would be unsuitable to present to colleagues.

## Intel Atom processor-based tablet



## iPad using Quickoffice



## iPad using Pages

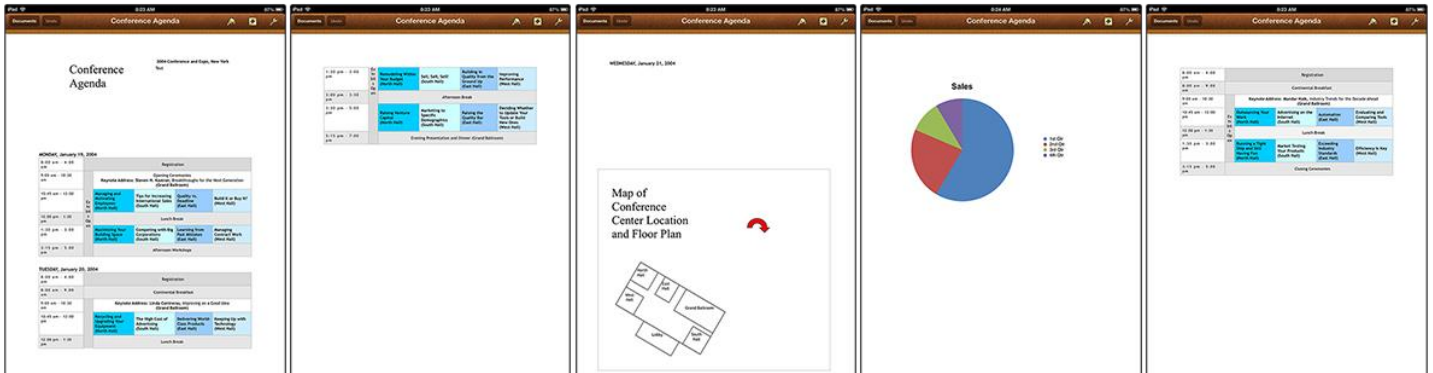


Figure 8: The same document displayed on the Intel Atom processor tablet and with two different apps on the iPad.

The iPad was able to connect to the WebEx videoconference call with no issues. However, the iPad limits users to viewing conference content and does not allow the user to present material. Figure 9 shows the WebEx frequently asked question and response illustrating this serious limitation.

**Can I present content from my iPad and iPhone?**

This feature is not supported. You can however view content shared from other's computers. In addition, if you are the meeting host, you can pass presenter control to a computer user to share content.

Figure 9: WebEx on iPad's inability to present. WebEx FAQ found at <http://www.webex.com/products/web-conferencing/mobile-iphone-ipad-faq.html>.

While we had to edit the registry and disable Windows 8 Driver Signing to allow the Acer ICONIA W510-1422 to connect to the VPN, it had no issues with document formatting or with editing and saving the document over the VPN, and completed the tasks more quickly than the iPad.

Likewise, we encountered few issues during the WebEx videoconference. The Intel Atom processor-based tablet allowed us to connect and perform all of the tasks a full conference participant would need to do, including taking their turn as presenter and sharing a correctly rendered document that others could view and annotate. During the videoconference, the camera would not work, so we were unable to transmit live video of the presenter. Audio and desktop sharing worked as desired.

Figure 10 details the times, in minutes:seconds, that it took the tablets to complete the first scenario. For a full list of compatibility issues we encountered, see [Appendix B](#).

Time to complete workflow			
	Acer ICONIA W510-1422 Microsoft Office	Apple iPad QuickOffice Pro HD	Apple iPad Pages
Time to connect to the VPN	00:23.37	00:11.80	00:11.80
Time to open Word DOCX	00:06.73	00:07.53	00:11.99
Time to edit and save the Word DOCX file back to the network	00:19.26	<b>Incomplete Task</b> 00:57.95	<b>Incomplete Task</b> 00:52.85
Time to save the edited Word DOCX file locally	00:05.98	00:16.33	00:09.90
Time to connect to WebEx conference	00:40.43	00:15.95	00:15.95
<b>Total time</b>	<b>01:35.77</b>	<b>Incomplete scenario</b> 01:49.56	<b>Incomplete scenario</b> 01:42.49

Figure 10: Times, in minutes:seconds, that it took the tablets to complete the scenario.

## IN CONCLUSION

If a tablet can't integrate into your enterprise environment well enough to perform basic tasks for your workers, it has no business in your workplace. In our tests, the Acer ICONIA W510-1422 tablet powered by an Intel Atom processor and Windows 8 completed common scenarios more quickly than the third-generation Apple iPad, and encountered nearly no integration issues for the tasks we tested. The Intel Atom processor-based Windows 8 tablet was able to open, edit, and save documents as we intended, while the Apple iPad was unable to get the job done with these simple, everyday tasks.



## APPENDIX A – SYSTEM CONFIGURATION INFORMATION

Figure 11 provides detailed configuration information for the test systems.

System	Apple iPad (3rd generation)	Acer ICONIA W510-1422
<b>General</b>		
Number of processor packages	1	1
Number of cores per processor	2	2
Number of hardware threads per core	1	2
Total number of threads	2	4
System dimensions (width x depth x height)	9.50" x 7.31" x 0.37"	10.2" x 6.6" x 0.4"
System weight	1 lb. 7 oz.	1 lb. 3 oz.
<b>CPU</b>		
Vendor	Apple	Intel
Name	NA	Atom
Model number	A5X	Z2760
Core frequency (GHz)	1.00	1.80
L1 cache	32 KB + 32 KB	24 KB + 32 KB (per core)
L2 cache	1 MB	1 MB (512 KB per core)
<b>Memory module(s)</b>		
Type	DDR2-533	LPDDR2
Speed (MHz)	533	800
Size (MB)	1,024	2,048
<b>Hard disk</b>		
Vendor and model number	Integrated flash storage	Integrated flash storage
Size (GB)	16	64
<b>Operating system</b>		
Name	Apple iOS 6.0	Windows 8 Pro
<b>Graphics</b>		
Vendor and model number	PowerVR SGX543MP4	Intel Graphics Media Accelerator
Resolution	2,048 x 1,536	1,366 x 768
<b>Wireless</b>		
Vendor and model number	802.11a/b/g/n	Broadcom 802.11abgn
<b>Ports</b>		
USB Type	0	1 x Micro USB 2.0
Other	Headphone jack	Micro HDMI, Micro SD, headphone jack
<b>Monitor</b>		
LCD type	LED-backlit glossy widescreen Multi-Touch display with IPS technology	LED backlight Active Matrix TFT Color LCD
Screen size	9.7"	10.1"

System	Apple iPad (3rd generation)	Acer ICONIA W510-1422
<b>Battery</b>		
Type	Apple A1389 integrated Li-polymer	2-Cell Li-polymer
Rated capacity	11560 mAh (42.5WH)	3650 mAh (27Wh)

Figure 11: System configuration information for the test systems.

## APPENDIX B – DETAILED TEST RESULTS

### Scenario 1 – Working with Word documents and Excel spreadsheets

Figure 12 details the issues we encountered completing our first scenario on the tablets. The Acer ICONIA W510-1422 tablet powered by the Intel Atom processor and Windows 8 was easy to work with, presenting no issues completing the work tasks. The Apple iPad had a number of notable issues completing the work using both Quickoffice Pro HD and Apple iPad Pages.

Acer ICONIA W510-1422 (with Microsoft Office)	Apple iPad (with Quickoffice Pro HD)	Apple iPad (with Apple Pages)
None	<ul style="list-style-type: none"> <li>• Word DOCX1: The header was missing.</li> <li>• Word DOCX1: The footer was missing.</li> <li>• Word DOCX1: The hyperlinks in the table of contents page did not work.</li> <li>• Word DOCX1: The page numbers in the table of contents were formatted incorrectly with the digits after 10 wrapped.</li> <li>• Word DOCX1: While we were scrolling to page 3 to view and make edits, the Quickoffice Pro HD application crashed and exited to the home Screen. <b>This was a showstopper.</b></li> <li>• Word DOCX2: The header was missing.</li> <li>• Word DOCX2: The footer was missing.</li> <li>• Word DOCX2: The report charts were missing.</li> <li>• Word DOCX2: The color formatting in the table was missing.</li> <li>• Word DOCX2: The border formatting in the table was incorrect.</li> <li>• Word DOCX2: The formatting of the last table was rendered incorrectly.</li> <li>• Word DOCX2: An extra blank page was added to the end of the document.</li> <li>• Viewing the emailed iPad edited DOCX2 file from a different PC: The first page header appeared on every page rather than on only the first page. It overwrote the subsequent page header.</li> <li>• Viewing the emailed iPad edited DOCX2 file from a different PC: The first page footer appeared on every page rather than on only the first page. It overwrote the subsequent page footer.</li> </ul>	<ul style="list-style-type: none"> <li>• Word DOCX1: When the document was opened with Pages, a Document Import Warnings dialog appeared with the following messages:               <ul style="list-style-type: none"> <li>○ The missing font Times New Roman was replaced by TimesNewRomanPSMT.</li> <li>○ All comments were removed.</li> <li>○ 3 fonts were missing. Your text might look different.</li> </ul> </li> <li>• Word DOCX1: Tracked changes were missing.</li> <li>• Word DOCX1: The table of contents did not work.</li> <li>• Word DOCX1: We were unable to add a comment to the document.</li> <li>• Word DOCX1: Bullet points were not rendered.</li> <li>• Word DOCX1: An extra blank page was added before the Appendix section.</li> <li>• Word DOCX1: When email document was selected and the Word format was selected, the document was saved as a DOC file and not a DOCX file.</li> <li>• Viewing the emailed iPad edited DOCX1 file from a different PC: The original comments were missing.</li> <li>• Viewing the emailed iPad edited DOCX1 file from a different PC: The table of contents did not work.</li> <li>• Viewing the emailed iPad edited DOCX1 file from a different PC: Line spacing in the middle of paragraphs was inconsistent.</li> <li>• Viewing the emailed iPad edited DOCX1 file from a different PC: Bullet points were missing.</li> </ul>

Acer ICONIA W510-1422 (with Microsoft Office)	Apple iPad (with Quickoffice Pro HD)	Apple iPad (with Apple Pages)
	<ul style="list-style-type: none"> <li>• Viewing the emailed iPad edited DOCX2 file from a different PC: The page break formatting was incorrect.</li> <li>• Excel XLSX1: It took roughly 5 minutes to load the XLSX file.</li> <li>• Excel XLSX1: It took over 6 minutes to save the edited XLSX file back to the network.</li> </ul>	<ul style="list-style-type: none"> <li>• Word DOCX2: When the document was opened with Pages, a Document Import Warnings dialog appeared with the following messages: <ul style="list-style-type: none"> <li>○ The font Calibri is missing. Your text might look different.</li> <li>○ Objects in headers, footers, shapes, text boxes, and table cells were removed.</li> <li>○ All comments were removed.</li> <li>○ The missing font Courier New was replaced by CourierNewPSMT.</li> <li>○ The missing font Arial was replaced by ArialMT.</li> </ul> </li> <li>• Word DOCX2: The front-page header was missing.</li> <li>• Word DOCX2: The front-page footer was missing.</li> <li>• Word DOCX2: The front-page report graphic was missing.</li> <li>• Word DOCX2: Tracked changes were missing.</li> <li>• Word DOCX2: Page formatting was rendered incorrectly.</li> <li>• Word DOCX2: Bullet points were missing.</li> <li>• Word DOCX2: Comments were missing.</li> <li>• Word DOCX2: The report charts were missing.</li> <li>• Word DOCX2: The company logo (object) graphic was missing</li> <li>• Word DOCX2: When email document was selected and the Word format was selected, the document was saved as a DOC file and not a DOCX file.</li> <li>• Viewing the emailed iPad Pages-edited DOCX2 (changed to DOC) from the sender PC: The front-page header was missing.</li> <li>• Viewing the emailed iPad edited DOCX2 file from a different PC: The front-page graphic was missing.</li> <li>• Viewing the emailed iPad edited DOCX2 file from a different PC: The font was changed from Calibri to Helvetica.</li> <li>• Viewing the emailed iPad edited DOCX2 file</li> </ul>

Acer ICONIA W510-1422 (with Microsoft Office)	Apple iPad (with Quickoffice Pro HD)	Apple iPad (with Apple Pages)
		<p>from a different PC: Inconsistent line spacing in the middle of paragraphs.</p> <ul style="list-style-type: none"> <li>• Viewing the emailed iPad edited DOCX2 file from a different PC: No previous tracked changes were shown.</li> <li>• Viewing the emailed iPad edited DOCX2 file from a different PC: No previous comments were shown.</li> <li>• Viewing the emailed iPad edited DOCX2 file from a different PC: Page formatting was rendered incorrectly.</li> <li>• Viewing the emailed iPad edited DOCX2 file from a different PC: Bullet points were missing.</li> <li>• Viewing the emailed iPad edited DOCX2 file from a different PC: Report charts were missing.</li> <li>• Viewing the emailed iPad edited DOCX2 file from a different PC: Table fonts were changed from Calibri to Arial.</li> <li>• Viewing the emailed iPad edited DOCX2 file from a different PC: Appendix table font was changed from Calibri to Helvetica.</li> <li>• Viewing the emailed iPad edited DOCX2 file from a different PC: An extra blank page was added between Appendix A and Appendix B.</li> <li>• Viewing the emailed iPad edited DOCX2 file from a different PC: Company logo (object) was missing from last page.</li> <li>• Excel XLSX1: Numbers was unable to open the spreadsheet because it contained “too many cells.” <b>This was a showstopper.</b></li> <li>• Excel XLSX2: When the spreadsheet was opened with Numbers a Spreadsheet Import Warnings dialog appeared with the following message: <ul style="list-style-type: none"> <li>○ Pivot tables aren’t supported and were converted to regular tables.</li> </ul> </li> <li>• Excel XLSX2: When saving the XLSX file, the Numbers application saved it as an XLS file, not an XLSX file.</li> </ul>

Figure 12: Compatibility issues with Word documents and Excel spreadsheets.

## Scenario 2 – Working with PowerPoint presentations

Figure 13 presents the problems the tablets had working in PowerPoint.

Acer ICONIA W510-1422 (with Microsoft Office)	Apple iPad (with Quickoffice Pro HD)	Apple iPad (with Apple Pages)
None	<ul style="list-style-type: none"> <li>SharePlus Pro was able to access the files but not able to edit the files.</li> <li>It was not possible to change the slide transparency as outlined in the test methodology.</li> </ul>	<ul style="list-style-type: none"> <li>SharePlus Pro was able to access the files but not able to edit the files.</li> <li>When the file was opened with Keynote, a Presentation Import Warnings dialog appeared with the following message:               <ul style="list-style-type: none"> <li>2 fonts are missing. Your text might look different.</li> <li>Movies aren't supported and were removed.</li> <li>Start and stop movie builds were removed.</li> <li>All emphasis builds were removed.</li> <li>Build order was changed on one or more slides.</li> </ul> </li> <li>It was not possible to change the slide transparency as outlined in the test methodology.</li> <li>When saving the PPTX file, the Keynote application saves it as a PPT file, not a PPTX file.</li> </ul>

Figure 13: Compatibility issues for working with a PowerPoint slide presentation.

Figure 14 presents the problems the tablets had when printing a PowerPoint slide deck.

Acer ICONIA W510-1422	Apple iPad
None	<ul style="list-style-type: none"> <li>The network printer model was a Brother MFC-8860DN and was not compatible with Apple AirPrint. Therefore, we used the Print Central Pro application from the Apple App Store.</li> <li>In addition to Print Central Pro, we needed to use a separate PC that acted as a print server for the iPad.</li> <li>It was not possible to print in gray-scale mode.</li> <li>It took over 6 minutes to print the PPTX slide deck.</li> <li>The PPTX slide presentation was printed in portrait mode, even though Landscape mode was selected.</li> <li>The PPTX slide print out gradually started "slipping." The top of the next slide started to appear on the bottom of each slide.</li> </ul>

Figure 14: Compatibility issues printing a PowerPoint slide deck.

Figure 15 presents the problems that the tablets had when presenting an edited PowerPoint slide deck on a mobile projector.

Acer ICONIA W510-1422 (with Microsoft Office)	Apple iPad (with Quickoffice Pro HD)	Apple iPad (with Apple Pages and Keynote)
None	<ul style="list-style-type: none"> <li>To present the presentation with the Dell M110 ultra mobile projector, it was necessary to convert the presentation to a PtG2 file using Dell's PtG2 Converter software so that it could be used with the MobiShow Pro application.</li> <li>Slide 24 has an animation that is supposed to stop blinking and show a fax machine. On the iPad, the animation stopped blinking and showed a printer, a fax machine, a cell phone, and a router.</li> </ul>	<ul style="list-style-type: none"> <li>To present the presentation with the Dell M110 ultra mobile projector, it was necessary to convert the presentation to a PtG2 file using Dell's PtG2 Converter software so that it could be used with the MobiShow Pro application.</li> <li>The transition animation between slides was different. Instead of a smooth fade, it was a pixelated fade.</li> <li>The movie slide animations were all garbled together on one slide.</li> <li>Bits of the movie animation were missing.</li> <li>The slide animation boxes were different colors, i.e., red instead of orange.</li> <li>The slide 24 animation did not blink.</li> </ul>

Figure 15: Compatibility issues when presenting an edited PowerPoint slide deck.

### Scenario 3 – Collaborating with multiple file types

Figure 16 presents the problems that the tablets had when collaborating with multiple document types originating from a USB flash drive.

Acer ICONIA W510-1422 (with Microsoft Office)	Apple iPad (with Quickoffice Pro HD)	Apple iPad (with Apple Pages, Numbers, and Keynote)
None	<ul style="list-style-type: none"> <li>There was no way to get the document files directly from the USB flash drive to the iPad. We used a separate PC to copy the files to a Dropbox account.</li> <li>Word DOC: The header was missing.</li> <li>Word DOC: The footer was missing.</li> <li>Word DOC: The hyperlinks in the table of contents page did not work.</li> <li>Word DOC: The numbers in the table of contents were formatted incorrectly with the digits after 10 wrapped.</li> <li>Word DOC: Some indent formatting was incorrect.</li> <li>Word DOC: Some bold formatting was</li> </ul>	<ul style="list-style-type: none"> <li>There was no way to get the document files directly from the USB flash drive to the iPad. We used a separate PC to copy the files to a Dropbox account.</li> <li>Word DOC: When the document was opened with Pages, a Document Import Warnings dialog appeared with the following message:             <ul style="list-style-type: none"> <li>The missing font Times New Roman was replaced by TimesNewRomanPSMT</li> <li>3 fonts are missing. Your text might look different.</li> </ul> </li> <li>Word DOC: The table of contents did not work.</li> </ul>

Acer ICONIA W510-1422 (with Microsoft Office)	Apple iPad (with Quickoffice Pro HD)	Apple iPad (with Apple Pages, Numbers, and Keynote)
	<p>incorrect or missing.</p> <ul style="list-style-type: none"> <li>• Word DOCX1: The header was missing.</li> <li>• Word DOCX1: The footer was missing.</li> <li>• Word DOCX1: The hyperlinks in the table of contents did not work.</li> <li>• Word DOCX1: The numbers in the table of contents were formatted incorrectly with the digits after 10 wrapped.</li> <li>• Word DOCX1: While scrolling to page 3 the Quickoffice Pro HD application crashed and exited to the home Screen.</li> <li>• Word DOCX2: The header was missing.</li> <li>• Word DOCX2: The footer was missing.</li> <li>• Word DOCX2: The report charts were missing.</li> <li>• Word DOCX2: The color formatting in the table was missing.</li> <li>• Word DOCX2: The border formatting in the table was incorrect.</li> <li>• Word DOCX2: The formatting of the last table was rendered incorrectly.</li> <li>• Word DOCX2: An extra blank page was added to the end of the document.</li> <li>• PowerPoint PPT: The transition between slides was not the same.</li> <li>• PowerPoint PPT: The slide 2 animation was incorrect, with the column 1 words over top of other words and not in column 1 and no gradual animation.</li> <li>• PowerPoint PPT: The slide 7 artwork was rendered incorrectly with rectangular boxes instead of pictures.</li> <li>• PowerPoint PPT: Slide 17 hyperlinks were not underlined.</li> <li>• PowerPoint PPTX: The slides were missing the gradient colors used in fonts and bullet points, and were instead plain white.</li> <li>• PowerPoint PPTX: The slide 4 animations were missing and instead were all stacked on top of each other in a garbled mess.</li> <li>• PowerPoint PPTX: Slide 8, 9, 10, and 11</li> </ul>	<ul style="list-style-type: none"> <li>• Word DOC: We were not able to add a comment to the document.</li> <li>• Word DOC: We were unable to track changes.</li> <li>• Word DOC: The original Segoe font was replaced with Helvetica.</li> <li>• Word DOC: Bullet points were not rendered.</li> <li>• Word DOC: Some of the bold formatting was incorrect or missing.</li> <li>• Word DOC: Some indentation formatting was incorrect.</li> <li>• Word DOC: An extra page was added after the last document page.</li> <li>• Word DOCX1: When the document was opened with Pages, a Document Import Warnings dialog appeared with the following message: <ul style="list-style-type: none"> <li>○ The missing font Times New Roman was replaced by TimesNewRomanPSMT</li> <li>○ All comments were removed</li> <li>○ 3 fonts are missing. Your text might look different.</li> </ul> </li> <li>• Word DOCX1: Tracked changes were missing.</li> <li>• Word DOCX1: The table of contents did not work.</li> <li>• Word DOCX1: We were not able to add a comment to the document.</li> <li>• Word DOCX1: Bullet points did not appear.</li> <li>• Word DOCX1: An extra blank page was added before the Appendix section.</li> <li>• Word DOCX2: When the document was opened with Pages, a Document Import Warnings dialog appeared with the following message: <ul style="list-style-type: none"> <li>○ The font Calibri is missing. Your text might look different.</li> <li>○ Objects in headers, footers, shapes, text boxes, and table cells were removed.</li> <li>○ All comments were removed.</li> <li>○ The missing font Courier New was replaced by CourierNewPSMT.</li> </ul> </li> </ul>



Acer ICONIA W510-1422 (with Microsoft Office)	Apple iPad (with Quickoffice Pro HD)	Apple iPad (with Apple Pages, Numbers, and Keynote)
	<p>missing animations and instead was showing entire slide instead of showing things that were hidden and gradually revealed.</p> <ul style="list-style-type: none"> <li>• PowerPoint PPTX: Slide 24 animations were missing and the application windows that should have been shown were either missing or cut off.</li> <li>• PowerPoint PPTX: Slide 26 hyperlinks were not underlined.</li> <li>• Excel XLSX1: It took roughly 5 minutes to load the XLSX file.</li> <li>• Excel XLSX1: It took over 6 minutes to save the edited XLSX file back to the network.</li> <li>• Collaborating on a Shared XLSX file: Quickoffice does not support working on a shared XLSX file at the same time as another user.</li> </ul>	<ul style="list-style-type: none"> <li>○ The missing font Arial was replaced by ArialMT.</li> <li>• Word DOCX2: The front-page header was missing.</li> <li>• Word DOCX2: The front-page footer was missing.</li> <li>• Word DOCX2: The front-page report graphic was missing.</li> <li>• Word DOCX2: Tracked changes were missing.</li> <li>• Word DOCX2: Page formatting was rendered incorrectly.</li> <li>• Word DOCX2: Bullet points were missing.</li> <li>• Word DOCX2: Comments were missing.</li> <li>• Word DOCX2: The report charts were missing.</li> <li>• Word DOCX2: The company logo (object) graphic was missing.</li> <li>• Excel XLS: When the spreadsheet was opened with Numbers, a Spreadsheet Import Warnings dialog appeared with the following message: <ul style="list-style-type: none"> <li>○ Unsupported formulas were removed. The last calculated values were imported.</li> <li>○ Pivot tables aren't supported and were converted to regular tables.</li> </ul> </li> <li>• Excel XLSX1: Numbers was unable to open the spreadsheet because it contained "too many cells."</li> <li>• Excel XLSX2: When the spreadsheet was opened with Numbers, a Spreadsheet Import Warnings dialog appeared with the following message: <ul style="list-style-type: none"> <li>○ Pivot tables aren't supported and were converted to regular tables.</li> </ul> </li> <li>• Excel XLSX2: When saving the XLSX file, the Numbers application saved it as an XLS file, not an XLSX file.</li> <li>• PowerPoint PPT: When the PPT file was opened with Keynote, a Presentation Import Warnings dialog appeared with the following message:</li> </ul>

Acer ICONIA W510-1422 (with Microsoft Office)	Apple iPad (with Quickoffice Pro HD)	Apple iPad (with Apple Pages, Numbers, and Keynote)
		<ul style="list-style-type: none"> <li>○ The missing font Arial was replaced by ArialMT.</li> <li>○ The font Segoe Semibold is missing. Your text might look different.</li> <li>● PowerPoint PPT: The animation between slides was different.</li> <li>● PowerPoint PPTX: When the PPT file was opened with Keynote, a Presentation Import Warnings dialog appeared with the following messages: <ul style="list-style-type: none"> <li>○ 2 fonts are missing. Your text might look different.</li> <li>○ Movies aren't supported and were removed.</li> <li>○ Start and stop movie builds were removed.</li> <li>○ All emphasis builds were removed.</li> <li>○ Build order was changed on one or more slides.</li> </ul> </li> <li>● PowerPoint PPTX: The fonts were colored but not in the gradient way of the original.</li> <li>● PowerPoint PPTX: The slide 4 animations were out of order and in some cases missing.</li> <li>● PowerPoint PPTX: The slide 8 picture colors were incorrect, i.e., original orange boxes were presented as green or red boxes.</li> <li>● PowerPoint PPTX: The slide 24 animations did not blink as they were supposed to.</li> <li>● PowerPoint PPTX: Slide 26 hyperlinks were not underlined.</li> </ul>

Figure 16: Compatibility issues when working with multiple file types originating from a USB flash drive.

## Scenario 4 – Connecting to the VPN and participating in a video conference

Figures 17 through 11 detail the issues we encountered completing our first scenario on the tablets. The Apple iPad had a number of notable issues completing the work using both Quickoffice Pro HD and Apple iPad Pages.

### Connecting to the VPN

Acer ICONIA W510-1422	Apple iPad
In order to connect to the VPN using the Cisco IPsec	None.

Acer ICONIA W510-1422	Apple iPad
application, it was necessary to edit the registry and disable Windows 8 driver signing.	

Figure 17: Issues connecting to the VPN.

### Opening, editing, and saving files directly over the VPN

Acer ICONIA W510-1422	Apple iPad
None.	<ul style="list-style-type: none"> <li>We could use the FileBrowser application to access and view the file, but not to edit it.</li> <li>To edit the file, we had to open it in either Quickoffice Pro HD or Pages.</li> </ul>

Figure 18: Issues opening, editing, and saving files directly over the VPN.

### Viewing a Microsoft Word document as intended

Acer ICONIA W510-1422 (with Microsoft Office)	Apple iPad (with Quickoffice Pro HD)	Apple iPad (with Apple Pages)
None.	<ul style="list-style-type: none"> <li>The document header was missing.</li> <li>The color fill was missing. The entire document was black and white.</li> <li>Text that was supposed to appear rotated 90° within a column was instead broken up horizontally inside the column.</li> <li>The second table was formatted incorrectly, with incorrect column and row height.</li> <li>A large blank space appeared between the second and third tables.</li> <li>The map graphic of the conference center was missing.</li> <li>The pie chart was missing.</li> <li>We encountered intermittent problems when attempting to save the edited Word DOCX back to the network over the VPN using FileBrowser. The error occasionally produced said “Save Failed. Could not save file – a copy has been stored in ‘My Files’.”</li> <li>When editing the Word DOCX over the VPN, there was a noticeable lag time between typing a letter and seeing it</li> </ul>	<ul style="list-style-type: none"> <li>When we opened the document with Pages, a Document Import Warnings dialog appeared with the following message: <ul style="list-style-type: none"> <li>The missing font Times New Roman was replaced by TimesNewRomanPSMT</li> <li>The missing font Trebuchet MS was replaced by TrebuchetMS.</li> <li>Objects in headers, footers, shapes, text boxes, and table cells were removed.</li> <li>The font Calibri is missing. Your text might look different.</li> </ul> </li> <li>The company logo was missing from the header.</li> <li>The table in the header was replaced with the word “Text.”</li> <li>Text that was supposed to appear rotated 90° within a column was instead broken up horizontally inside the column.</li> <li>Table 2 was split across two pages.</li> <li>A large blank space appeared between the second table and where the third table should have been.</li> <li>The third table was reorganized and inserted incorrectly after the conference center map graphic.</li> </ul>

Acer ICONIA W510-1422 (with Microsoft Office)	Apple iPad (with Quickoffice Pro HD)	Apple iPad (with Apple Pages)
	appear on the screen.	<ul style="list-style-type: none"> <li>• The map graphic of the conference center was incomplete.</li> <li>• When editing the Word DOCX, we could not set the font size to 26 so had to use 24.</li> <li>• When we saved the document back to the VPN, Pages saved it as a DOC file (not DOCX).</li> <li>• After we had edited the file and saved it back to the network over the VPN using Pages, we received a Document Import Warnings dialog with the following message: <ul style="list-style-type: none"> <li>○ The missing font Times New Roman was replaced by TimesNewRomanPSMT.</li> <li>○ The missing font Trebuchet MS was replaced by TrebuchetMS-Bold.</li> </ul> </li> </ul>

Figure 19: Issues sharing a file with other conference participants.

### Connecting to a WebEx video conference

Acer ICONIA W510-1422	Apple iPad
None.	None.

Figure 20: Issues connecting to a WebEx video conference.

### Taking a turn as a conference presenter

Acer ICONIA W510-1422 WebEx presentation notable issues	Apple iPad WebEx presentation notable issues
Neither the front nor rear-facing video camera worked during the WebEx video conference call. We received the following error when we attempted to enable the video camera through the WebEx application “We can’t connect to your webcam. Is the webcam installed properly or are you using it in another application?”	<ul style="list-style-type: none"> <li>• It is not possible to present content from the iPad. It is only possible to view the content of other’s PCs.</li> </ul>

Figure 21: Issues taking a turn as a conference presenter.

## APPENDIX C - HOW WE TESTED

### Scenario 1 – Working with Word documents and Excel spreadsheets

#### Performing this scenario on the PC

1. Send an email with the attached test Word Docx (WordDOCX1 or WordDOCX2) to the system under test.
2. Simultaneously start the timer and on the system under test, open Outlook.
3. Open the Word docx attachment.
4. Stop the timer when the Word file has opened. Note any formatting issues with document.
5. Simultaneously start the timer and delete the second paragraph on page 3.
6. Highlight the third paragraph on page 3, and add the comment “I like this paragraph.”
7. Press the File tab, followed by Save & Send.
8. Choose Send Using E-mail as an attachment.
9. Stop the timer after the document has been saved and emailed back to the original email sender. Note any formatting issues with the document.
10. Simultaneously start the timer and minimize Outlook.
11. Press the FileShare desktop shortcut.
12. Open the test Excel xlsx (ExcelXLSX) file.
13. Stop the timer when the Excel file has opened. Note any formatting issues with document.
14. Simultaneously start the timer and highlight cell A1 in yellow.
15. Enter 0011 in cell B2.
16. Stop the timer when the Excel XLSX file has been saved to the network.

#### Performing this scenario on the iPad

1. Send an email with the attached test Word docx (WordDOCX1 or WordDOCX2) to the system under test.
2. Simultaneously start the timer and on the system under test, open Mail.
3. Open the Word docx attachment with the Quickoffice Pro HD or Pages application.
4. Stop the timer when the Word file has opened. Note any formatting issues with document.
5. Simultaneously start the timer and delete the second paragraph on page 3.
6. Highlight the third paragraph on page 3, and add the comment “I like this paragraph.”
7. Stop the timer after the document has been saved and emailed back to the original email sender. Using the sender PC, note any formatting issues with the received document.
8. Simultaneously start the timer and double-press the Home button to switch to the FileBrowser application and choose the network File share server.
9. For Quickoffice Pro HD:
  - a. Select the test Excel xlsx (ExcelXLSX) file, and choose Open In Quickoffice Pro HD.
  - b. Stop the timer when the Excel file has opened. Note any formatting issues with document.
  - c. Simultaneously start the timer and press Settings→Cell Color.
  - d. Highlight cell A1 in yellow, and enter 0011 in cell B2.
  - e. Press Close, and press Save Back.
  - f. Select Open In File Browser.
  - g. Select Save a copy.
  - h. Stop the timer when the Excel XLSX file has been saved to the network file share. Note any issues.
10. For Numbers:
  - a. Select the test Excel xlsx (ExcelXLSX) file, and choose Open In Numbers.
  - b. Stop the timer when the Excel file has opened. Note any formatting issues with document.
  - c. Simultaneously start the timer and press Settings→Cell Color.
  - d. Highlight cell A1 in yellow, and enter 0011 in cell B2.

- e. Press Spreadsheets.
- f. Press Edit, and select the XLSX spreadsheet.
- g. Press the Action toolbar button in the top left corner, and select Open in Another App.
- h. Choose the Excel option.
- i. Press Choose App.
- j. Select Open In File Browser.
- k. Press the Action toolbar button, and select Paste 1 file here.
- l. Stop the timer when the Excel XLSX file has been saved to the network file share. Note any issues.

## Scenario 2 – Working with PowerPoint presentations

### Performing this scenario on the PC

1. Press the Internet Explorer tile to launch Internet Explorer.
2. Enter the SharePoint server name into the address bar.
3. Select the PPTX file.
4. Choose Edit.
5. Simultaneously start the timer and press OK to open the PPTX file.
6. Stop the timer when the PPTX file has opened. Note any issues.
7. Simultaneously start the timer and make the following changes:
  - a. On Page 2, add the word “More” to the header.
  - b. On Page 3, adjust the background transparency to 50%.
8. Stop the timer when the file has been saved locally to the tablet after it has been edited as outlined above. Note any issues.
9. Simultaneously start the timer and print out the slide presentation:
  - a. Selecting File→Print.
  - b. Select Full Page Slides and select Scale to Fit Paper.
  - c. Select Grayscale.
  - d. Press Print.
10. Stop the timer when the presentation has finished printing. Note any issues.
11. Turn on the wireless projector (Dell M110).
12. Simultaneously start the timer and connect to the wireless projector.
  - a. Launch the projector application by pressing the Dell M110 desktop shortcut.
  - b. At the Info screen, press OK.
  - c. At the Connect to Access Point screen, verify that Dell M110 is listed, and press OK.
  - d. Enter the Login Code that the projector is showing on the screen, and press OK.
  - e. At the Info screen, press OK.
  - f. Open the PPTX presentation.
13. Stop the timer when the presentation is open.

### Performing this scenario on the iPad

1. Press the SharePlus Pro application.
2. Select the SharePoint server.
3. Select the Shared Documents directory.
4. Press the PPTX file.
5. Simultaneously start the timer and open the PPTX file by pressing the PPTX icon with small gray print saying Tap to open.
6. Stop the timer when the PPTX file has opened. Note any issues.
7. For Quickoffice Pro HD:
  - a. Simultaneously start the timer and press Edit.
  - b. Select Open in Quickoffice.

- c. On Page 2, add the word “More” to the header.
- d. On Page 3, adjust the background transparency to 50%. (Note: This was not possible in Quickoffice.)
- e. Press Close, and select Save Back.
- f. Press SharePlus Pro.
- g. Press Keep local.
8. Stop the timer when the file has been saved after it has been edited as outlined above. Note any issues.
9. For Keynote:
  - a. Simultaneously start the timer and press Edit.
  - b. Select Open in Keynote.
  - c. On Page 2, add the word “More” to the header.
  - d. On Page 3, adjust the background transparency to 50%. (Note: This was not possible in Keynote.)
  - e. Press Presentations.
  - f. Press Edit, and select the PPTX file.
  - g. Press the Action toolbar button in the top left corner, and select Open in Another App.
  - h. Choose the PowerPoint option.
  - i. Press Choose App.
  - j. Select Open In SharePlus.
  - k. Stop the timer when the PPTX file has been saved locally to the SharePlus directory. Note any issues.
10. Simultaneously start the timer and print the slide presentation:
  - a. Select the PPTX local file.
  - b. Press the Edit button, and select Open in PrintCentralPro.
  - c. Press Print.
11. Stop the timer when the presentation has finished printing. Note any issues.
12. Simultaneously start the timer and save the edited PPTX file to Dropbox for the conversion process.
  - a. Open SharePlus Pro.
  - b. Select the edited PPTX local file.
  - c. Press the Edit button, and select Open in Dropbox.
  - d. Press Save.
13. Stop the timer when the PPTX file appears on the separate PC.
14. Simultaneously start the timer and begin the conversion to PtG2 process on the separate PC.
  - a. Launch PtG2 Converter by clicking the desktop icon.
  - b. Drag and drop the PPTX file from Dropbox file location to the PtG2 converter.
  - c. Accept the default save location settings, and click OK.
15. Stop the timer when the PPTX file has been converted to a PtG2 file.
16. Simultaneously start the timer and begin the process of transferring the PtG2 file to iPad.
  - a. Using the USB connector, connect the iPad to the PC.
  - b. On the PC that has iTunes installed, launch iTunes.
  - c. From within iTunes, select the iPad device when it appears, and click the Apps tab.
  - d. Under File Sharing Apps select MobiShow Pro, and click Add.
  - e. Browse to the PtG2 file, and click Sync.
17. Stop the timer when the iPad has finished syncing.
18. Turn on the wireless projector.
19. Simultaneously start the timer and begin the process of connecting to the wireless projector.
  - a. Disconnect the iPad from the PC.
  - b. Launch the MobiShow Pro application.
  - c. Enter the IP address shown on the projector screen, and click Connect.
  - d. Enter the Login Code shown on the projector screen, and click OK.
  - e. Open the PtG2 file.

20. Stop the timer when the iPad is showing the first slide in the presentation. Note any issues.

## Scenario 3 – Collaborating with multiple file types

### Performing this scenario on the PC

1. Simultaneously start the timer and insert the USB flash drive into the tablet.
2. Select the eight document files, and copy them to the Documents directory.
3. Stop the timer when the files have been copied to the tablet.
4. Simultaneously start the timer and open the ExcelXLS file.
5. Stop the timer when the ExcelXLS file has been opened. Note any issues with the document.
6. Simultaneously start the timer and edit each file:
  - a. For the Excel files, highlight cell A1 in yellow, and enter 0011 in cell B2.
  - b. For the Word files, delete the second paragraph on page 3, highlight the third paragraph on page 3, and add the comment “I like this paragraph.”
  - c. For the PowerPoint files, add the word “More” to the second slide’s header.
7. Stop the timer when the file has been saved after each file has been edited as outlined above.
8. Repeat for each of the remaining test files, noting any issues.
9. Simultaneously start the timer and copy the shared XLSX1 file to the network share.
10. Stop the timer when the file has been copied to the network. Note any issues.
11. With the file opened on a different networked PC, simultaneously start the timer and open and edit by highlighting cell A2 in Red, and entering 0015 in cell B3 the shared XLSX1 file.
12. Stop the timer when the file has been saved after having been edited as outlined above. Note any issues.

### Performing this scenario on the iPad

1. This test requires a separate PC with Dropbox installed on the PC and on the iPad.
2. Simultaneously start the timer and insert the USB flash drive into the separate PC.
3. Select the eight document files, and copy/paste them to the Dropbox directory.
4. Open the Dropbox application on the tablet, and stop the timer when the Dropbox files appear on the tablet.
5. For Quickoffice Pro HD:
  - a. Simultaneously start the timer and open the ExcelXLS file, using the Open In Quickoffice option.
  - b. Stop the timer when the ExcelXLS file has been opened. Note any issues with document.
  - c. Simultaneously start the timer and edit each file:
    - i. For the Excel files, highlight cell A1 in yellow, and enter 0011 in cell B2.
    - ii. For the Word files, delete the second paragraph on page 3, highlight the third paragraph on page 3, and add the comment “I like this paragraph.”
    - iii. For the PowerPoint files, add the word “More” to the second slide’s header.
  - d. Stop the timer when the file has been saved after each file has been edited as outlined above.
  - e. Repeat for each of the remaining test files, noting any issues.
  - f. Simultaneously start the timer and on a separate PC go to the Quickoffice web address displayed at the bottom of the Quickoffice screen.
  - g. Download the shared XLSX file to Downloads.
  - h. Copy the XLSX to the network share.
  - i. Stop the timer when the file has been copied to the network. Note any issues.
  - j. With the file opened on a different networked PC, go back to tablet, and simultaneously start the timer and open FileBrowser.
  - k. Select the XLSX file, and open in Quickoffice.
  - l. Edit the file by highlighting cell A2 in Red, and entering 0015 in cell B3 of the shared XLSX1 file.
  - m. Press Close, and press Save Back.
  - n. Select Open In File Browser.



- o. Select Save a copy.
  - p. Stop the timer when the file has been saved after having been edited as outlined above. Note any issues.
6. For Numbers:
- a. Simultaneously start the timer and open the ExcelXLS file, using the Open In Numbers option.
  - b. Stop the timer when the ExcelXLS file has been opened. Note any issues with document.
  - c. Simultaneously start the timer and edit each file:
    - i. For the Excel files, highlight cell A1 in yellow, and enter 0011 in cell B2.
    - ii. For the Word files, delete the second paragraph on page 3, highlight the third paragraph on page 3, and add the comment "I like this paragraph."
    - iii. For the PowerPoint files, add the word "More" to the second slide's header.
  - d. Stop the timer when the file has been saved after each file has been edited as outlined above.
  - e. Repeat for each of the remaining test files, noting any issues.
  - f. Simultaneously start the timer and open Numbers.
  - g. Press Edit, and select the XLSX spreadsheet.
  - h. Press the Action toolbar button in the top left corner, and select Open in Another App.
  - i. Choose the Excel option.
  - j. Press Choose App.
  - k. Select Open In File Browser.
  - l. Press the Action toolbar button, and select Paste 1 file here.
  - m. Stop the timer when the Excel XLSX file has been saved to the network file share. Note any issues.
  - n. With the file opened on a different networked PC, simultaneously start the timer and open and edit by highlighting cell A2 in Red, and entering 0015 in cell B3 of the shared XLSX1 file.
  - o. Stop the timer when the file has been saved after having been edited as outlined above. Note any issues.

## Scenario 4 – Remote access: Connecting to the VPN and participating in a video conference

### Performing this test on the Acer ICONIA W510-1422

1. From the Windows Start screen, find the Cisco VPN client software tile.
2. Simultaneously start the timer and connect to the VPN.
3. Stop the timer when the connection has been made. Note any issues.
4. Using Windows Explorer, browse to the test directory.
5. Simultaneously start the timer and open the Word DOCX over the VPN.
6. Stop the timer when the document has been opened. Note any issues.
7. Simultaneously start the timer and perform the following:
  - a. On page 1, insert and type Today's in front of Conference Agenda.
  - b. Change the Wednesday Registration start time from 8:00 am to 8:30 am.
8. Stop the timer when the above steps have been performed and the file has been saved back to the network by pressing the Save icon. Note any issues.
9. Simultaneously start the timer and save the file locally by performing the following steps:
  - a. Press File→Save As.
  - b. Select Documents and press Save.
10. Stop the timer when the document has been saved locally to the tablet. Note any issues.
11. From the videoconferencing host system, send a WebEx invitation to the test tablet.
12. On the tablet, open Outlook.
13. Simultaneously start the timer and connect to the WebEx conference by performing the following steps:
  - a. Click the WebEx invitation link.
  - b. Enter the name and email address fields.
  - c. Select Call Using Computer.

14. Stop the timer when the tablet has joined the conference call. Note any issues.

#### Performing this test on the Apple iPad

1. From the Home screen, press the Settings application.
2. Simultaneously start the timer and connect to the VPN, by sliding the VPN switch to ON.
3. Stop the timer when the connection has been made. Note any issues.
4. Using the FileBrowser application, browse to the test directory.
5. Using Quickoffice Pro HD:
  - a. Select the Word DOCX file.
  - b. Simultaneously start the timer and select Open In.
  - c. Choose Quickoffice.
  - d. Stop the timer when the document has been opened. Note any issues.
6. Using Pages:
  - a. Select the Word DOCX file.
  - b. Simultaneously start the timer and select Open In.
  - c. Choose Pages.
  - d. Stop the timer when the document has been opened. Note any issues.
7. Using Quickoffice Pro HD:
  - a. Simultaneously start the timer and perform the following:
    - i. Because the title is missing, on page 1, insert and type using Trebuchet MS size 26 font Today's Conference Agenda.
    - ii. Change the Wednesday Registration start time from 8:00 am to 8:30 am.
    - iii. Press Close.
    - iv. Press Save Back.
    - v. Press Open in FileBrowser.
    - vi. Press Replace.
15. Stop the timer when the above steps have been performed and the file has been saved back to the network. Note any issues.
16. Simultaneously start the timer and save the file locally by performing the following steps:
  - a. Select the newly saved Word DOCX file.
  - b. Select Open In.
  - c. Select Open In Quickoffice.
  - d. Type "A" and then delete it. (This is necessary to bring up the save prompt when the document is closed.)
  - e. Press Close.
  - f. Press Save As.
  - g. Press Save.
17. Stop the timer when the document has been saved locally to the tablet. Note any issues.
18. Using Pages:
  - b. Simultaneously start the timer and perform the following steps:
    - i. Because it is not possible to edit the Title box, on page 1, insert and type using Trebuchet MS size 24 font Today's Conference Agenda.
    - ii. Change the Wednesday Registration start time from 8:00 am to 8:30 am.
    - iii. Press Documents.
    - iv. Press Edit and select the Word DOCX document.
    - v. Press the Action toolbar button in the top left corner, and select Open in Another App.
    - vi. Choose the Word option.
    - vii. Press Choose App.
    - viii. Select Open In File Browser.

- ix. Press the Action toolbar button, and select Paste 1 file here.
19. Stop the timer when the above steps have been performed and the file has been saved back to the network.  
Note any issues.
20. Simultaneously start the timer and save the file locally by performing the following steps:  
Select the newly saved Word DOC file.  
Select Open In.  
Select Open In Pages.  
Press Done, when the Document Import Warnings dialog appears.
21. Stop the timer when the document has been saved locally to the tablet. Note any issues.
22. From the videoconferencing host system, send a WebEx invitation to the test tablet.
23. On the tablet, open Mail.
24. Simultaneously start the timer and connect to the WebEx conference by performing the following steps:  
Click the WebEx invitation link.  
Enter the name and press OK.  
Select Connect using Internet.
25. Stop the timer when the tablet has joined the conference call. Note any issues.

## APPENDIX D – TEST FILE CHARACTERISTICS

### Scenario 1 – Working with Word documents and Excel spreadsheets

- Word DOCX1: a 206 KB Word document consisting of 18 pages and 7,588 words. The document has been lightly edited with deletions and an added comment. Changes are tracked.
- Word DOCX2: a 1.9 MB Word document consisting of 10 pages and 2,828 words with several charts and tables
- Excel XLSX1: a 2.7 MB Excel file consisting of 68 columns and 8,260 rows with no formulas or calculations
- Excel XLSX2: a 177 KB Excel file consisting of 11 columns and 1,754 rows with several formulas and calculations

### Scenario 2 – Working with PowerPoint presentations

- PowerPoint PPTX: a 2.23 MB PowerPoint file consisting of 28 slides with slide animations and movies

### Scenario 3 – Collaborating with multiple file types

- Excel XLS: a 404KB Excel file consisting of 11 columns and 1,754 rows with several formulas and calculations
- Excel XLSX1: a 2.7MB Excel file consisting of 68 columns and 8,260 rows with no formulas or calculations
- Excel XLSX2: a 177KB Excel file consisting of 11 columns and 1,754 rows with several formulas and calculations
- PowerPoint PPT: a 1.18MB PowerPoint file consisting of 18 slides with slide animations and movies
- PowerPoint PPTX: a 2.23MB PowerPoint file consisting of 28 slides with slide animations and movies
- Word DOC: a 261KB Word document consisting of 18 pages and 7,590 words
- Word DOCX1: a 206KB Word document consisting of 18 pages and 7,588 words with changes tracked that has been lightly edited with deletions and an added comment
- Word DOCX2: a 1.9MB Word document consisting of 10 pages and 2,828 words with several charts and tables.

### Scenario 4 – Connecting to the VPN and participating in a video conference

- Conference Agenda Word DOCX: a 148 KB Word document consisting of 3 pages and 344 words with Tables, Charts, and colored formatting.

# APPENDIX E – SAMPLE WORD DOCUMENT PAGE RENDERING

## Intel Atom processor-based tablet

YOUR LOGO  
HERE

# Conference Agenda

2004 Conference and Expo, New York

Track 1	Growth in the New Millennium
Track 2	Sales and Marketing
Track 3	Quality Assurance
Track 4	Tools and Resources

**MONDAY, January 19, 2004**

8:00 am - 4:00 pm	Registration				
9:00 am - 10:30 am	Opening Ceremonies Keynote Address: Steven H. Kastner, Breakthroughs for the Next Generation (Grand Ballroom)				
10:45 am - 12:00 pm	Exhibits Open	Managing and Motivating Employees (North Hall)	Tips for Increasing International Sales (South Hall)	Quality vs. Deadline (East Hall)	Build It or Buy It? (West Hall)
12:00 pm - 1:30 pm		Lunch Break			
1:30 pm - 3:00 pm		Maximizing Your Building Space (North Hall)	Competing with Big Corporations (South Hall)	Learning from Past Mistakes (East Hall)	Managing Contract Work (West Hall)
3:15 pm - 5:00 pm		Afternoon Workshops			

**TUESDAY, January 20, 2004**

8:00 am - 4:00 pm	Registration				
8:00 am - 9:00 am	Continental Breakfast				
9:00 am - 10:30 am	Keynote Address: Linda Contreras, Improving on a Good Idea (Grand Ballroom)				
10:45 am - 12:00 pm	Exhibits Open	Recycling and Upgrading Your Equipment (North Hall)	The High Cost of Advertising (South Hall)	Delivering World-Class Products (East Hall)	Keeping Up with Technology (West Hall)
12:00 pm - 1:30 pm		Lunch Break			
1:30 pm - 3:00 pm		Remodeling Within Your Budget (North Hall)	Sell, Sell, Sell! (South Hall)	Building In Quality from the Ground Up (East Hall)	Improving Performance (West Hall)
3:00 pm - 3:30 pm		Afternoon Break			
3:30 pm - 5:00 pm	Exhibits Open	Raising Venture Capital (North Hall)	Marketing to Specific Demographics (South Hall)	Raising the Quality Bar (East Hall)	Deciding Whether to Update Your Tools or Build New Ones (West Hall)
5:15 pm - 7:00 pm		Evening Presentation and Dinner (Grand Ballroom)			

## iPad using Quickoffice

### MONDAY, January 19, 2004

8:00 am - 4:00 pm	Registration				
9:00 am - 10:30 am	Ex hi bit s Op en	Opening Ceremonies Keynote Address: Steven H. Kastner, Breakthroughs for the Next Generation (Grand Ballroom)			
10:45 am - 12:00 pm		Managing and Motivating Employees (North Hall)	Tips for Increasing International Sales (South Hall)	Quality vs. Deadline (East Hall)	Build It or Buy It? (West Hall)
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1:30 pm - 3:00 pm		Maximizing Your Building Space (North Hall)	Competing with Big Corporations (South Hall)	Learning from Past Mistakes (East Hall)	Managing Contract Work (West Hall)
3:15 pm - 5:00 pm		Afternoon Workshops			

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3:00 pm - 3:30 pm		Afternoon Break			
3:30 pm - 5:00 pm		Raising Venture Capital (North Hall)	Marketing to Specific Demographics (South Hall)	Raising the Quality Bar (East Hall)	Deciding Whether to Update Your Tools or Build New Ones (West Hall)

# Conference Agenda

2004 Conference and Expo, New York  
Text

## MONDAY, January 19, 2004

8:00 am - 4:00 pm	Registration				
9:00 am - 10:30 am	Opening Ceremonies Keynote Address: Steven H. Kastner, Breakthroughs for the Next Generation (Grand Ballroom)				
10:45 am - 12:00 pm	Exhibits Open	Managing and Motivating Employees (North Hall)	Tips for Increasing International Sales (South Hall)	Quality vs. Deadline (East Hall)	Build It or Buy It? (West Hall)
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3:15 pm - 5:00 pm	Afternoon Workshops				

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12:00 pm - 1:30 pm		Lunch Break			

## ABOUT PRINCIPLED TECHNOLOGIES



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Our founders, Mark L. Van Name and Bill Catchings, have worked together in technology assessment for over 20 years. As journalists, they published over a thousand articles on a wide array of technology subjects. They created and led the Ziff-Davis Benchmark Operation, which developed such industry-standard benchmarks as Ziff Davis Media's Winstone and WebBench. They founded and led eTesting Labs, and after the acquisition of that company by Lionbridge Technologies were the head and CTO of VeriTest.

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