# TABLETS IN SCHOOLS: DELL LATITUDE 10 ESSENTIALS CONFIGURATION WITH WINDOWS 8 VS. APPLE IPAD

## Dell™ Latitude™ 10 delivers lower management costs on large deployments

powered by dual core Intel® Atom™ processor Z2760

Dell's tablet solution for schools delivered a lower management cost* advantage due to:

**52%** less time spent on management

**99%** faster update time

**2X** the number of devices IT staff can support

School systems purchasing tablets for use by students and staff have a wide variety of options available. Choosing a model that is easy and quick to deploy, set up, and update can dramatically reduce the amount of time that the IT department must spend on management, which translates to a much lower cost of ownership over the lifecycle of the device.

We performed a cost-of-ownership analysis for a hypothetical school that purchases and deploys 500 tablets and maintains them over three years. We compared how much the school would spend with two different tablets, the Dell Latitude 10 essentials configuration powered by the dual core Intel Atom processor Z2760 and running Microsoft® Windows® 8 and the Apple iPad. To learn more about the job of managing these two tablets, we timed a technician performing a set of typical IT tasks.

Thanks in large part to the dramatically reduced amount of time IT staff would need to allocate to management and maintenance tasks, each Latitude 10 essentials configuration tablet would cost the school $1,248.45 over the course of three years, 14.7 percent less than the $1,462.97 each iPad would cost over that same period. A school or district deploying 500 devices could save more than $100,000 in IT staff time.

Especially in a school environment, where small IT teams must support large quantities of devices that students do not always handle with kid gloves, the purchase price of a tablet is only part of the story. Our analysis of deployment, repair, support,

and management costs for tablets revealed that despite its slightly higher acquisition price, the Dell Latitude 10 essentials configuration would be the more cost-effective choice for a school or school system.

## MANAGEMENT MATTERS

Acquiring tablets for students to use is only the beginning. Over the years that a school owns a tablet, IT staff can devote many hours to taking care of it—from the initial configuration and setup process to periodic software updates to fixing any problems that arise. This time can be reduced by selecting a tablet that is easy to incorporate into the existing infrastructure and quick to deploy, connect to printers, and update because you can use the same tools and processes to manage tablets that you use to manage your district's desktop and notebook systems.

The Dell Latitude 10 essentials configuration, which runs the full-featured Windows 8 Pro operating system, fully supports x86-based applications to ensure student productivity and can easily join an existing Windows-based management environment. Compared to the Apple iPad, it also requires far less time for IT to set up, maintain, and manage. Because a centralized IT department can manage the Latitude 10 essentials configuration using the school system's network, it reduces the number of on-site visits required for management and support tasks, saving time and money. The Dell tablet can deliver further savings by allowing schools to use existing software licenses of productivity software such as Microsoft Office or educational software and take advantage of previous investments in adaptive hardware and software such as voice recognition software for students with special needs.

While many school system IT departments have packages in house to configure and manage Windows devices, fewer have the mobile device management tools that can manage iPads. As a result, iPad administration is often a series of time-consuming manual tasks. While adopting a mobile device management (MDM) solution could greatly improve manageability of iPads, doing so would have its own costs—not only for the software itself, but also for the time spent researching the many options and training IT staff on using the new solution.

Figure 1 summarizes the per-tablet costs and total costs our hypothetical school would have over three years with 500 tablets. As it shows, the dramatically lower management and support costs of the Dell Latitude 10 essentials configuration more than make up for the slightly higher initial capital investment associated with this solution.

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| | Dell Latitude 10 essentials configuration | Apple iPad |
|---|---|---|
| Capital costs | $865.90 | $642.98 |
| Setup costs | $2.85 | $9.93 |
| Management and support costs | $379.70 | $810.07 |
| **Total overall cost per tablet** | **$1,248.45** | **$1,462.97** |
| **Total overall cost for 500 tablets** | **$624,224.85** | **$731,486.93** |

Figure 1: Summary of cost of ownership for the two tablets over three years.

As we detail in the following section, because of the dramatically reduced management time required, we estimate that one IT staff member in our hypothetical school could support 500 Dell Latitude 10 essentials configuration tablets but only 250 Apple iPads. This is an important consideration for districts that want to prioritize innovating the learning experience over managing devices for their IT teams.

# COST OF OWNERSHIP: THE DETAILS OF OUR ANALYSIS

Our cost-of-ownership model looks at the three-year costs for a hypothetical school deploying 500 tablets for use by students and staff. It considers the following categories: capital costs, setup costs, and management costs. [1]

We include the cost of the device, three-year hardware support, and key software required to access print and file infrastructure and to manage the device.

## Capital costs

### Hardware costs

- **Dell Latitude 10 essentials configuration.** We include the $589.00 price after instant savings from the Dell store for the currently available 64GB device. The $499.00 32GB version is available in February, (but not at the time of this testing).
- **Apple iPad.** We include the price from the Apple Web site for the least expensive model of the newest full-sized iPad, the 16GB iPad with Retina display with Wi-Fi.

### Hardware support

- **Dell Latitude 10 essentials configuration.** We added a three-year basic hardware service plan from Dell, which includes next-business-day limited OS (after remote diagnosis) protection, priced at $83.30. We also added a three-year accidental damage service priced at $62.30.
- **Apple iPad.** The Apple service plan, AppleCare+, provides coverage for only two years. Other vendors offer three-year support plans for iPads and other devices. We selected the well-reviewed SquareTrade three-year iPad warranty.[2] This plan, which

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[1] We estimate staff time cost using an hourly rate of $31.59 for a technician receiving a salary of $40,992 ($60,658 with benefits) based on 48 40-hour workweeks. We base this on a December 2012 average salary from Salary.com for a PC Maintenance Technician.
[2] http://www.squaretrade.com/ipad-warranty

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has no deductible and is priced at $129.00, includes accident protection, but not battery replacement. Therefore, we include estimates for battery replacement costs under management costs later in this model.

### Battery support

- **Dell Latitude 10 essentials configuration.** We include the $62.30 cost of a two-year extended battery service for the second and third years of the Dell Latitude 10 Essential tablet's life. We found no similar plan for the iPad. Apple charges for battery repair on a per-incident basis, which we include under management costs.

### Software costs

- **Dell Latitude essentials configuration.** Our model assumes that IT staff manages the Dell tablets with current versions of the same Microsoft System Center 2012 Configuration Manager (SCCM) software they use to manage notebooks and desktops. SCCM requires a Configuration Manager Client Management License (ML) on each device it manages. The Microsoft Volume Licensing Open License No Level U.S. Estimated Retail Price is $62.00 for the SCCM Client ML.[3] We include one license per Dell Latitude 10 essentials configuration tablet. We do not include licenses for the System Center management servers, as those would already be in place.
- **Apple iPad.** We assume these devices will be managed manually, so do not include the costs for purchasing or implement a mobile device management solution. We include two iPad apps that enable file sharing and printing: FileBrowser, priced at $4.99 per device, lets students browse and share files, and PrintCentral Pro, priced at $9.99 per device, supports printing to all printers, not just AirPrint printers.

## Setup costs

These are one-time costs associated with setting up the school's file and print infrastructure to support the tablets and setting up the tablets for end users.

### Printing infrastructure costs

- **Dell Latitude 10 essentials configuration.** Because these tablets can use the printers and printing procedures already in place for notebooks and desktops, we include no additional costs for printing infrastructure.
- **Apple iPad.** The iPad printing solution we chose requires at least one workstation (either Windows or Macintosh) per building configured with the appropriate software to serve as a printing hub. We assume the 500 iPads in this model need

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[3] http://download.microsoft.com/download/1/1/1/11128EC7-2BE7-480C-9D46-4ECECA9E481A/System%20Center%202012%20Licensing%20Datasheet.pdf

four such workstations and estimate the costs for each at $500.00. For 500 iPads, this comes to $4.00 per tablet.

## Device setup

- **Dell Latitude 10 essentials configuration.** We timed how long it took to turn on the tablet, go through the initial setup menus, connect to the wireless network, and set up the device for SCCM management. These steps must be performed manually on each device. We also timed deploying applications to the tablet via SCCM.
- **Apple iPad.** We timed the manual steps of turning on the device, going through the initial system menus, and installing apps on the device. We chose a sample of popular educational apps.

For both, we calculated the staff cost of this time to carry out this task for all the student devices and the spares kept on hand as replacements for devices that fail. We divided that total time by 500 to get a per-device cost for the student tablets.

## Printer setup

- **Dell Latitude 10 essentials configuration.** Because these tablets can use the printers and printing procedures already in place for notebooks and desktops, we include only the time to print a test page from each tablet.
- **Apple iPad.** We timed setting up the workstations serving as printer hubs and divided this time among the 500 iPads. We also timed manually setting up each iPad to print and printing a test page.

For both, we calculated the staff cost of this time to carry out this task for all the student devices and the spares kept on hand as replacements for devices that fail. We divided that total time by 500 to get a per-device cost for the student tablets.

# Management costs

## Accidental breakage

We assume that 10 percent of devices suffer accidental breakage each year. This percentage is similar to that reported by SquareTrade[4] based on its experience repairing the iPads that it insures. We use that same percentage for the Dell Latitude 10 essentials configuration.

- **Dell Latitude 10 essentials configuration.** We assume IT staff needs 20 minutes on average to schedule next-business-day repair from Dell and replace the device with a spare.
- **Apple iPad.** We assume IT needs 30 minutes on average to negotiate with the insurance provider for repair, take the device to a store for repair or mail it to the vendor, and replace the device with a spare.

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[4] One in three iPads breaking over three years is based on SquareTrade's iPad 2 data (http://www.squaretrade.com/small-business).

## Battery replacement

We estimate that 50 percent of batteries will have to be replaced as they come to the end of their three-year lifecycle.

- **Dell Latitude 10 essentials configuration.** We include battery replacement coverage for the Dell Latitude 10 essentials configuration tablets in the capital costs. We also include the same IT staff time cost as for accidental breakage because the process for handling both events is the same. School systems might consider having one or more members of the IT staff trained as a Dell authorized service provider as that would allow IT to replace the batteries and not need the battery replacement coverage.
- **Apple iPad.** For each incident, we include the same staff time cost as for accidental breakage and the cost of battery replacement from Apple at $105.95 ($99.00 plus $6.95 shipping and handling).

## Management computers

- **Dell Latitude 10 essentials configuration.** The Dell tablets need no additional management computers. We assume they use the ones already in place for managing notebooks and desktops.
- **Apple iPad.** We include the cost of four computers to help with iPad deployment. We assume that existing printers are not AirPrint compatible, and will need computers installed with WePrint software to allow iPads to communicate with existing printers. Their costs are the same as the computers serving as printer hubs, $500.00 each.

## Administrative cost per device

- **Dell Latitude 10 essentials configuration.** We assume that each IT administrator using SCCM to manage tablets can support 500 devices. For this number to work, the staff would be 100 percent engaged in managing student tablets and not also handling the myriad other jobs school IT staff handle—teaching classes, supporting servers, supporting administration computers, or running IT. We also assume that IT staff—rather than teachers, aides, or students—handles tablet maintenance and support. We assume all the devices are on one campus and do not include windshield time, the time it would take IT staff to drive to and from schools to perform repairs. The hands-free support of the Dell Latitude 10 essentials configuration would save even more if it reduced IT drive time. Even on a single campus, IT spends a great deal of time moving between classrooms and the technology office. We assume a streamlined management process for the Dell Latitude essentials configuration tablets where IT uses SCCM to manage installs and updates and to wipe systems that have problems. Because the school already uses SCCM for PCs, those procedures are already in place. A stash of spare tablets is

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installed with the software students are using and can be swapped for systems with problems. Vendor support agreements with next-business-day on-site repair handle hardware breakage, accidental damage, and battery repairs, so hardware repairs require minimal IT time and effort. The Dell Latitude 10 essentials configuration stay secure because IT can push OS and application updates to them automatically, can monitor software installs, and can wipe devices that are running unauthorized software.

- **Apple iPad.** We assume that using manual management processes, an administrator can support 250 iPads. As our tests results show, performing the same management tasks manually on the iPad can take many times longer than performing them on the Dell Latitude 10 essentials configuration with SCCM. We also assume that because of the administrative burden of performing manual updates, the iPad administrator would skip many updates; this would result in the Dell Latitude 10 systems being better managed with more frequent software updates.

Figure 2 summarizes our cost-of-ownership analysis.

| | Dell Latitude 10 essentials configuration | | Apple iPad | |
|---|---|---|---|---|
| **Capital costs** | | | | |
| Hardware | $589.00 | 64GB Dell Latitude 10 essentials configuration | $499.00 | 16GB iPad w/ Retina display & Wi-Fi |
| Support | $152.60 | 3-year basic support plus 3-year accident protection* | $129.00 | SquareTrade 3-year policy with no deductible** |
| Battery replacement | $62.30 | 2 years Extended battery service for years 2 and 3 of system life | NA | Not available |
| Software | $62.00 | SCCM client | $14.98 | FileBrowser and Print Central Pro |
| **Total capital costs** | **$865.90** | | **$642.98** | |
| **Setup costs** | | | | |
| Printing infrastructure | NA | No print hubs needed | $4.00 | Cost per device for the print hubs |
| Printer setup | $0.46 | | $0.88 | |
| Device set up | $2.39 | | $5.04 | |
| **Total setup costs** | **$2.85** | | **$9.93** | |
| **Management and support costs** | | | | |
| Accidental breakage | $3.13 | | $4.74 | |
| Replacement units | $7.42 | | $12.56 | |
| Battery replacement | $5.21 | Staff time to send in device to vendor for repair (Assumed battery lifecycle rate for both tablets is 50 percent.) | $60.87 | Staff time to send in device to vendor for repair plus replacement battery charge of $105.95. |
| Management computers | NA | No additional computers needed | $4.00 | |
| Administrative costs | $363.95 | | $727.90 | |
| **Total management and support costs** | **$379.70** | | **$810.07** | |
| **Total overall cost** | **$1,248.45** | | **$1,462.97** | |

**Figure 2: Cost of ownership for the two tablets over three years.**

# Additional considerations

The costs we discuss above, which would apply to any large deployment of tablets, form a baseline for the cost savings a school could enjoy by selecting the Windows 8-based Dell Latitude 10 essentials configuration. In this section, we discuss several additional issues that could boost the cost savings of this solution enormously. We exclude them from our analysis because they are challenging to quantify and will not apply to all situations. However, their importance should not be overlooked.

## Assistive technology and other peripheral devices

Many schools have invested in peripherals and learning aids for use by teachers and students, including those with special needs. Many of these devices either work exclusively with Windows or require special ports or adapters that iOS does not support. As such, adopting iPads for classroom use could render such peripheral devices unusable, requiring the school or district to either bear the expense of replacing them with comparable devices, if available, or do without them. Any new devices that are not identical to the ones already in use could result in a learning curve for students and teachers.

## Existing Windows-based applications

Along with hardware devices, many schools have invested in software applications—some of which are very expensive—that require a Windows OS for installation. If the school were to adopt iPads, these applications would become useless. Assuming that comparable products that can run on iOS were available, the school would not only have the expense of purchasing them but could also face a need for training.

## Mobile device management solutions

Several MDM software solutions are available that expressly attempt to address the kinds of iPad management issues this report addresses. However, adopting new management software has many costs. IT must invest time determining which of the many MDM solutions would meet their requirements, installing and configuring the new server setup for the solution, and learning to use the new software. Additional training time could be necessary for other staff members as well. However, the largest cost of such a solution could be for the software itself. Many of the MDM solutions on the market have a high one-time cost with additional monthly costs per device being managed.

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# FROM OUR LABS: MANAGING HUNDREDS OF DELL LATITUDE 10 TABLETS WOULD TAKE LESS TIME

We identified a set of basic management tasks—deploying the tablets, setting them up for printing, and updating software—and timed a technician performing them on both the Dell Latitude 10 essentials configuration and the Apple iPad. We then extrapolated that data to 500 devices to show the kind of time savings a school is likely to realize in a large deployment.

We found that while performing some of our sample management tasks on a single Dell tablet took longer than on a single Apple iPad, the Latitude 10 delivered an economy of scale such that performing tasks on all 500 tablets would require dramatically less time than on doing so on 500 iPads. The reason for this is that the Windows 8-based Dell tablet supports Active Directory®-based management via tools such as Microsoft SCCM 2012. Whatever tools or management software a school already uses to manage Windows desktops and notebooks would allow IT departments to deploy applications and updates and perform other tasks simultaneously on all managed devices.

Figures 3 and 4 on the next page summarize our findings. Note that not all tasks were necessary for both tablets; a yellow "NA" indicates cases where no equivalent step was required. As Figure 3 shows, when performing tasks on a single tablet, the technician spent more time overall with the Dell Latitude 10.

However, when we extrapolated our findings to 500 tablets, the picture was very different. As Figure 4 shows, two of the tasks that took much longer on a single Latitude 10 tablet—deploying software and apps and updating software—took so little time to perform on 500 tablets the bars in this chart are barely visible. As we will detail in the following section, deploying software and apps on 500 Dell Latitude 10 tablets would take less than 20 minutes—compared to more than 60 hours for the Apple iPad—and updating software would take 11 minutes—compared to 40 hours for the iPad. Those two tasks alone could save more than two weeks of an IT staff person's time.

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**Time to perform IT tasks on a single tablet (minutes)**
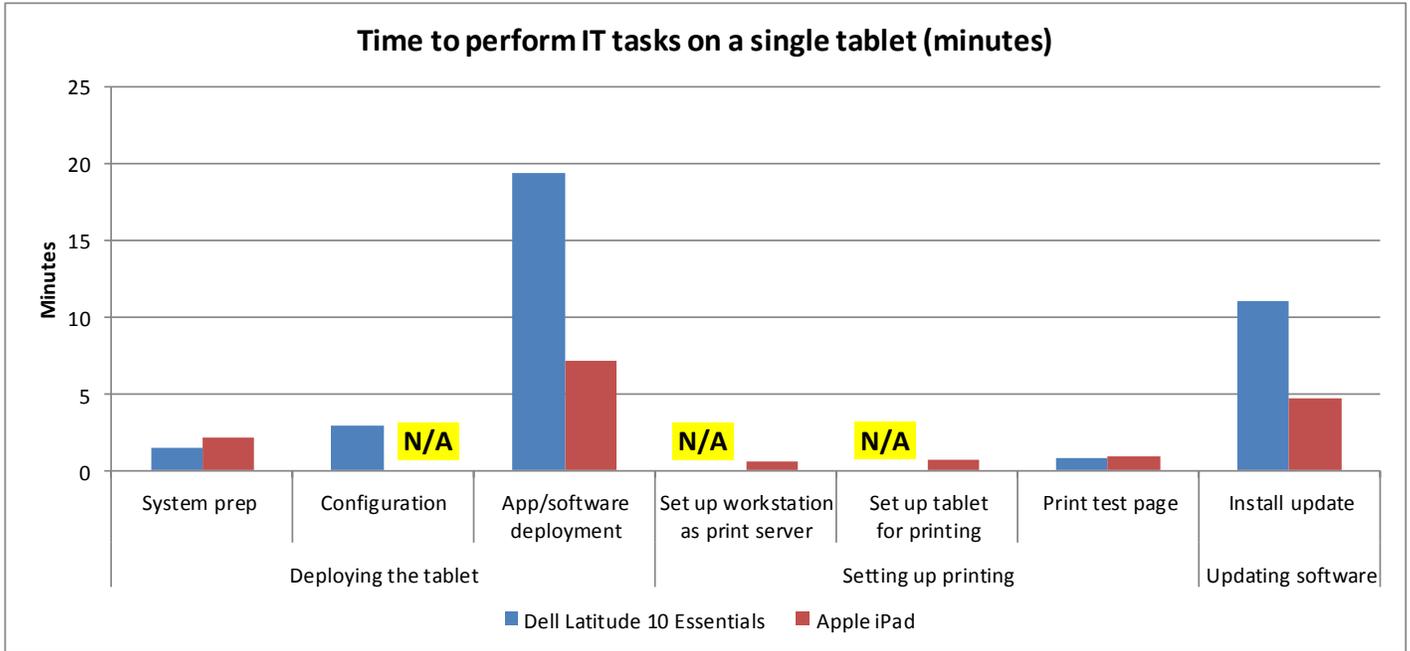
**Figure 3: Time in minutes our test technicians needed to complete management tasks on a single device. N/A indicates that no equivalent step was required on the device.**



**Time to perform IT tasks on 500 tablets (hours)**
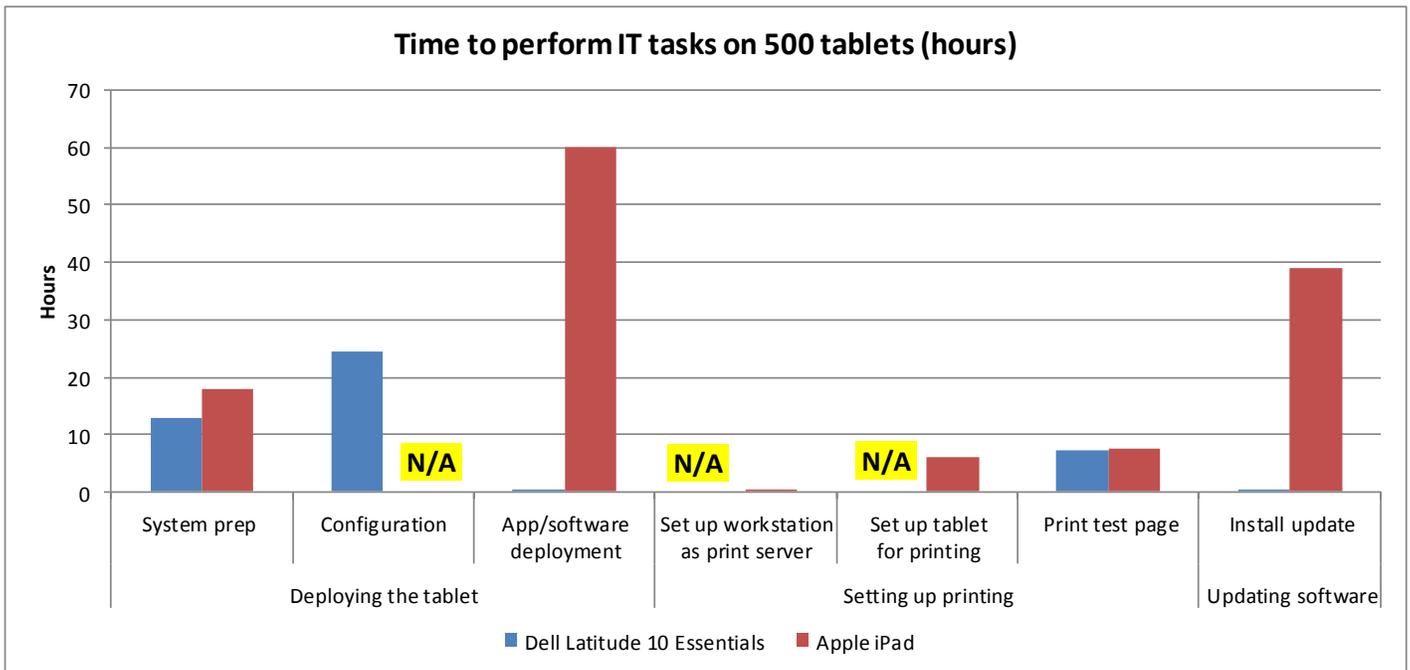
**Figure 4: Time in hours that IT staff would need to complete the tasks on 500 tablets, extrapolated from our single-tablet results. N/A indicates that no equivalent step was required on the device.**

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# WHAT WE FOUND

## Deploying the tablets

Before a tablet can be of use in the classroom, staff must prepare the device with the approved applications and software.

Figure 5 presents the time it took for us to perform initial deployment on the tablets, along with the time it would take to complete the same task on 500 tablets. Because the Latitude uses Microsoft System Center Configuration Manager (SCCM), the task of deploying software and applications—such as QuickOffice, Dropbox, and Number Line—takes IT staff 20 minutes instead of a week and a half.

| | One device | | 500 devices | | | Notes |
|---|---|---|---|---|---|---|
| | Latitude 10 (minutes) | iPad (minutes) | Latitude 10 (hours) | iPad (hours) | Latitude % faster | |
| Initial system prep | 1.54 | 2.17 | 12.82 | 18.08 | 29.09% | Performed manually on each device, iPad and Latitude 10 alike. |
| Initial configuration | 2.95 | N/A | 24.59 | N/A | N/A | Performed on the Latitude only, and consists of connecting to the wireless and joining the domain. |
| Application/software deployment | 19.37 | 7.22 | 0.32 | 60.17 | 99.46% | Performed manually on each iPad. Performed in a single step using SCCM on the Latitude 10. |
| **Workflow total** | **23.85** | **9.39** | **37.41** | **78.25** | **52.19%** | |

**Figure 5: Initial deployment times for the tablets.**

## Setting up printing

When IT staff deploy tablets to a classroom, they must ensure that each tablet can connect and print to the appropriate printer. Because the iPad needs a workstation to act as a print server, it requires several additional steps for IT—not to mention the cost of the print servers. Because the Latitude can print directly, these expenses are unnecessary.

Figure 6 presents the time it took for us to set up the tablets for printing, along with the time it would take to complete the same task on 500 tablets.

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| | One device | | 500 devices | | | Notes |
|---|---|---|---|---|---|---|
| | Latitude 10 (minutes) | iPad (minutes) | Latitude 10 (hours) | iPad (hours) | Latitude % faster | |
| Time to set up workstation | N/A | 0.56 | N/A | 0.04 | N/A | Required as a go-between for iPads and printers. Currently assuming four printer hubs throughout the school. |
| Time to set up device | N/A | 0.74 | N/A | 6.17 | N/A | Performed manually on each iPad. We assume a GPO policy for assigning printers to Windows machines is already in place. |
| Time to print a test page | 0.87 | 0.92 | 7.26 | 7.67 | 5.25% | Performed manually on each device, iPad and Latitude 10 alike. |
| **Workflow total** | **0.87** | **2.22** | **7.26** | **13.84** | **47.52%** | |

Figure 6: Printer setup times for the tablets.

## Performing software updates

Throughout a tablet's life, IT staff must apply software updates to keep applications running as they should and take advantage of the newest features. The Dell Latitude 10's use of SCCM makes this an 11-minute task for IT rather than a weeklong one, as it would be for the iPad.

Figure 7 presents the time it took for us to perform software updates on the tablets, along with the time it would take to complete the same task on 500 tablets.

| | One device | | 500 devices | | | Notes |
|---|---|---|---|---|---|---|
| | Latitude 10 (minutes) | iPad (minutes) | Latitude 10 (hours) | iPad (hours) | Latitude % faster | |
| Time to install the update | 11.03* | 4.68 | 0.18 | 38.98 | N/A | Performed manually on each iPad. Performed simultaneously through SCCM on the Latitude 10. |
| **Workflow total** | **11.03*** | **4.68** | **0.18** | **38.98** | **99.53%** | |

Figure 7: Software update times for the tablets.* It should take the same amount of time to update 500 Latitude tablets as it does one Latitude 10, as administrators update them simultaneously with the touch of a button.

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# CONCLUSION

When deciding which tablet your school will invest in, it is essential to view the entire picture—not just initial acquisition costs, but how much it will cost to own over the years. As our cost-of-ownership analysis and IT task testing demonstrates, the Windows 8-based Dell Latitude 10 essentials configuration tablet can provide a school with great savings thanks to its ability to integrate into an existing school environment. Because this tablet supports the SCCM management tool that lets IT staff manage hundreds of devices simultaneously, installing and updating software on a fleet of these tablets can take minutes rather than weeks. This time savings can dramatically increase the number of devices a single IT staff member can manage; in our hypothetical scenario, it doubled this number from 250 Apple iPads to 500 Latitude 10 essentials configuration. Time is money and for schools, money can be tight. Selecting a tablet that can cut management time in half can result in significant savings and enable district IT professionals to focus more time on supporting innovation in learning.

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# APPENDIX A – DETAILED SYSTEM CONFIGURATION

Figure 8 presents the configuration information for the tablets we tested.

| System | Apple iPad (4th generation) | Dell Latitude 10 essentials configuration |
|---|---|---|
| **General** | | |
| 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" | 10.75" x 7.00" x 0.38" |
| System weight (pounds) | 1.44 | 1.55 |
| **CPU** | | |
| Vendor | Apple | Intel® |
| Name | N/A | Atom™ |
| Model number | A6X | Z2760 |
| Core frequency (GHz) | 1.40 | 1.80 |
| L1 cache | 32 KB + 32 KB | 24 KB + 32 KB (per core) |
| L2 cache | 1 MB | 1 MB (512 KB per core) |
| **Memory module(s)** | | |
| Type | DDR2-533 | DDR2 SDRAM |
| Speed (MHz) | 533 | 800 |
| Size (MB) | 1,024 | 2,048 |
| **Hard disk** | | |
| Vendor and model number | Integrated Flash storage | Integrated Flash storage |
| Size (GB) | 64 | 64 |
| **Operating system** | | |
| Name | Apple iOS 6.0.1 | Windows 8 |
| **Graphics** | | |
| Vendor and model number | PowerVR SGX543MP4 | Intel Graphics Media Accelerator |
| Resolution | 2,048 x 1,536 | 1,366 x 768 |
| **Wireless** | | |
| Vendor and model number | 802.11a/b/g/n | Broadcom® 802.11abgn |
| **Ports** | | |
| USB Type | 0 | 1 x Micro USB 2.0 |
| Other | Headphone jack | Micro HDMI, Micro SD, headphone jack |
| **Monitor** | | |
| LCD type | LED-backlit glossy widescreen Multi-Touch display with IPS technology | Wide view angle LCD |
| Screen size | 9.7" | 10.1" |
| **Battery** | | |
| Type | Apple A1389 integrated Li-polymer | Dell FWRM8 |
| Rated capacity | 11560 mAh 42.5 Wh | 3850 mAh |

**Figure 8: System configuration information for the test systems.**

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# APPENDIX B – TEST METHODOLOGY

## Provisioning the devices

### Apple iPad

Without a Mobile Device Manager solution, IT must manually provision each iPad. This includes the initial sysprep, which sets the Apple account, IP, and other basic settings, and the installation of the required applications for each tablet. We tested several applications as examples of what might be necessary for a school district's iPad. Note: Due to the Apple App Store's 15-minute login, we were not prompted to enter our credentials every time.

1. Perform the initial sysprep steps assigning a computer name, user name, password, etc.
2. Download, install, and configure WePrint.
3. Download, install, and configure Print Central Pro:
   a. Tap App Store to open the store.
   b. Search for Print Central Pro, and tap Install.
   c. Enter your credentials, and tap Enter.
   d. Open the app when the installation is finished to verify completion.
4. Download, install, and configure FileBrowser:
   a. Tap App Store to open the store.
   b. Search for FileBrowser, and tap Install.
   c. Enter your credentials, and tap Enter.
   d. Open the app when the installation is finished to verify completion.
   e. Tap the + button next to Locations to add your file server.
   f. Choose PC, and type the IP or FQDN of your fileserver in the Address field.
   g. Enter the AD user name and password in the relevant fields.
   h. Tap Save.
   i. Tap Done.
   j. Tap the server you just added to verify connection.
5. Download, install, and configure QuickOffice:
   a. Tap App Store to open the store.
   b. Search for QuickOffice, and tap Install.
   c. Enter your credentials, and tap Enter.
   d. Open the app when the installation is finished to verify completion.
6. Download, install, and configure Dropbox:
   a. Tap App Store to open the store.
   b. Search for Dropbox, and tap Install.
   c. Enter your credentials, and tap Enter.
   d. Open the app when the installation is finished to verify completion.
   e. Enter your login information to populate the app.
7. Download, install, and configure BrainPOP Feature Movie:
   a. Tap App Store to open the store.
   b. Search for BrainPOP, and tap Install.
   c. Enter your credentials, and tap Enter.
   d. Open the app when the installation is finished to verify completion.
8. Download, install, and configure Number Line:
   a. Tap App Store to open the store.
   b. Search for Number Line, and tap Install.
   c. Enter your credentials, and tap Enter.
   d. Open the app when the installation is finished to verify completion.

9. Download, install, and configure Edmodo:
   a. Tap App Store to open the store.
   b. Search for Edmodo, and tap Install.
   c. Enter your credentials, and tap Enter.
   d. Open the app when the installation is finished to verify completion.
   e. Enter your login information to populate the app.
10. Download, install, and configure Dictionary.com:
    a. Tap App Store to open the store.
    b. Search for Dictionary.com, and tap Install.
    c. Enter your credentials, and tap Enter.
    d. Open the app when the installation is finished to verify completion.

**Dell Latitude 10**

SCCM requires a wired connection for imaging processes, so a docking station or USB to LAN dongle would allow IT staff to simply deploy an image with desired settings and software in place. We are assuming that there are no docks or dongles present. Once the client has been installed, however, all applications and other settings should push out to the tablets remotely.

1. Perform the initial sysprep steps assigning a computer name, user name, password, etc.
2. Join the domain:
   a. Tap the desktop app in the Start view.
   b. Swipe to open the Charms bar, and tap Settings→ PC Info.
   c. Tap Change settings.
   d. Tap Change.
   e. Tap Domain, and enter the domain address.
   f. Tap OK.
   g. Enter the domain administrator credentials, and Tap OK.
   h. Tap OK to close the Welcome window.
   i. Tap OK to confirm restart.
   j. Tap Close.
   k. Tap Restart Now.
3. Check for updates to install the SCCM client
   a. Swipe up from the bottom of the tablet to reveal the All Programs option, and tap it.
   b. Tap Control Panel.
   c. Tap System and Security→Windows Updates→Check for updates.
   d. Tap Install when the SCCM client update appears.
4. Once the client is installed, all existing SCCM policies and software installations should start up automatically.

# Printing scenario

## Apple iPad

If a district does not already own AirPrint-capable printers, the following steps are required to allow users to print from their iPads to the wireless printers already in place across the district.

1. Configure the PC:
   a. On a Windows computer that has access to the network printer, go to http://mobile.eurosmartz.com, and download the WePrint software.
   b. Install the WePrint software onto the Windows machine by double-clicking the WePrint executable.
   c. Click Install.

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d.  At the license agreement, click Agree.
e.  Click OK, to launch WePrint.
f.  When WePrint launches, accept the default settings, and click OK.
g.  Choose a folder to use for file sharing, and click OK.
2.  Configure the iPad:
a.  Tap the App Store, and search for PrintCentral Pro.
b.  Purchase the app ($9.99), and install it.
c.  Open the application, and tap Getting Started – Printing.txt.
d.  Tap the Print icon in the top right corner.
e.  Wait until the printer discovery has found your printer, and close the application.
f.  Tap FileBrowser to open the application.
g.  In My Files, tap the arrow on the right hand side of the Test Merge.docx file, and tap Open In…
h.  Choose Open in PrintCentral.
i.  Tap Print.
j.  Repeat on each device.

### Dell Latitude 10

There is no methodology for setting up the Dell Latitude tablet for printing. We have assumed an existing infrastructure for Windows devices, including a GPO for printer installation. As such, as soon as a user logs into the Windows tablet on the domain, the printer will automatically be installed and ready for use. The following methodology is for the Time to Print results.

1.  Tap the Word icon.
2.  Tap Open→Computer→Documents.
3.  Tap the test.docx file to open it.
4.  Double-tap the test.docx file.
5.  Click File→Print→Print.

## Performing software updates

### Apple iPad

Apple has released an OS update that must be installed on each device. As Apple does not provide a way to manage these releases, the updates must be installed by the user when the device notifies whoever is logged in at the time. This means that IT must manually check each iPad for the update, and install it when it hasn't already been installed.

1.  Tap Settings→General→Software Update
2.  Tap the update, and tap Install.

### Dell Latitude 10

As Windows has not released a large update for Windows 8, we used Office 2010 SP1 as our sample update. Once Office 2010 has been installed, the existing Office 2010 SP1 update (already in place for use on desktops and servers) will become available via the SCCM client on the tablet. Although no user involvement is necessary for required updates, we opted to manually install this update in order to time how long it took to install.

1.  Open the SCCM client manager on the tablet.
2.  Tap on the Office 2010 SP1 update, and tap Install.
3.  Tap Restart to restart the tablet when the install completes.

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# ABOUT PRINCIPLED TECHNOLOGIES



Principled Technologies, Inc.
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We provide industry-leading technology assessment and fact-based marketing services. We bring to every assignment extensive experience with and expertise in all aspects of technology testing and analysis, from researching new technologies, to developing new methodologies, to testing with existing and new tools.

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We provide customized services that focus on our clients' individual requirements. Whether the technology involves hardware, software, Web sites, or services, we offer the experience, expertise, and tools to help our clients assess how it will fare against its competition, its performance, its market readiness, and its quality and reliability.

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.