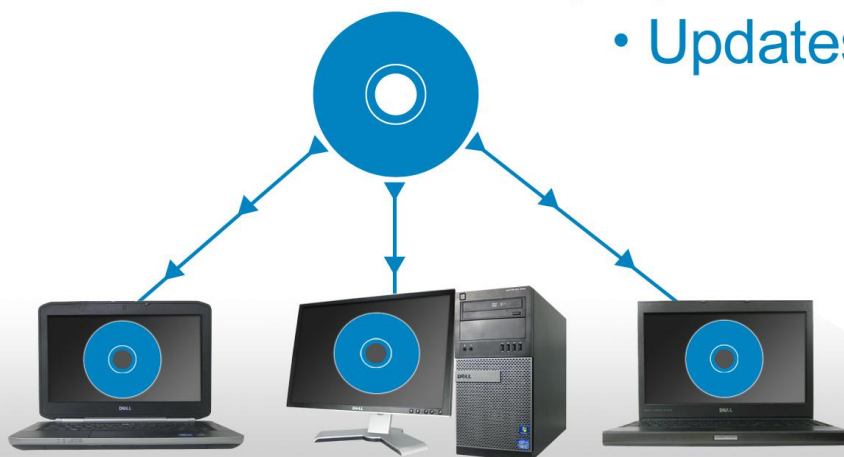
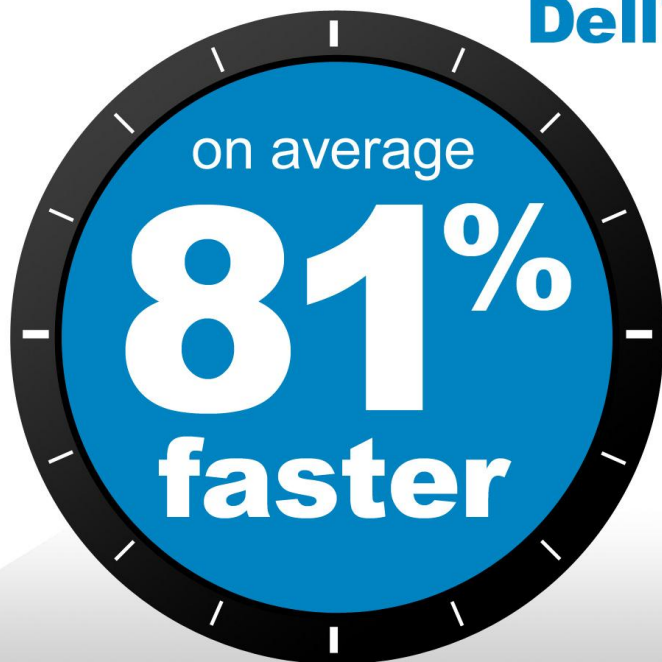


## DELL IMAGEDIRECT 3 WITH FACTORY IMAGE LOAD VS. SYMANTEC GHOST 11.5: TIME TO DEPLOY

**Dell™ ImageDirect 3** saved time on:

- Initial imaging
- Deployment
- Updates



Equipping your employees who work at various locations with notebooks and desktops—and keeping these systems up to date—can be daunting. First, IT must acquire the new systems, load them with the proper operating systems and applications, and then distribute them. And then, each time the company updates or replaces applications, IT has to create and deploy a new image incorporating these changes. Keeping numerous images current and getting new systems to employees can fill an IT staff person's days.

Luckily, notebook and desktop customers now have a solution to this problem. Dell ImageDirect 3 allows you to easily configure your desired corporate computer images, and even better, ships new systems to you with those images already installed. In tests within our labs, Dell ImageDirect 3 was an average of 81.3 percent faster, and saved time on initial imaging, updating images, and deploying systems compared to Symantec™ Ghost™ 11.5 imaging software.



NOVEMBER 2011  
A PRINCIPLED TECHNOLOGIES TEST REPORT

Commissioned by Dell Inc.

## SETTING UP A SYSTEM: DELL MAKES IT EASY WITH IMAGEDIRECT 3

Dell ImageDirect 3 is a service designed to simplify system imaging, deployment, management, and updating. Through an easy-to-use online interface, IT staff can upload and/or build a base system image; Dell will then ship new systems with the selected company image already loaded. Systems can go directly from the factory to employees in local and remote offices around the globe—no need to take a detour to your company’s IT staff for setup.

We compared the online Dell ImageDirect 3 image creation process with a typical corporate deployment solution using the Symantec Ghost 11.5 tool, a leading solution many organizations use. By allowing IT to order systems with a customized, preinstalled image or to build customized images for download with a few clicks of the mouse button, Dell ImageDirect 3 could save significant amounts of IT staff members’ time—time they would otherwise need to devote to imaging using a tool such as Symantec Ghost.

As Figure 1 shows, using Dell ImageDirect 3 for setup, local deployment, and remote site deployment was considerably faster than using Symantec Ghost 11.5, with savings ranging from 79.1 percent to 83.9 percent.

Figure 1. Performing routine setup and deployment tasks with Dell ImageDirect 3 was an average of 81.3 percent faster than with Symantec Ghost 11.5. Lower numbers, indicating shorter times, are better.

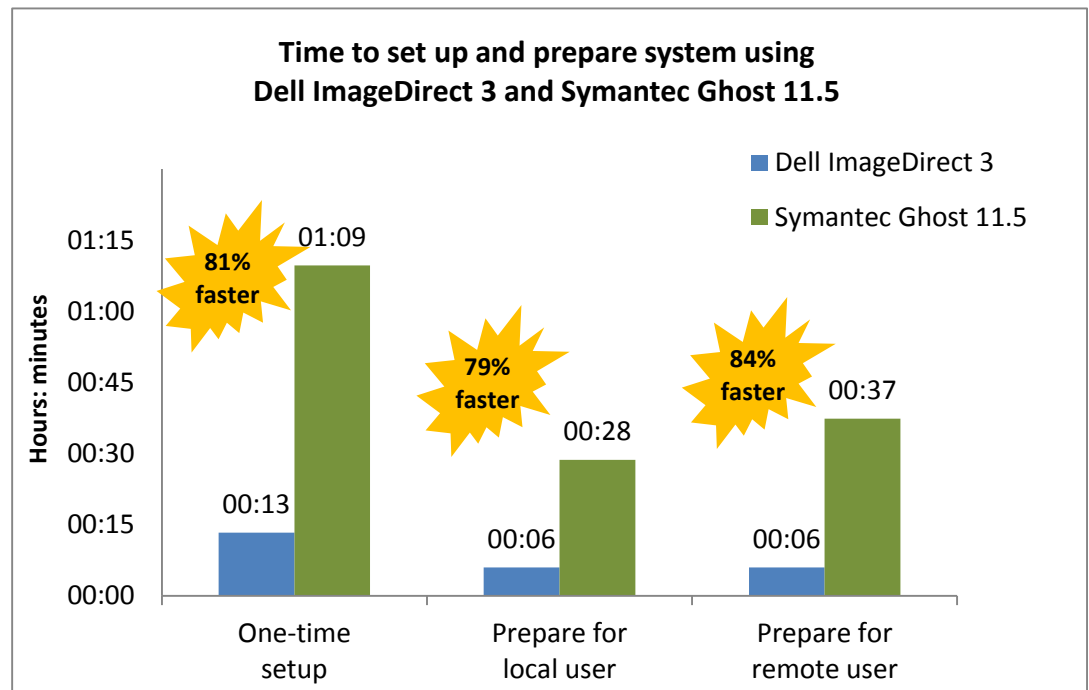


Figure 2 illustrates the steps involved in executing tasks with the two solutions. Using Dell ImageDirect 3 requires far fewer steps of IT staff than using Symantec Ghost 11.5 approach, which in turn saves time.

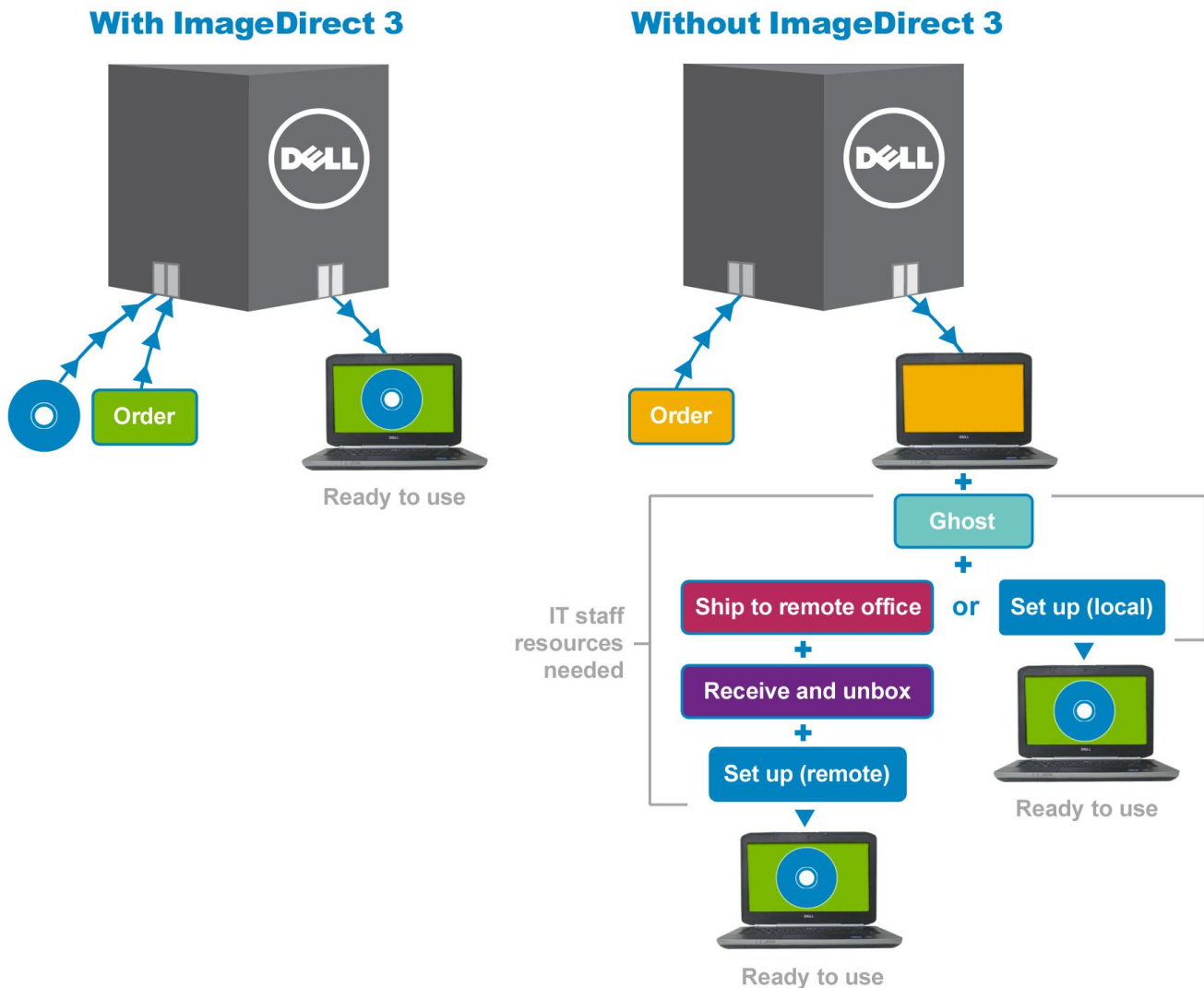


Figure 2. Dell ImageDirect 3 simplifies the process of getting ready-to-use systems to local and remote workers.

## HOW WE TESTED

We selected three commonly available Microsoft® Windows® 7 Enterprise systems that Dell ImageDirect supports and tested the following three scenarios:

- **Scenario 1.** A company orders and deploys a new **Dell Latitude™ E5420 notebook** with an existing company image.
- **Scenario 2.** The same company orders and deploys a new **Dell OptiPlex™ 990 desktop** with an image as similar as possible to the existing company image. This reflects the situation the IT staff faces when adding a new model to the set of computers they already support. We chose a desktop because they necessarily differ slightly from notebook systems.

- **Scenario 3.** Months down the road, the same company orders and deploys a new **Dell Precision™ M4600 notebook** with an updated company image. This reflects the situation the IT staff faces when they need to add updates, new applications, and make other changes over time.

For each scenario, we measured and compared the amount of the time IT staff would spend on three activities with the two approaches, Dell ImageDirect 3 and Symantec Ghost 11.5. We looked at the following activities:

- **Performing one-time setup.** This is the work IT must do to create an image for a system. Most companies have multiple standard images for employees who perform different types of work. Once IT has created one of these images, they can deploy it on multiple similar systems. With Dell ImageDirect 3, IT staff members can also deploy the Dell ImageDirect 3 image on different types of Dell systems with no additional setup time. Note: In our testing, we assume that the initial image for the Dell Latitude E5420 already exists; therefore, neither method requires any setup and no time savings result.
- **Preparing the system for a local user.** This is the work IT must do from the time the boxed system arrives at IT to the time it is on the desk of a user at that same location, ready to be used. It includes unboxing the system, imaging it, and personalizing it for the user.
- **Preparing the system for a remote user.** This includes the work IT must do to prepare a system for a local user, plus the additional time to repack the system in the box and prepare it for shipping to the remote location. It also includes the time to unbox the system upon arrival at the remote location.

## DETAILED FINDINGS

We present our findings below. We use the actual time an IT worker would devote to a task, not elapsed time. For example, copying an image to a system takes a total of 40 minutes, but because the actual time to start up the image copy and monitor its progress takes only 8 minutes, we use the 8-minute figure. Time savings of 100 percent indicates that Dell ImageDirect 3 required no time for imaging when switching to a different model of computer.

We calculated our times on the Dell ImageDirect 3 builds from powering on the system. We captured the Ghost imaging comparison times from the point of powering on the system to the point that we created the user and the Windows desktop appears. We found the times with the ImageDirect 3 setup to be much faster than those with the Symantec Ghost 11.5 setup, especially when it came to ordering a pre-configured system.

## Scenario 1: New notebook with existing company image

As Figure 3 shows, preparing a new notebook for a local user took only around 20 percent of the time when using Dell ImageDirect 3 as it did when using Symantec Ghost 11.5. Preparing a new notebook for a remote user took only around 15 percent of the time with Dell ImageDirect 3.

	Time using Dell ImageDirect 3	Time using Symantec Ghost 11.5	Dell ImageDirect 3 savings (time)	Dell ImageDirect 3 savings (percentage)
Prepare for local user	06:18	31:12	24:54	79.8%
Prepare for remote user	06:18	40:03	33:45	84.3%

Figure 3. Time (in minutes:seconds) to prepare a new notebook for a local user and a remote user using the two approaches. Note: In our testing, we assume that the initial image for the Dell Latitude E5420 already exists; therefore, neither method requires any setup and no time savings result.

## Scenario 2: New desktop with existing company image

As Figure 4 shows, using Dell ImageDirect 3 meant that no time was necessary for set up a new desktop with the company image, saving IT staff 1 hour and 10 minutes. Preparing a new desktop for a local user took less than one-third the time when using Dell ImageDirect 3 as it did when using Symantec Ghost 11.5. Preparing a new desktop for a remote user took around one-fifth of the time with Dell ImageDirect 3.

	Time using Dell ImageDirect 3	Time using Symantec Ghost 11.5	Dell ImageDirect 3 savings (time)	Dell ImageDirect 3 savings (percentage)
One-time setup	0:00:00	1:10:44	1:10:44	100.0%
Prepare for local user	0:07:29	0:28:02	0:20:33	73.3%
Prepare for remote user	0:07:29	0:36:40	0:29:11	79.6%

Figure 4. Time (in hours:minutes:seconds) to set up and prepare a new desktop system for a local user and a remote user using the two approaches.

## Scenario 3: New notebook with updated company image

As Figure 5 shows, using Dell ImageDirect 3 to set up a new notebook with an updated company image took considerably less time than using Symantec Ghost 11.5, a savings of over 60 percent. Preparing a new notebook for a local user took around 15 percent of the time when using Dell ImageDirect 3 as it did when using Symantec Ghost 11.5. Preparing a new notebook for a remote user took only 12 percent of the time with Dell ImageDirect 3.

	Time using Dell ImageDirect 3	Time using Symantec Ghost 11.5	Dell ImageDirect 3 savings (time)	Dell ImageDirect 3 savings (percentage)
One-time setup	0:26:36	1:08:35	<b>0:41:59</b>	<b>61.2%</b>
Prepare for local user	0:04:15	0:26:54	<b>0:22:39</b>	<b>84.2%</b>
Prepare for remote user	0:04:15	0:35:28	<b>0:31:13</b>	<b>88.0%</b>

Figure 5. Time (in hours:minutes:seconds) to set up and prepare a new notebook system with an updated company image for a local user and a remote user using the two approaches.

## Average across all images and systems

As Figure 6 shows, across all tasks, using Dell ImageDirect 3 was an average of 81.3 percent faster than using Symantec Ghost 11.5.

	Time using Dell ImageDirect 3	Time using Symantec Ghost 11.5	Dell ImageDirect 3 savings (time)	Dell ImageDirect 3 savings (percentage)
One-time setup	0:13:18	1:09:39	<b>0:56:21</b>	<b>80.9%</b>
Prepare for local user	0:06:01	0:28:43	<b>0:22:42</b>	<b>79.1%</b>
Prepare for remote user	0:06:01	0:37:23	<b>0:31:23</b>	<b>83.9%</b>
Average across all tasks				<b>81.3%</b>

Figure 6. Average time (in hours:minutes:seconds) to set up and prepare systems using the two approaches. Note: The average one-time setup times are based on only scenarios 2 and 3; the average deployment and remote site deployment times are based on times for all three scenarios.

## CONCLUSION

Imaging, deploying, and updating your company's notebook and desktop systems can be a full-time job for your IT staff. Using Dell ImageDirect 3 for these activities is on average 81.3 percent faster than using Symantec Ghost 11.5. Realizing these time savings could free your IT workers to spend their time more productively.

## APPENDIX A – SYSTEM CONFIGURATION INFORMATION

Figure 7 provides detailed configuration information about the two notebook systems we tested and Figure 8 provides detailed configuration information about the OptiPlex 990 desktop we tested.

System	Dell Latitude E5420	Dell Precision M4600
<b>General</b>		
Number of processor packages	1	1
Number of cores per processor	2	4
Number of hardware threads per core	2	2
System power management policy	Dell	Dell
Processor power-saving option	Enhanced Intel® SpeedStep® Technology	Enhanced Intel SpeedStep Technology
System dimensions (length x width x height)	13-3/4" x 9-5/8" x 1-5/16"	14-3/4" x 10-3/8" x 1-1/2"
System weight	5 lbs. 3 oz.	6 lbs. 8 oz.
<b>CPU</b>		
Vendor	Intel	Intel
Name	Core™ i5	Core i7
Model number	2520M	2720QM
Stepping	D2	D2
Socket type and number of pins	Socket 988B rPGA	Socket 988B rPGA
Core frequency (GHz)	2.50	2.20
L1 cache	32 KB + 32 KB (per core)	32 KB + 32 KB (per core)
L2 cache	512 KB (256 KB per core)	1 MB (256 KB per core)
L3 cache	3 MB	6 MB
<b>Platform</b>		
Vendor	Dell	Dell
Motherboard model number	0H5TG2	08V9YG
Motherboard chipset	Intel HM65	Intel QM67
BIOS name and version	Dell Inc. A02 (7/10/2011)	Dell Inc. A07 (10/2/2011)
BIOS settings	Default	Default
<b>Memory module(s)</b>		
Vendor and model number	Nanya Technology NT2GC64B88B0NS-CG	Samsung M471B5773CHS-CH9
Type	PC3-10600	PC3-10600
Speed (MHz)	1,334	1,334
Speed running in the system (MHz)	1,334	1,334
Timing/Latency (tCL-tRCD-tRP-tRASmin)	9-9-9-24	9-9-9-24
Size (MB)	4,096	8,192
Number of memory module(s)	2 x 2,048 MB	4 x 2,048 MB
Chip organization (single-sided/double-sided)	Double-sided	Double-sided
Channel (single/dual)	Dual	Dual

System	Dell Latitude E5420	Dell Precision M4600
<b>Hard disk</b>		
Vendor and model number	Toshiba MK3261GSYN	Lite-On LAT-256M2S
Number of disks in system	1	1
Size (GB)	320	256
Buffer size (MB)	16	N/A
RPM	7,200	N/A
Type	SATA 3.0 Gb/s	SATA 6.0 Gb/s
Controller	Intel Mobile Express Chipset SATA RAID Controller	Intel Mobile Express Chipset SATA RAID Controller
Driver	Intel 10.1.0.1008 (11/6/2010)	Intel 10.1.0.1008 (11/6/2010)
<b>Operating system</b>		
Name	Microsoft Windows 7 Enterprise	Microsoft Windows 7 Enterprise
Build number	7601	7601
Service Pack	1	1
File system	NTFS	NTFS
Kernel	ACPI x64-based PC	ACPI x64-based PC
Language	English	English
Microsoft DirectX® version	DirectX 11	DirectX 11
<b>Graphics</b>		
Vendor and model number	Intel HD Graphics 3000	AMD FirePro™ M5950 Mobility Pro Graphics
Type	Integrated	Discrete
Chipset	Intel HD Graphics	ATI M5950
BIOS version	2089.11	BR040490-001
Total available graphics memory (MB)	1,696	4,842
Dedicated video memory (MB)	64	1,024
System video memory (MB)	0	0
Shared system memory (MB)	1,632	3,818
Resolution	1,366 x 768 x 32-bit	1,366 x 768 x 32-bit
Driver	Intel 8.15.10.2418 (6/10/2011)	ATI 8.851.0.0 (5/31/2011)
<b>Sound card/subsystem</b>		
Vendor and model number	IDT High Definition Audio	IDT High Definition Audio
Driver	IDT 6.10.0.6324 (1/25/2011)	IDT 6.10.0.6324 (1/25/2011)
<b>Ethernet</b>		
Vendor and model number	Broadcom® NetXtreme® 57xx Gigabit	Intel 82579LM Gigabit
Driver	Broadcom 14.4.2.4 (2/7/2011)	Intel 11.8.81.0 (10/28/2010)
<b>Wireless</b>		
Vendor and model number	Intel Centrino™ Ultimate-N 6300	Intel Centrino Ultimate-N 6300
Driver	Intel 14.0.1.2 (12/21/2010)	Intel 14.0.1.2 (12/21/2010)



System	Dell Latitude E5420	Dell Precision M4600
<b>Optical drive(s)</b>		
Vendor and model number	TSSTcorp TS-L633J	Matshita BD-RE UJ242
Type	DVD+-RW	Blu-ray™
<b>USB ports</b>		
Number	4	5
Type	3 x USB 2.0, 1 x USB 2.0/eSATA	2 x USB 3.0, 2 x USB 2.0, 1 x USB 2.0/eSATA
<b>IEEE 1394 ports</b>		
Number	1	1
<b>Monitor</b>		
LCD type	HD LED WXGA	HD LED-backlit
Screen size (inches)	14.1	15.6
Refresh rate (Hz)	60	60
<b>Battery</b>		
Type	Dell T54FJ	Dell PG6RC
Size (length x width x height)	8-1/4" x 2" x 13/16"	7-1/2" x 3-1/4" x 7/8"
Rated capacity	5300mAh / 11.1V (60Wh)	5200mAh / 11.1V (60Wh)
Weight	11 oz.	13 oz.

Figure 7. Detailed system configuration information for the two notebook systems we tested.

System	Dell OptiPlex 990
<b>General</b>	
Number of processor packages	1
Number of cores per processor	4
Number of hardware threads per core	1
System power management policy	Balanced
Processor power-saving option	Enhanced Intel SpeedStep Technology
<b>CPU</b>	
Vendor	Intel
Name	Core i5
Model number	2400
Stepping	D2
Socket type and number of pins	Socket LGA 1155
Core frequency (GHz)	3.10
Bus frequency	5 GT/s
L1 cache	32 KB + 32 KB (per core)
L2 cache	1 MB (256 KB per core)
L3 cache (MB)	6
<b>Platform</b>	
Vendor	Dell
Motherboard model number	06D7TR
Motherboard chipset	Q67
BIOS name and version	Dell A06 (07/25/2011)
BIOS settings	Default
<b>Memory module(s)</b>	
Vendor and model number	Nanya Technology NT2GC64B88B0NF-CG
Type	PC3-10700
Speed (MHz)	1,334
Speed running in the system (MHz)	1,334
Timing/Latency (tCL-tRCD-tRP-tRASmin)	9-9-9-24
Size (MB)	4,096
Number of memory module(s)	2 x 2,048 MB
Chip organization (single-sided/double-sided)	Single-sided
Channel (single/dual)	Dual
<b>Hard disk</b>	
Vendor and model number	Seagate ST3320413AS
Number of disks in system	1
Size (GB)	320
Buffer size (MB)	16
RPM	7,200
Type	SATA 3.0 Gb/s
Controller	Intel Desktop/Workstation/Server Express Chipset SATA AHCI Controller
Driver	Intel 10.1.0.1008 (11/6/2010)

System	Dell OptiPlex 990
<b>Operating system</b>	
Name	Microsoft Windows 7 Enterprise
Build number	7601
Service Pack	SP1
File system	NTFS
Kernel	ACPI x64-based PC
Language	English
Microsoft DirectX version	DirectX 11
<b>Graphics</b>	
Vendor and model number	Intel 4 Series Internal Chipset
Type	Discrete
Chipset	Intel HD Graphics 2000
BIOS version	2089.10
Total available graphics memory (MB)	1,696
Dedicated video memory (MB)	64
System video memory (MB)	0
Shared system memory (MB)	1,632
Resolution	1,280 x 1,024 x 32-bit
Driver	Intel 8.15.10.2418 (6/10/2011)
<b>Sound card/subsystem</b>	
Vendor and model number	Realtek High Definition Audio
Driver	Realtek Semiconductor Corp. 6.0.1.5883 (9/14/2010)
<b>Ethernet</b>	
Vendor and model number	Intel 82579LM Gigabit
Driver	Intel 11.8.81.0 (10/28/2010)
<b>Optical drive(s)</b>	
Vendor and model number	HL-DT-ST GH70N
Type	DVD-RW
<b>USB ports</b>	
Number	10
Type	2.0
<b>IEEE 1394 ports</b>	
Number	0
<b>Monitor</b>	
LCD type	Optiquest Q7
Screen size (inches)	19
Refresh rate (Hz)	60

Figure 8. Detailed system configuration information for the desktop system we tested.

## APPENDIX B – DETAILED RESULTS

Figure 9 provides more details on the test times of the individual tasks and activities for each of the systems with Dell ImageDirect 3 and with Symantec Ghost 11.5.

Timed activities	Scenario 1: New notebook with existing company image (Dell Latitude E5420)		Scenario 2: New desktop with existing company image (Dell OptiPlex 990)		Scenario 3: New notebook with updated company image (Dell Precision M4600)	
	Dell ImageDirect 3	Symantec Ghost 11.5	Dell ImageDirect 3	Symantec Ghost 11.5	Dell ImageDirect 3	Symantec Ghost 11.5
<b>One-time setup</b>						
Install Windows 7	N/A	N/A	N/A	0:22:20	N/A	0:18:33
Download and install drivers	N/A	N/A	N/A	0:23:09	N/A	0:26:13
Install applications	N/A	N/A	N/A	0:08:40	N/A	0:06:21
Customize image	N/A	N/A	N/A	0:00:22	N/A	0:00:24
Time to capture image	N/A	N/A	N/A	0:16:13	0:05:05	0:17:04
Total	0:00:00	0:00:00	0:00:00	1:10:44	0:05:05	1:08:35
<b>Prepare for local user</b>						
Unbox system	0:02:10	0:02:10	0:01:48	0:01:48	0:01:54	0:01:54
Power on/deploy ghost image/ rename computer	0:04:08	0:12:28	0:05:41	0:10:41	0:02:21	0:13:11
Install additional applications	N/A	0:16:34	N/A	0:15:33	N/A	0:11:49
Total	0:06:18	0:31:12	0:07:29	0:28:02	0:04:15	0:26:54
<b>Additional time to prepare for remote user</b>						
Repack system (average for all systems)	N/A	0:06:40	N/A	0:06:40	N/A	0:06:40
Unpack and set up	N/A	0:02:10	N/A	0:01:48	N/A	0:01:54
Total	0:00:00	0:08:50	0:00:00	0:08:28	0:00:00	0:08:34

Figure 9. Detailed test results.

## APPENDIX C – DETAILED TEST METHODOLOGY

We first tested a Dell Latitude E5420 notebook system with an existing image. We then tested a Dell OptiPlex 990 desktop system with as similar an image as possible. This is the situation the IT staff faces when adding a new model of computer to the set of computers they already support. We chose a desktop to emphasize the differences when compared with a notebook. We also tested a Dell Precision M4600 notebook with an updated image. This situation is a common one, where the IT staff needs to add updates, new applications, and make other changes over time. We completed the test by ordering a Dell Latitude E5420, a Dell OptiPlex 990, and a Dell Precision M4600 from the factory with the images already installed.

The initial image contained the following applications as part of our hypothetical company's corporate build:

- Adobe® Acrobat® Reader 9.3.0
- Adobe Photoshop® CS5.1
- iTunes® 10.4.1
- Microsoft Access® 2010
- Microsoft Excel® 2010
- Microsoft Outlook® 2010
- Microsoft PowerPoint® 2010
- Microsoft Project 2010
- Microsoft Word 2010
- Microsoft Visio® 2010
- Microsoft Groove® 2010
- Microsoft OneNote® 2010
- Microsoft Publisher 2010
- Microsoft InfoPath® 2010
- Skype 5.5
- Symantec EndPoint Protection 12.1
- WinAmp® 5.621
- WinZip® 14.5

We also set the following in the image:

- Microsoft Internet Explorer® (IE) home page to [www.principledtechnologies.com](http://www.principledtechnologies.com)
- Corporate-mandated policy settings:
  - Under Security Settings→Account Policies→Password Policy→Change Maximum Password age to 20 days
  - Under Security Settings→Local Policies→Security Options→Rename guest account to PTGuest

For the Dell OptiPlex 990 system, we recorded the amount of time that it took to deploy the corporate image using the two imaging tools.

On the Dell Precision M4600, we updated the corporate image to simulate quarterly changes. We made the following changes to the image:

- Replaced Symantec EndPoint Protection 12.1 with McAfee® VirusScan Enterprise 8.7i
- Replaced Adobe Reader 9.3.0 with Adobe Reader 10
- Changed IE home page from [www.principledtechnologies.com](http://www.principledtechnologies.com) to [www.dell.com](http://www.dell.com)

- Added one system policy: Under Security Settings→Local Policies→Security Options→Rename Administrator account to PTAdmin

For the Dell Latitude E5420, Dell OptiPlex 990, and Dell Precision M4600 system orders from the factory, we recorded the time from powering on the system to the Windows desktop as well as how long it would take to use Symantec Ghost 11.5 to build and image the systems.

## Dell Latitude E5420 notebook

We measured the amount of time we used with each of the two imaging solutions—Dell ImageDirect 3 and Symantec Ghost 11.5—to go from unboxing the notebook to having a functioning system with the following applications and settings:

- Adobe Acrobat Reader 9.3.0
- Adobe Photoshop CS5.1
- iTunes 10.4.1
- Microsoft Access 2010
- Microsoft Excel 2010
- Microsoft Outlook 2010
- Microsoft PowerPoint 2010
- Microsoft Project 2010
- Microsoft Word 2010
- Microsoft Visio 2010
- Microsoft Groove 2010
- Microsoft OneNote 2010
- Microsoft Publisher 2010
- Microsoft InfoPath 2010
- Skype 5.5
- Symantec EndPoint Protection 12.1
- WinAmp 5.621
- WinZip 14.5

We also set the following in the image:

- IE home page to [www.principledtechnologies.com](http://www.principledtechnologies.com)
- Corporate-mandated Policy settings
  - Under Security Settings→Account Policies→Password Policy→Change Maximum Password age to 20 days
  - Under Security Settings→Local Policies→Security Options→Rename guest account to PT Guest

## Dell OptiPlex 990 desktop

We received the Dell OptiPlex 990 from the factory with ImageDirect 3 already installed. Therefore, we only measured the amount of time we used with the Symantec Ghost 11.5—to go from unboxing the desktop to having a functioning system with the following applications and settings:

- Adobe Acrobat Reader 9.3.0
- Adobe Photoshop CS5.1
- iTunes 10.4.1
- Microsoft Access 2010

- Microsoft Excel 2010
- Microsoft Outlook 2010
- Microsoft PowerPoint 2010
- Microsoft Project 2010
- Microsoft Word 2010
- Microsoft Visio 2010
- Microsoft Groove 2010
- Microsoft OneNote 2010
- Microsoft Publisher 2010
- Microsoft InfoPath 2010
- Skype 5.5
- Symantec EndPoint Protection 12.1
- WinAmp 5.621
- WinZip 14.5

We also set the following in the image:

- IE home page to [www.principledtechnologies.com](http://www.principledtechnologies.com)
- Corporate-mandated Policy settings
  - Under Security Settings→Account Policies→Password Policy→Change Maximum Password age to 20 days
  - Under Security Settings→Local Policies→Security Options→Rename guest account to PT Guest

### Creating the Dell OptiPlex 990 build using Ghost

1. Install Windows 7 and updates.
2. Install the following applications:
  - Adobe Acrobat Reader 9.3.0
  - Adobe Photoshop CS5.1
  - iTunes 10.4.1
  - WinZip 14.5
  - Symantec EndPoint Protection 12.1
  - MS Office 2010
  - MS Project 2010
  - MS Visio 2010
  - Skype 5.5
  - WinAmp 5.621
3. Set the home page to [www.principledtechnologies.com](http://www.principledtechnologies.com).
4. Set the following group policies:
  - Under Security Settings→Account Policies→Password Policy→Change Maximum Password age to 20 days.
  - Under Security Settings→Local Policies→Security Options→Rename guest account to PT Guest
5. Capture the corporate image using Ghost 11.5.

### Dell Precision M4600 notebook

We measured amount of time we used with each of the two imaging solutions—Dell ImageDirect 3 and Symantec Ghost 11.5—to go from imaging the notebook to having a functioning system with the following applications and settings:

- Adobe Acrobat Reader 10.1.1

- Adobe Photoshop CS5.1
- iTunes 10.4.1
- Microsoft Access 2010
- Microsoft Excel 2010
- Microsoft Outlook 2010
- Microsoft PowerPoint 2010
- Microsoft Project 2010
- Microsoft Word 2010
- Microsoft Visio 2010
- Microsoft Groove 2010
- Microsoft OneNote 2010
- Microsoft Publisher 2010
- Microsoft InfoPath 2010
- McAfee 8.7i
- Skype 5.5
- WinAmp 5.621
- WinZip 14.5

We also set the following in the image:

- IE home page to [www.dell.com](http://www.dell.com)
- Corporate-mandated Policy settings
  - Under Security Settings→Account Policies→Password Policy→Change Maximum Password age to 20 days
  - Under Security Settings→Local Policies→Security Options→Rename guest account to PT Guest
    - Under Security Settings→Local Policies→Security Options→Rename Administrator account to PTAdmin

On the Dell Precision M4600 notebook system, we updated the corporate image to simulate quarterly changes.

We made the following changes to the image:

- Replaced Symantec EndPoint Protection 12.1 with McAfee® VirusScan Enterprise 8.7i
- Replaced Adobe Reader 9.3.0 with Adobe Reader 10.1.1
- Changed IE home page from [www.principledtechnologies.com](http://www.principledtechnologies.com) to [www.dell.com](http://www.dell.com)
- Added one system policy: Under Security Settings→Local Policies→Security Options→Rename Administrator account to PTAdmin

For the Dell Precision M4600 notebook system, we recorded the amount of time that it took to deploy the corporate image using the two imaging tools.

### Creating the new Dell Precision M4600 build using ImageDirect 3

1. Sign into the ImageDirect 3 site (<https://imagedirect.dell.com/imagedirect/logon.aspx?c=us&l=en&s=gen>).
2. Click Images.
3. Select desired image, and click View.
4. Click Edit.
5. Click Image Name to rename image.
6. Click Save.
7. Click Components.



8. Click Edit.
9. Select Symantec Endpoint 12.1 in the right pane, and click Remove.
10. Select VirusScan Enterprise 8.7i in the left pane, and click Copy.
11. In the right pane, click Paste.
12. Select Reader9.3 in the right pane, and click Remove.
13. Select Adobe Reader 10 in the left pane, and click Copy.
14. In the right pane, click Paste.
15. Check install order, and click Ok.
16. Select Image Settings, and click Edit.
17. Click Commands.
18. In the Commands Editor, click First Login.
19. Click New.
20. Type the following launch command in the command field: `C:\setupvse.exe /s`
21. Click OK.
22. Click SAVE.
23. Click Build Image.
24. Click START IMAGE BUILD.

### Creating the Dell Precision M4600 build using Ghost

1. Install Windows 7 and updates.
2. Install the following applications:
  - Adobe Acrobat Reader 9.3.0
  - Adobe Photoshop CS5.1
  - WinZip 14.5
  - McAfee VirusScan Enterprise 8.7i
  - MS Office 2010
  - MS Project 2010
  - MS Visio 2010
  - Skype 5.5
  - WinAmp 5.621
3. Set the desktop wallpaper.
4. Set IE Home page to [www.principledtechnologies.com](http://www.principledtechnologies.com).
5. Set the following group policies:
  - Under Security Settings→Account Policies→Password Policy→Change Maximum Password age to 20 days.
  - Under Security Settings→Local Policies→Security Options→Rename guest account to PT Guest.
  - Under Security Settings→Local Policies→Security Options→Rename the Administrator account to PT Admin.
6. Capture the corporate image using Ghost 11.5.

## 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.

When the assessment is complete, we know how to present the results to a broad range of target audiences. We provide our clients with the materials they need, from market-focused data to use in their own collateral to custom sales aids, such as test reports, performance assessments, and white papers. Every document reflects the results of our trusted independent analysis.

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.

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