Best Practices Series

Overview: Dell Digital Delivery for Commercial Client Products

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Contents

1 Introduction

This document describes the Dell Digital Delivery capability and is intended for purchasers and administrators of Dell client products. It presents the advantages of digital delivery, a sample use case, and detailed guidance on how it works and what to expect, as well as alternatives for scenarios where the use of Dell Digital Delivery presents technical or policy issues.

Dell Digital Delivery (referred to as DDD throughout) was designed to accommodate the need for customers to select and fulfill software on Dell notebooks, desktops, and tablets, outside of the factory or at "second touch" Dell distribution facilities.

This capability has been designed to securely deliver digital payloads to Dell notebooks, desktops, workstations, and tablets, anywhere in the world. In the following sections, we expand on the design so commercial customers can better understand how DDD operates and what software fulfillment alternatives exist.

We hope, that this answers most implementation questions and that you will take advantage of digital delivery. Should you have more detailed questions not covered in this document, your account team can provide answers.

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2 Digital Fulfillment Overview

Dell's digital fulfillment process for client devices is summarized in the following diagram:
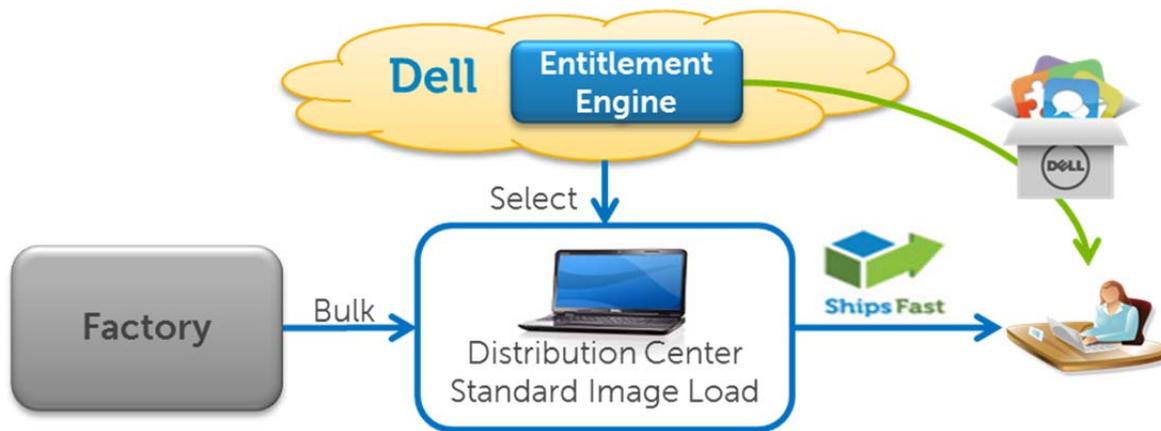
Dell launched the DDD capability with consumer and small office "ShipsFast" client products in early 2011. Today, this secure, robust fulfillment mechanism is in operation globally and has fulfilled millions of software entitlements.

To explain how it works, we'll start with the factory, where Dell forecasts demand and builds standard hardware configurations in bulk, including standardized software images. These systems are then staged at worldwide distribution centers in close proximity to our customers, ready for quick shipment when an order is received.

Next, suppose that you have placed an order for 24 Dell Latitude notebooks and also purchased Adobe Photoshop on each of these systems (we'll keep it simple).

Dell's order management system then selects 24 Dell Latitudes in a distribution center's inventory which match your order, and also retrieves the Dell Service Tags of each system.

Unless you have opted to use Dell's Configuration Services for additional customization, Dell ships those systems to the location(s) you've chosen immediately. Note that, at this time, these systems have a standard operating system image factory installed, but <u>no other customizations</u>, and no Adobe Photoshop software.

While those systems are in transit, Dell's Digital Entitlement services take the Service Tags reported from the order system and create digital "entitlements" for each system. An entitlement is quite simply what software your organization or device is entitled to as a result of the purchase. If a serial number, activation code, or license key is required as part of the software entitlement, it is also permanently associated with your record.

Since most client software Dell sells with systems is licensed as OEM software where a device must be purchased with the software, the license and the entitlement are typically

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tied to your hardware. Other licensing models are also supported by Dell, but in this Adobe Photoshop example, the license will be device-bound.

As a result, the following entitlements are created in the Entitlement Engine for all 24 systems (table abbreviated for clarity):

#	Service Tag	SKU	Serial number/Product Key
1	ABC1234	Adobe Photoshop	1111-2222-3333-4444-5555-6666
2	ABC1235	Adobe Photoshop	1111-2222-3333-4444-5555-6667
..	...	Adobe Photoshop	...
24	ABC1257	Adobe Photoshop	1111-2222-3333-4444-5555-6689

In the meantime, the system order is delivered. The new systems are powered on, and a preinstalled Dell Digital Delivery Client application automatically launches, approximately 10 minutes after first boot. If the user explicitly consents to send their Service Tag and hardware profile information (required to securely identify the system), the DDD application will contact Dell's cloud to check for entitlements.

If pending entitlements are found, the user then has a second opportunity to decide whether to fulfill the software at that time.

Only after agreeing to proceed, all pending entitlements are downloaded and installed, and any required license keys are injected. This portion of the process is automatic, requiring no user intervention, and the applications are ready to use as soon as installation is finished. The user is kept informed of the installation progress throughout the process and through successful completion, using the DDD Client application and standard Windows "toast" notifications.

All of this occurs with no need for direct IT staff involvement or user action, beyond consenting to the agreement which allows the DDD application to contact Dell, and then agreeing to proceed with fulfillment.

In the following sections, we will go into more detail on each component of the service, and how you can fully utilize this capability.

3 Digital Fulfillment Client Operation

The Dell Digital Delivery Client is factory-installed on every Dell system. This Client fulfills the contractual obligation to deliver any digitally delivered software purchased with the system. The Client was developed by Dell Software Engineering, and continues to be owned and managed by Dell.

The Client consists of an application and a Windows service. The Windows service is responsible for downloading and installing applications and for the DDD communications.

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All user interactions are handled by the application. The Windows service communicates with the application when the user needs a notification or is able to make a decision.

When the list of entitlements has been completed and all entitlements are installed or declined, the Client may be closed, and no processes will continue to run. (note: systems manufactured prior to August, 2013 are preloaded with Dell Digital Delivery Client v2.6 or earlier, which contacts Dell for auto-updates every 8 days. Effective September, 2013, this feature is disabled on existing systems via a final auto-update to v2.7, and new Dell systems ship with a DDD Client which only contacts Dell when manually prompted by the end-user)

While Dell recommends that the Client remain installed on the system to support any future reinstall scenarios for digitally fulfilled applications, it may be uninstalled through image wiping, or simply uninstalling the application.

Under the scenario where the image is not wiped but the Client is uninstalled through the Windows UX or the command line, no trace of the Client will remain aside from a handful of values written to a dedicated section of the registry, and a settings file, both of which may also be deleted as a subsequent step:

- *HKLM\SOFTWARE\Wow6432Node\Dell\Digital Delivery*
- *Settings file: C:\ProgramData\Dell\DigitalDelivery\ClientFulfillmentService.State.settings*

The DDD Client is not known to present any compatibility or performance issues when installed on non-Dell hardware, but, it will also not perform any fulfillment function. Therefore, Dell recommends installing it only on Dell products.

4 How to Use Dell Digital Delivery

We make every effort to clearly distinguish the fulfillment method of software available with your systems, at the time the order is placed. All Client software offerings fulfilled using Dell Digital Delivery are designated as "Digitally Delivered" or "Digital Delivery" in Dell's online configurators and sales order entry tools.

Depending on the specific software application, alternatives to digital fulfillment may exist, including Dell's Custom Factory Integration (CFI) program and other Configuration Services, as well as retail software through Dell's Electronics & Accessories store. Please check with your account representative for details.

Ordering Systems With Digital Delivery
Systems which have digitally fulfilled software available for order will have the Dell Digital Delivery Client preinstalled in the factory. Whether or not digitally fulfilled software is actually ordered, the Client remains on the system image that you receive, unless alternative "second touch" arrangements have been made through Dell CFI, your own re-imaging, etc.

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Also, for purposes of speeding your fulfillment process by reducing download time, Dell may have preinstalled prep files for optional software applications on your factory image. If these files are not needed to install the software you actually ordered to or if you remove the DDD Client using the uninstaller or by completing a system re-image, these files will automatically be removed.

System Requirements & Compatibility

The Dell Digital Delivery Client is compatible with all x86 desktops, notebooks and workstations manufactured by Dell since early 2011, and most sold within the past five years.

- Operating System: Windows 7 or 8, 32 and 64-bit
- Processor: Intel Celeron or higher, 1.2 GHz or higher
- Memory: 25MB free
- Graphics: Integrated VGA, or higher
- Storage: 12MB free (The DDD Client itself is approximately 1MB in size)

The Client supports all Windows operating system languages Dell factory installs, and will automatically adjust to the OS language the user selected in Windows Setup.

Fulfilling Digitally Delivered Software on Customer-Imaged Systems

In the event the system factory software image has been wiped, and replaced with your own image, completing fulfillment of Dell Digital Delivery offerings is straightforward. The Client application installer may be downloaded fromwww.dell.com/ddd, and installed on any Dell target devices you select. Once installed, the application should be manually launched, and after consenting to the user agreement while connected to the internet *(window 1)*, the user may retrieve entitlements by selecting *"Check for new purchases"* from the DDD application's Settings menu. *(window 2)*
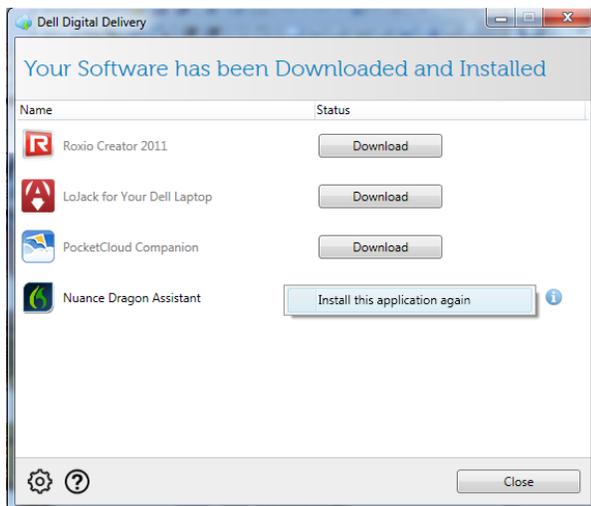

(Window 1)
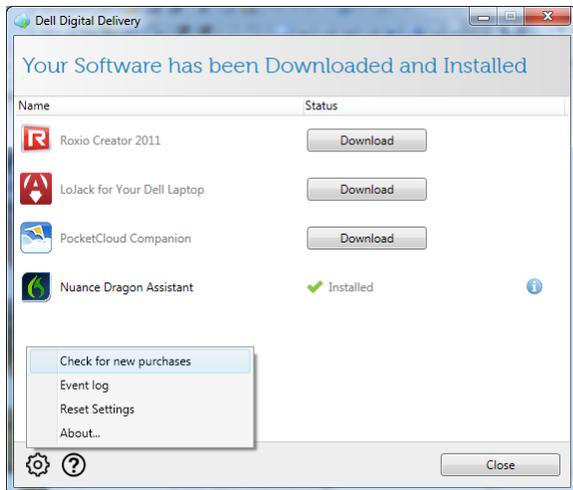
(Window 2)

Reinstalling Digitally Delivered Software

In the event it is necessary to reinstall any digitally delivered applications, Dell maintains your entitlement records and license keys on our servers. After launching the Dell Digital Delivery Client, select *"Install this application again"* for the software you would like to reinstall.

How to Install Digitally Fulfilled Software on Multiple Machines, Without Downloading an Installer Package to Each Machine

In certain scenarios where internet bandwidth is limited, and identical entitlements will be fulfilled to a series of systems, it is possible to use the DDD Client to retrieve only the license keys, and to manage the install process. While this requires IT staff or more advanced technical knowledge, you may be able to speed the deployment process dramatically, as payloads for the entitlements and license keys are typically no more than a few kilobytes in size.

1. Complete regular Windows setup on all of the machines which will have software digitally fulfilled, but do NOT complete the digital delivery process yet; close the DDD

Client if it launches. (if you are re-imaging the system, make sure that the DDD Client is included in your image, or, after imaging, download and install it from www.dell.com/ddd, Again, do not complete the DDD process yet).
2. Select one machine to use as your "master" system. When the DDD Client launches, complete the fulfillment process as normal, following the prompts.
3. Confirm that the software was successfully fulfilled, via the DDD Client, or by simply launching the application which was just fulfilled.
4. Copy the C:\ProgramData\Dell\Digital Delivery\Downloads\Software\ folder from the "master" system to the same folder on each of the additional machines you ordered the software for.
5. Finally, launch the Dell Digital Delivery Client application on each of the additional machines, and proceed with the installation as normal. Because each system's hardware attributes are reconciled with Dell's backend services by the DDD Client, unique licenses will be fulfilled for each entitled device.

5 Alternatives to Dell Digital Delivery

For organizations that still do not wish to use DDD after reviewing this information, there are several alternatives:

- Decline Dell Digital Delivery offerings
    - o Do not select any software applications designated "Digital Delivery" at the time the system is ordered
    - o While the DDD Client will remain on the factory image unless you choose to remove it, the end-user has no ability to install software using the Client- no entitlements will be delivered since they were never purchased (Dell does not offer "after point of sale" software sales fulfilled by DDD)
    - o Systems management tools can be configured to remove the DDD Client using standard Windows APIs
- Wipe the factory-installed image and load your own image
    - o If your organization is purchasing stock Dell configurations, typically referred to as "Smart Selection", and you will reimage the system, do not select any software marked "Digitally Delivered" or "Digital Delivery"
- Utilize Dell Configuration Services
    - o Dell can load your own corporate image that includes custom software but does not include or require DDD

At this time, Dell Digital Delivery cannot accommodate volume license keys or provision custom images. Many software vendors use a special installer packages for volume licensing and Dell Digital Delivery does not track ISV versions and licensing key restrictions; entitlements are reconciled to the device. For fulfillment of volume licensed software, we recommend using Dell Configuration Services, or working directly with your ISV

6 FAQs

1. Exactly how does the DDD Client contact Dell servers?
   - All Client/Server communications take place over an https connection. In more than two years of operation, we have not encountered a significant number of customer fulfillment issues due to proxies, firewalls, etc.

2. Who built the DDD Client?
   - Dell's Software Engineering organization developed the DDD application, and continues to maintain it.

3. When does the DDD Client contact Dell servers?
   - After the user has connected the system to the internet, the Client contacts Dell within 10 minutes after first boot. After initial software fulfillment, v2.6 and lower phones home every 8 days, for the exclusive purpose of updating itself. V2.7 and later do not self-update, and only communicate with the internet when prompted by the end-user.

4. Can the DDD service "push" software to my devices, after my original order has been delivered?
   - No, Dell has not implemented the capability to "push" software which was not part of your system order.

5. Where does the DDD Client send information to?
   - Entitlements and license keys are stored in the "Dell Entitlement Engine", which are Dell-owned services running in Dell's data centers, which may be physically located outside of your country of residence. If you have entitlements to be fulfilled, the installer itself is typically fulfilled from a global CDN, for improved performance.

6. Does the DDD Client change any registry settings?
   - The Client writes a small number of values to its own section of the registry: HKLM\SOFTWARE\Wow6432Node\Dell\Digital Delivery.

7. If I wipe the image, does any of the DDD Client remain? Can Dell prove that it's gone?
   - There is no persistence to the hardware. If you format the disk, no files related to the DDD Client remain installed
   - The Client may also be uninstalled without reimaging; the only trace is a settings file (C:\ProgramData\Dell\Digital Delivery\ClientFulfillmentService.State.settings).

8. Does the DDD Client use encryption?
   - No, beyond https. Dell Export Compliance has approved the DDD Client for all countries Dell does business in.

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