Introduction to MDT 2012 OSD in Dell Factories

Microsoft® Deployment Toolkit 2012 (MDT) provides a common console with a comprehensive toolset for Operating System Deployments (OSD). MDT 2012 is a recommended process and toolset to create and modify images for client and server systems.

MDT OSD Dell Factory pre-load options include:

- **Initiate task sequence during Dell’s Factory process** (before shipment). Reduces deployment time by pre-loading the OSD and by running most of the task sequence within the Dell factory. PC deployment network bandwidth usage is also greatly reduced. This document focuses on this option, how to integrate your task sequence with Dell’s factory process (enabling the task sequence to run within Dell’s factory process).

- **Initiate task sequence on first boot** (after receiving the system). Saves time and network bandwidth required to download the OSD to each system on-site. If you have a production MDT OSD this may be the fastest path to begin loading your OSD in the factory.

**Important notice for customers initiating Task Sequence Execution on first boot:**

This document does not apply if you plan to initiate your task sequence on first boot (after receiving the system). Please contact your Configuration Services Project Manager for instructions on sending your MDT OSD media to Dell to begin your project setup.

Dell Configuration Services simplifies IT for Administrators utilizing Microsoft Deployment Toolkit 2012 by enabling a single source provisioning solution for all deployment scenarios.

Administrators can also leverage MDT 2012 to reduce the number of OS images your company must create and manage. The flexibility of MDT enables Administrators to manage the OS, drivers, applications, and patches within a single distribution.

**The intended users of this guide are Dell customers**

- IT network administrators or managers using MDT 2012 to perform Operating System Deployments within an organization

**Administrators must have experience:**

- Creating, deploying and validating images on Dell client systems
- Creating and validating stand-alone media builds from an MDT 2012 Task Sequence
The following process outlines the basic steps required to integrate an MDT 2012 OSD Task Sequence with the Dell Factory.

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Modify your current task sequence to include Configuration Services requirements detailed in this document.</td>
</tr>
<tr>
<td>2</td>
<td>Create Standalone media of your task sequence and send it to the Dell Configuration Services team.</td>
</tr>
<tr>
<td>3</td>
<td>Dell IMS engineers will work with you to validate your Task Sequence modifications.</td>
</tr>
<tr>
<td>4</td>
<td>Dell Configuration Services team imports your standalone media for use in the factory on systems you order.</td>
</tr>
<tr>
<td>5</td>
<td>Your build is placed on systems you have ordered and they are booted while in the factory to launch the build process.</td>
</tr>
<tr>
<td>6</td>
<td>When the factory portion of the build is complete, the systems are shipped directly to your end users.</td>
</tr>
<tr>
<td>7</td>
<td>The end user receives their system, connects it to your network and powers it on.</td>
</tr>
<tr>
<td>8</td>
<td>The build process continues with any steps that require network connectivity (e.g., joining domain) before allowing the user to logon.</td>
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</tbody>
</table>
**Configuration Requirements**

MDT 2012 Task Sequences must support these requirements to initiate task sequence execution within the Dell Factory.

**Selection Profiles**

Selection Profiles are used to control what the content included in any media that is created. Create folders in the Deployment Workbench that contain one or more items for applications, operating systems, device drivers (Out-of-Box Drivers), OS Patches and Language Packs (Packages) as well as task sequences. A selection profile will be used as the basis for creating the MDT 2012 deployment media.

**Prepare for a New Computer Deployment Scenario**

Managed device driver deployments ensure that appropriate device drivers are deployed to the target computer.

- Create a folder structure in the Out-of-Box Drivers node of the Deployment Workbench to organize the device drivers as described in the MDT Documentation Library help file (Managing Device Drivers section).
- Create Folders to Organize Device Drivers for LTI Deployments
- Create selection profiles used to select the device drivers for deployment, based on the folder structure you created in the previous step (as described in the MDT Documentation Library help file).
- Create selection profiles to select the Device Drivers for LTI Deployments.
- Configure task sequences to deploy the device drivers in the selection profiles (as described in the MDT Documentation Library help file).
- Configure Task Sequences to deploy device drivers in selection profiles for LTI deployments.

**Apply the Stand-Alone Media Build to an offline PC and validate the build process**

- Validate your task sequence before adding the steps for Dell Configuration Services.
- After successfully completing the stand-alone media build, validate that the steps you modified are working properly (e.g.: Device driver injection and CS Steps.)

**Important**

Be sure to spell / type variables and group names correctly.

Be sure to add the spaces and dashes as indicated in the given examples.
For successful factory integration, you need to modify a standard task sequence so that it performs properly in the Dell factories. This section walks you through the basic process of making the necessary modifications to the Task Sequence.

Standard Task Sequence

A Standard Task Sequence is created when you select the Standard Client Task Sequence Template to modify your existing task sequence.

**Restriction:** Using multiple task sequences to deploy the same OS should be avoided because it increases the deployment solution complexity.

The highlighted sections run based on task sequence conditions. For example, if you select the task sequence group **State Capture** and click the Options tab, that step will run only if the task sequence variable PHASE equals STATECAPTURE. This variable is configured automatically at the start of the task sequence. Typically, new computer deployment scenarios skip this step. Take a few minutes to review the other conditional statements and become familiar with the flexibility of the task sequencer.
CS Enabled MDT OSD Map

This map illustrates what actions are required in order to enable a current OSD task sequence for Dell factory integration. The map should be used as a quick reference when configuring a task sequence with the Dell factory process.

*Admins are not required to disable these steps as they may require the execution of these tasks in a production environment. Dell recommends that the Admin establishes a task sequence variable “CFI” to control when tasks will be run, and when tasks will be skipped (e.g., skip these tasks when CFI ≠ TRUE).

All software packages must be enabled for offline deployment during the factory process. The system will be running the Task Sequence in the factory without network connectivity. If you have a package that requires connectivity to your network infrastructure then simply move the task to the “Post-Delivery Configuration” group. This task group will execute when the system is turned on and boots to the operating system for the first time after delivery.
Adding drivers to Support Models ordered from the Dell Factory

Add required drivers

Drivers will be in either the form of a package that contains .INF files or as an application that you must install. Model specific driver packages and combo cabs can be obtained from Dell TechCenter.

Note: To ensure proper support for 512e Advanced Format drives see www.dell.com/512e-drives

1) Import driver .INF files into the Out-Of-Box Drivers node in the Deployment Workbench
2) Use the MDT 2012 install application process for driver MSI or setup.exe files as you would any other application
3) Create selection profiles to select device drivers during deployments
   » If a higher folder structure is selected then more device drivers are included but an Admin will have less granular control over device drivers deployed
   » If a lower folder structure is selected then fewer device drivers are included, giving the Admin more granular control over the device drivers deployed.
4) Use selection profile names that allow you to easily identify the device drivers included in them, such as Dell Latitude E3 Series x64 Family Drivers, Dell Latitude E6410 x64 Drivers, WinPE x64 Drivers, WinPE x86 Drivers.
5) Integrate conditions to apply drivers with the use of WMI Queries as shown below:
   » If any conditions are true:
   » select * from Win32_ComputerSystem where Model like "Latitude E6420%"
Applying drivers to Support Models ordered from the Dell Factory

Apply Driver Package

1) Open the MDT Deployment Workbench
2) Expand Deployment Shares folder structure
3) Expand the Deployment Share intended for use in the Dell Factory
4) Expand the Task Sequences folder structure
5) In the main pane, Right Click the Task Sequence intended for use in the Dell Factory > Properties > Task Sequence tab
6) Expand the Pre-Install Group Task > Select Configure
7) Click Add > General > Inject Drivers
8) Click the Properties tab, enter the following:
   » At Name, type a description of the model’s Driver Package
     o Example: Precision T7500 x64 Driver Injection
   » At Description, type the driver model
   » At Choose a Selection Profile, Select the model driver profile from the drop-down list created in previous steps
9) Select “Install all drivers from the selection profile”

Apply Conditional Statement

1) Click the Options Tab
2) Click Add > Query WMI
3) At WQL Input, type a conditional statement correlating to the model type:
   » Select * from Win32_ComputerSystem where Model like “Precision T7500%”
4) Click the “Continue on error” box
5) Click OK > Apply

Repeat these steps for each model type to be imaged in the Dell Factory
Configure Dell CS Initialization

The Dell CS Entry group is placed at the beginning of your existing task sequence within the Initialization Group and consists of one primary section.

Create Group – Dell CS Entry

From the Microsoft Deployment Toolkit navigational pane, locate the task sequence to integrate with Dell’s factory process.

1) Task Sequence Editor, Select Initialization:
   » Click Add > New Group
   » At Name type, Dell CS Entry
2) Click Options tab
3) Check the “Continue on error box”
4) Click Options tab > Add Conditions > If Statement > All Conditions
5) Click OK, and then select the created If Statement for proper nesting
6) Click Add Conditions
   » Variable = CFI
   » Condition = Equals
   » Value = True
7) Click OK > Apply
Initialize Configuration Services

Initialize CS copies factory integration files to the system for initial build dependencies. Create a Run Command Line Task Sequence Step called Initialize CS, as shown below. Initialize CS should be nested in the Dell CS Entry group.

1) Task Sequence Editor, Select Dell CS Entry
2) Click Add > General > Run Command Line
3) At Properties tab, enter the following:
   » At Name, type Initialize CS
   » At Command Line, type CFI_START.BAT
   » At Start in, type C:\
4) Click the Options tab
5) Check the "Continue on error" box
Configure Dell CS Integration

Create Dell CS Integration Group

Create and configure the Dell CS Integration group with the CFI variable

1) Task Sequence Editor, Select State Restore Group
2) Click Add > New Group
3) Click the Properties tab, enter the following
   » At Name, type Dell CS Integration
4) Click Options Tab > Add > Task Sequence Variable
   » At Name, type CFI
   » At Condition, Select Equals
   » At Value, type True
5) Select the "Continue on Error" box from the Options tab
6) Click Apply
Create the "Handoff to CS" Task

Handoff to CS transfers the MDT process over to the Dell Factory for build dependencies and system shipment.

1) Task Sequence Editor, Select Dell CS Integration Group
2) Click Add > General > Run Command Line
3) Click the Properties tab, enter the following
   » At Name, type Handoff to CS
   » At Command Line, type CFI_LAUNCH.BAT
   » At Start in, type C:\
4) Select the ‘Continue on Error’ box from the Options tab
5) Click Apply

Create the "Restart Computer" Task

1) Task Sequence Editor, Select Dell CS Integration Group
2) Click Add > General > Restart Computer
3) Select the ‘Continue on Error’ box from the Options tab
4) Click Apply
Post-Delivery Configuration Group

The Post Delivery Configuration group will run when the system has shipped and is booted to the Operating System for the first time. Include in this group any steps needed to complete your build process. Include a “continue on error” for ALL individual tasks to be run in this group. Below is a list of items typically placed in this group.

- CS Cleanup is required to remove Dell Factory files from the hard drive
- Recover From Domain
- Mapping of network shares
- Application installations that require network connectivity
- Windows Activation

1) Task Sequence Editor, Select State Restore Group
2) Click Add > New Group
3) At Name type, Post-Delivery Configuration

CS Cleanup

1) Task Sequence Editor, Select Post-Delivery Configuration Group
2) Click Add > General > Run Command Line
   - At Name, CS Cleanup
   - At Command Line field, enter CFI_CLEANUP.BAT
   - At Start in field, enter C:\DELL\CFI
3) Click Apply > OK
4) Proceed to add any network dependent tasks after the “CS Cleanup” task has run

Example Only:
Add any network infrastructure dependent tasks you require here
Create the Deployment Media

Deployment Media created from the MDT Workbench will be in the form of an ISO file. The ISO contains the deployment share’s content folder which will be used for deployment in the Dell Factory.

How to Create Deployment Media

1) Expand **Advance Configuration** from the Deployment Workbench
2) Expand the **Media folder**
3) Right click the **Media folder > New Media**
   » At **Media path**, type a **folder path** and **name of ISO file** to be generated
   » At **Selection Profile**, select the **desired profile intended for deployment** (instructions on page 5)
   » Click **Next**
4) At **Summary**, click **Next**.

The Media ISO and the Content folder will only be generated when the Media has been updated in the Deployment Workbench.
Dell Configuration Services requires that the OSD is configured to have zero user interaction throughout the factory process. The following instruction set should be applied to the CustomSettings.ini and Bootstrap.ini files in the Media Properties. Use the following illustrations as a reference for customizing the Rules.

**CustomSettings.ini**

1) Navigate to the Media folder > Select the created Media
2) Right click the created Media > Properties > Click the Rules tab
3) At the end of the Settings section, establish the CFI variable
   » Properties=MyCustomProperty, CFI
4) At the end of the Default section add the following lines
   » CFI=TRUE
   » SkipBDDWelcome=YES

```ini
[Settings]
Priority=Default
Properties=MyCustomProperty, CFI

[Default]
OSInstall=Y
SkipWizard=YES
SkipApplications=YES
SkipDeploymentType=YES
DeploymentType=NEWCOMPUTER
SkipCapture=YES
SkipAdminPassword=YES
SkipProductKey=YES
SkipDeploymentType=YES
SkipDomainMembership=YES
JoinDomain=yourdomain.local
DomainAdmin=Deployment_Account
DomainAdminDomain=yourdomain
DomainAdminPassword=PASSWORD
SkipUserData=YES
UserDataLocation=NONE
SkipTaskSequence=YES
TaskSequenceID=Your_TS_Name
SkipComputerName=Variable if used
SkipPackageDisplay=YES
SkipLocaleSelection=YES
SkipTimeZone=YES
SkipBitLocker=YES
SkipSummary=YES
CFI=TRUE
FinishAction=SHUTDOWN,REBOOT,LOGOFF
SkipSummary=YES
SkipFinalSummary=YES
SkipBDDWelcome=YES
```

**Bootstrap.ini**

5) Click on the Edit Bootstrap.ini button from within the Rules tab
6) Use the following line
   "Skip BDDWelcome=Yes"
   to bypass the MDT Welcome screen during the time of deployment.

The listed modifications to the Deployment Share’s Rules will populate the empty variables required for the Task Sequence to be performed with zero user input. Modify the variable’s values or add additional variables to further customize the client system’s deployment (e.g.: TaskSequenceID, OSDComputerName). Consult the “Toolkit Reference” section of the MDT 2012 documentation for Property Definition guidance.
Test Standalone Media

Although you cannot replicate the entire Dell Factory process, perform a simulation of the process to identify potential failures. If your process is similar to our example, with post-delivery configuration requiring network access (such as join domain), Dell recommends at least two test deployments are performed. One test with the system connected to your network. A second test with the system disconnected from your network.

Test the Stand-Alone Media Build to simulate factory deployment

These steps represent a brief test simulation walk-through:

1) In the Media folder, right click the Media > Update Media Content
2) Locate and burn stand-alone media ISO to DVD or extract to bootable external storage
3) Disconnect the test system from the network
4) Boot a test system using the media DVD or bootable external storage
5) There should be no prompts to initiate the deployment
6) Allow the task sequence process to complete
7) Log in to the system and verify all configurations and application installation settings to confirm a successful deployment.
8) Rerun steps 1-7 with the test system connected to your infrastructure
9) Log in to the system and verify that all Post-Delivery Configurations have executed as expected
10) Take note of how the final configurations differ between the two tests.
11) Provide screenshots or relevant information regarding image deployment behavior when testing the deployment offline. This will aid the Dell IMS Engineers in their validation process.

For more information about solutions for your organization, contact your Dell account representative or visit Dell.com/services

Work with your IMS PM to submit your Configuration Manager OSD .ISO files.