



APELON

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# DTS Distribution Client Administration and User Guide

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## A. Introduction

This document focuses on administrating a Distributed Terminology System (DTS) environment by managing content through the Subscription Portal user interface.

## B. DTS Subscription Portal Administration

The DTS Content Distribution system is designed to deploy and keep remote data repositories up-to-date with the most current content. Within this system, remote environments download subscription packages from the DTS Subscription Portal. The DTS Content Distribution system is composed of three parts, as shown below in Figure 1 DTS Content Distribution System.



**Figure 1 DTS Content Distribution System**

For example, a small hospital is subscribed to a handful of terminologies. It has a single client service responsible for downloading new packages every Sunday at 1 AM. The hospital has two (2) DTS environments, (1) a testing environment, and (2) a production environment. The environments share the client service and any downloaded packages. The testing environment is set to apply packages as they are available. The production environment only applies packages when ordered to, and only at during a specified time period.

From a remote client's perspective, there are two components which must be managed, (1) the Java-based DTS Subscription Portal, and (2) one or more DTS environments.

The DTS Subscription Portal service is responsible for downloading newly published packages and storing them in a central location and acts as a proxy for DTS environments since they cannot communicate with the gateway server directly. Both the downloading and application of packages are controlled through a scheduler.

Within the context of this content distribution system, a DTS environment consists of the following:

- **DTS Database** – The actual data repository that contains the distributed DTS content.
- **DTS Subscription Portal Client** – An application responsible for subscribing, analyzing, and applying content packages to the DTS Repository (a.k.a. DTS Distribution Client).

## B.1 DTS Distribution Client Installation Instructions

The following instructions will assist in installing the files required to run the DTS Distribution Client on your machine. It can be installed on a Windows or Linux type operating system. Follow the below steps for the type of operating system on your machine.

### B.1.1 Installation Requirements

The following are the system requirements to install and run the DTS Distribution Client:

#### a. *Supported Operating Systems*

- Windows Server 2016 or Windows Server 2019
- RedHat Enterprise Linux 6 or 7
- CentOS 6 or 7

#### b. *Java requirements*

- Java SE Runtime Environment 8

### B.1.2 Installing on Linux type operating systems

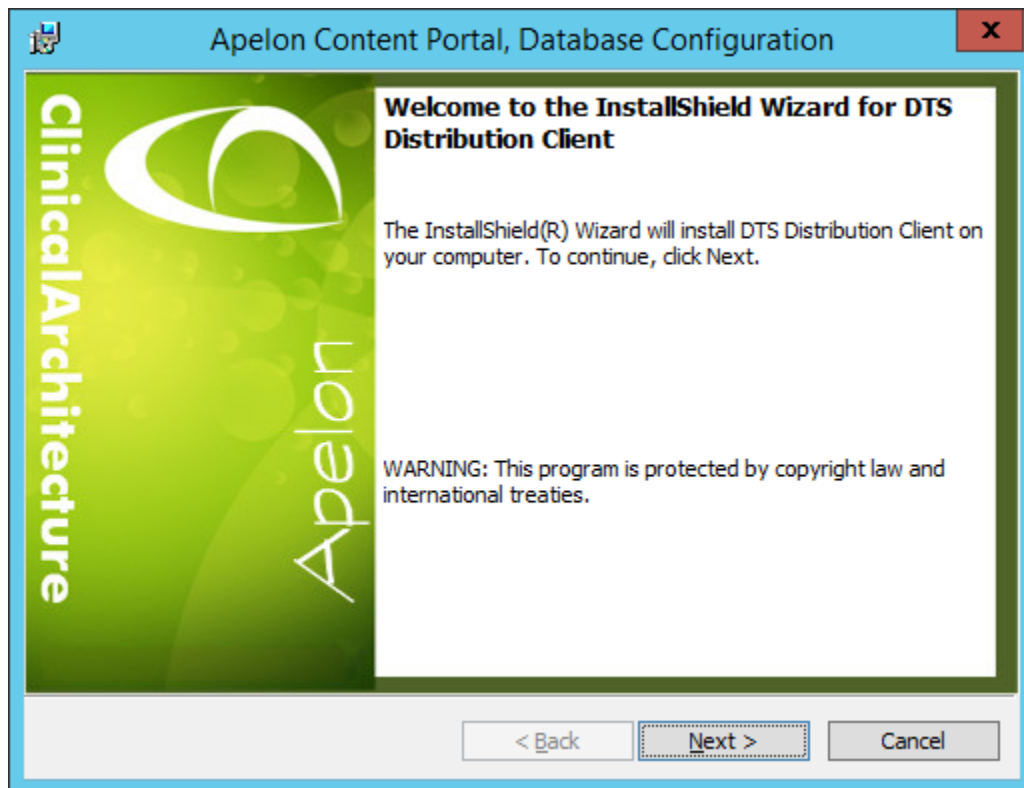
This process consists of creating an install directory, editing configuration files, and creating tables.

1. If necessary, extract the combined Windows/Linux Distribution Client package and navigate to:  
..\DTSDistributionClient\Installers\Linux
2. Uncompress the “**DTSDistributionClient.tar**” file into the install directory. (The suggested default directory name is **DTSDistributionClient**).
3. After uncompressing the tar file, the install directory should contain the following directories:
  - a. bin
  - b. Data
  - c. Database SQL
  - d. Documentation
4. Configure DTS settings by editing the “**DTSDistributionClient.properties**” and “**DTSDistributionNode.properties**” files from the installed **bin** directory. Update the “Required Property Values” sections of these files and review the “Optional Property Values” sections for any necessary changes. See the [Configuration Settings](#) and the [DTS Distribution Client Files](#) sections below for more information regarding configuring these files and settings.
5. Execute “**DTSDistributionClient-RunAll.sh**” from the **bin** directory to run the Distribution Client GUI.

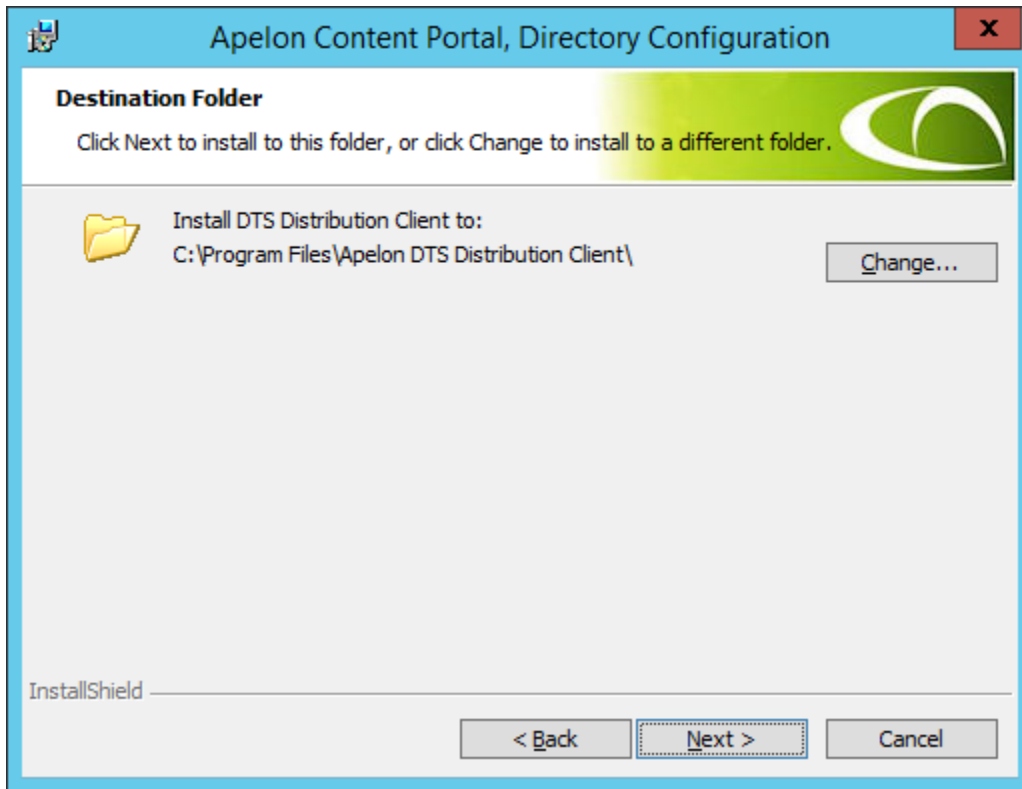
### B.1.3 Installing on Windows systems

This process utilizes the Windows Installer to create the install directory and configure DTS email, authentication, and connection settings.

1. The DTS Microsoft® Windows® installer is contained within an .exe file named “**DTS Distribution Client.exe**” located here:  
..\\DTSDistributionClient\\Installers\\Windows
2. Open the “**DTSDistributionClient.exe**” file to start the installation Wizard.
3. If a security message appears, choose to allow the program to run.
4. Once the Wizard starts the following appears, click **Next** to begin the installation process.

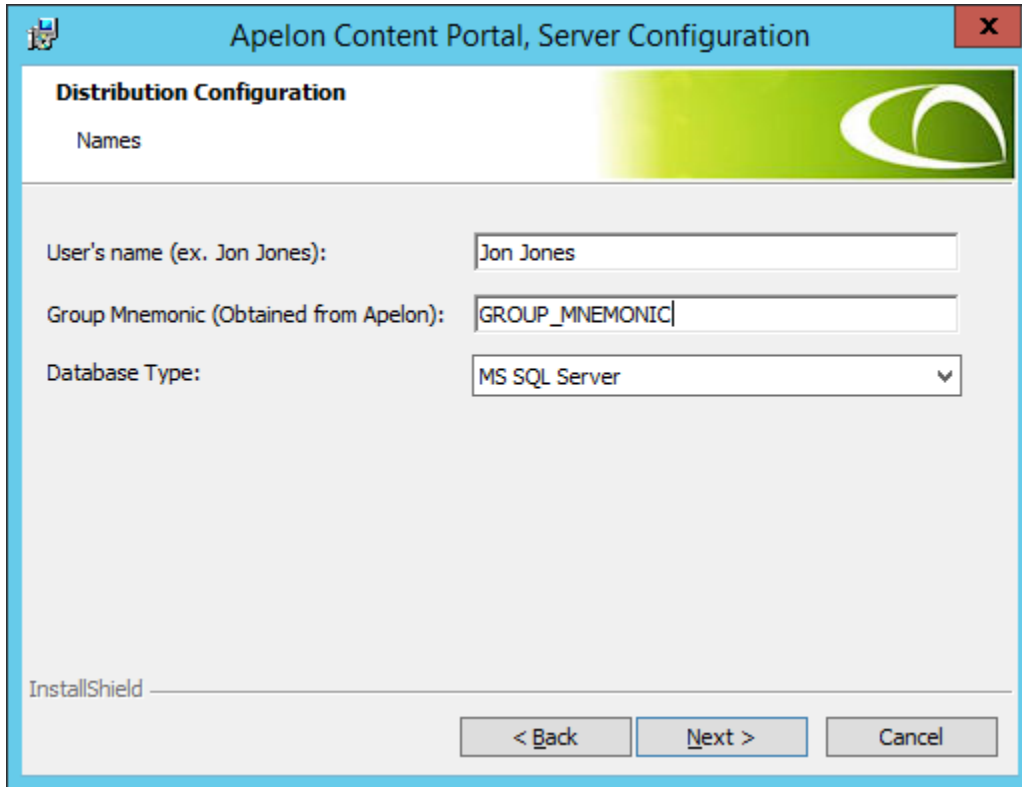


*a. Specify the install destination path.*



Click **Next** to accept the default path shown above or click **Change** to specify another location and then click **Next**.

*b. Distribution Server Configuration.*



Provide the following information:

- **User's name** — Enter a name of your choice to identify the subscriber downloading content.
- **Group Mnemonic** — This value must be obtained from Apelon Customer Support. Enter the value that uniquely identifies the distribution group with the distribution server.
- **Database Type** — Identify your database server (MS SQL Server®, Oracle®, or MySQL).

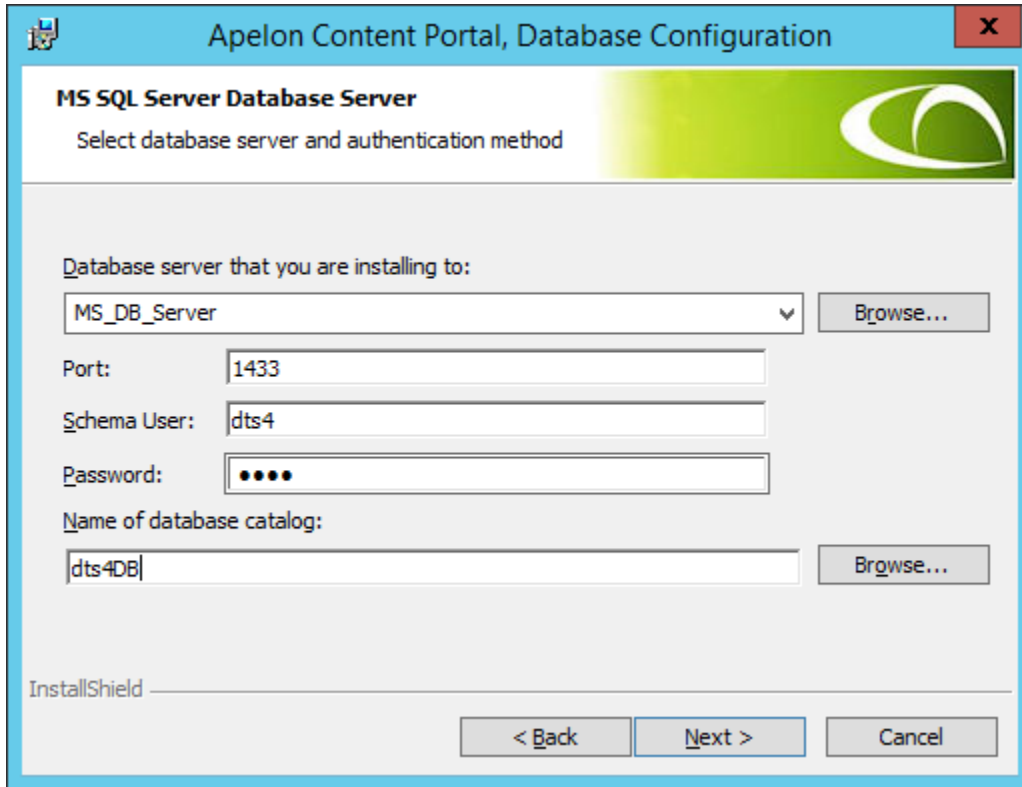
After entering information, click **Next**.

Depending on your database system, go to the following step:

- For MS SQL Server database systems, refer to step [Configure SQL Server database connection and authentication](#).
- For Oracle database systems, refer to step [Configure Oracle database connection and authentication](#).
- For MySQL database systems, refer to step [Configure MySQL database connection and authentication](#)



*c. Configure Microsoft SQL Server database connection and authentication.*

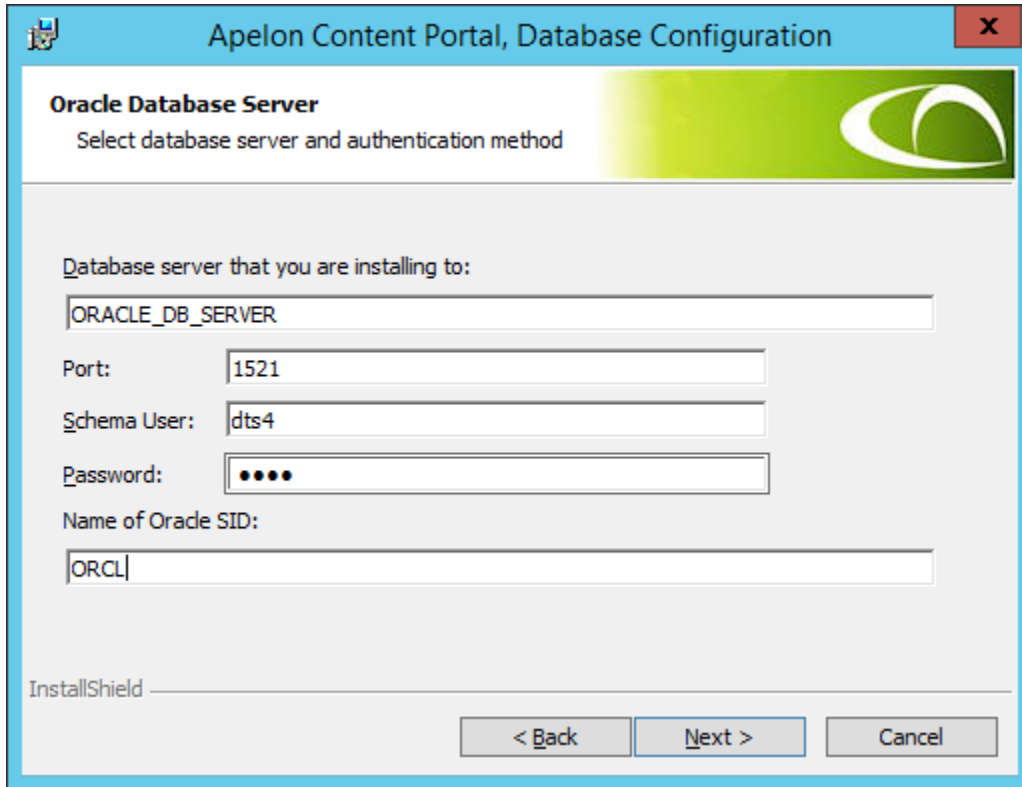


Provide the following information:

- **Database Server that you are installing to** — Type or select the address of the Microsoft database server that is hosting the DTS 4 schema. Click **Browse** to select from a list of servers found by the installer.
  - **Port:** Enter the port value for your MS SQL Server database.
  - **Schema User:** The MS SQL Server database user for the DTS 4 schema.
  - **Password:** The MS SQL Server database user's password for the DTS 4 schema.
- **Name of Database Catalog** — The MS SQL Server database name created for the DTS 4 schema. Click **Browse** to select from a list of databases found by the installer.

After entering information, click **Next**. Skip to step [SMTP Notification Setup](#).

*d. Configure Oracle database connection and authentication*



Apelon Content Portal, Database Configuration

**Oracle Database Server**  
Select database server and authentication method

Database server that you are installing to:  
ORACLE\_DB\_SERVER

Port: 1521

Schema User: dts4

Password: ••••

Name of Oracle SID:  
ORCL

InstallShield

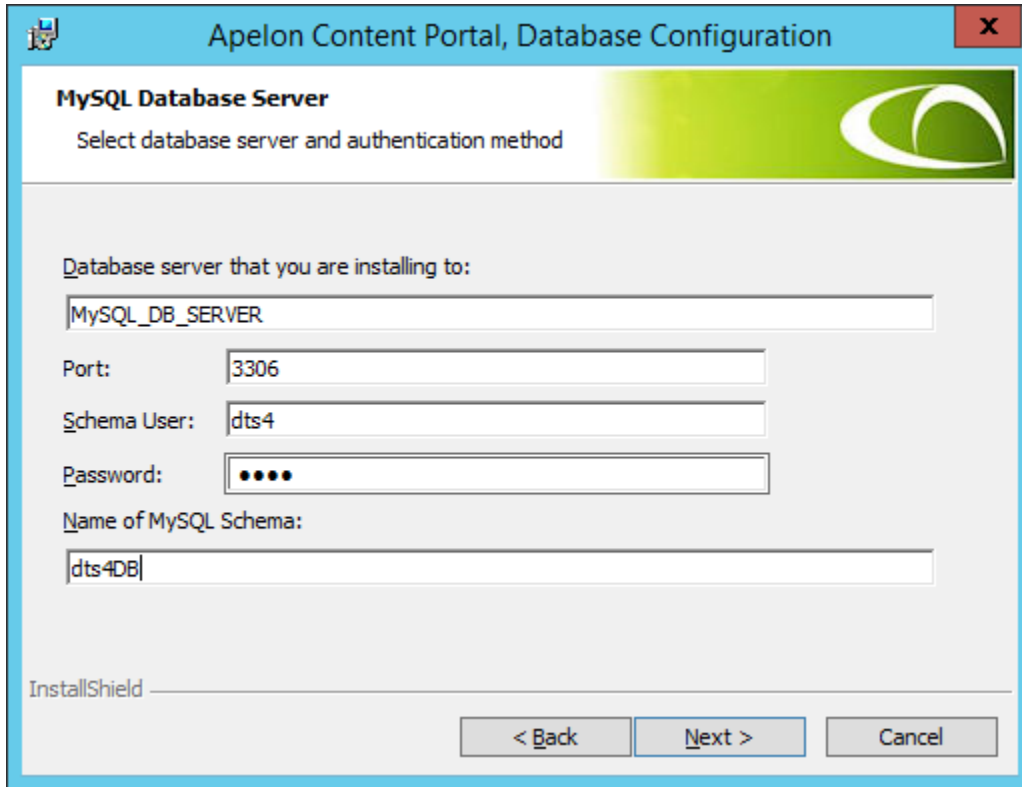
< Back Next > Cancel

Provide the following information.

- **Database Server that you are installing to** — The address of the Oracle database server that is hosting the DTS 4 schema.
- Set authentication credentials:
  - **Port:** The Oracle database port number.
  - **Schema User:** The Oracle Server database user for the DTS 4 schema.
  - **Password:** The Oracle Server database user's password for the DTS 4 schema.
- **Name of Oracle SID** — Type the name of the oracle service.

After entering information, click **Next**. Skip to step [SMTP Notification Setup](#).

*e. Configure MySQL database connection and authentication*



Provide the following information.

- **Database Server that you are installing to** — The address of the MySQL database server that is hosting the DTS 4 schema.
- Set authentication credentials:
  - **Port:** The MySQL database port number.
  - **Schema User:** The MySQL Server database user for the DTS 4 schema.
  - **Password:** The MySQL Server database user's password for the DTS 4 schema.
- **Name of MySQL Schema** — Type the name of the MySQL Database used for the DTS 4 schema.

After entering information, click **Next**.

*f. SMTP Notification Setup*

Apelon Content Portal, Email Configuration

**Distribution Configuration**

SMTP Notification Setup

\* Email information is optional and can be configured later

Email Server Information

SMTP Server: Email Server

User name: User

Password: ••••••••

SMTP Port: 25 Use SSL: ☒

Sender Email: User@company.com

Receiver Email: User2@company.com

InstallShield

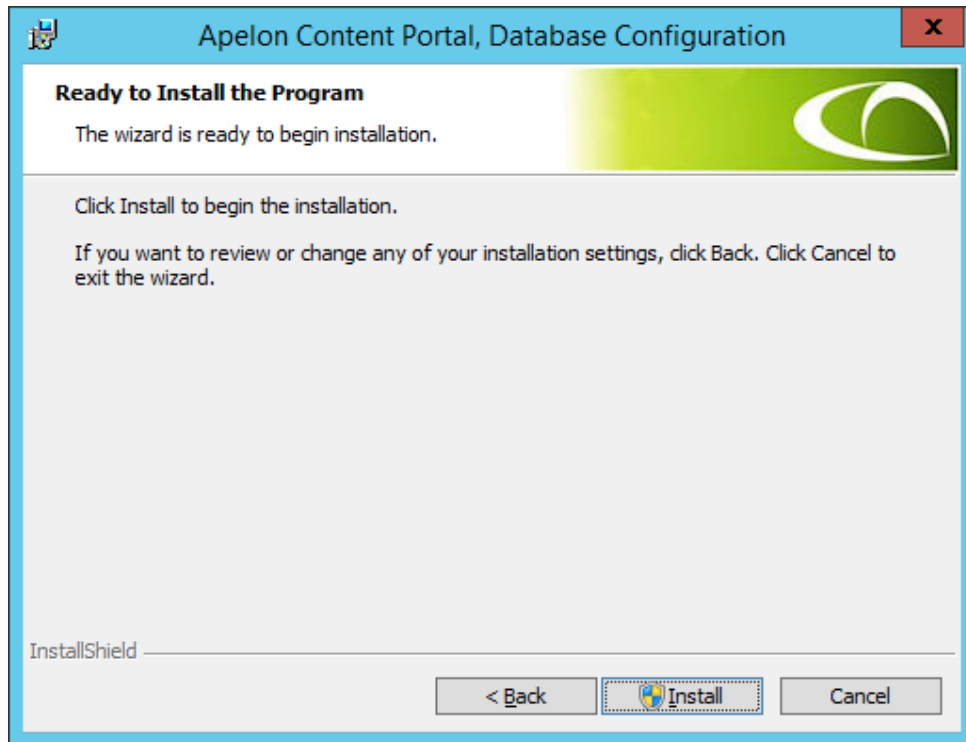
< Back Next > Cancel

Provide the following information for the Email Notification Setup:

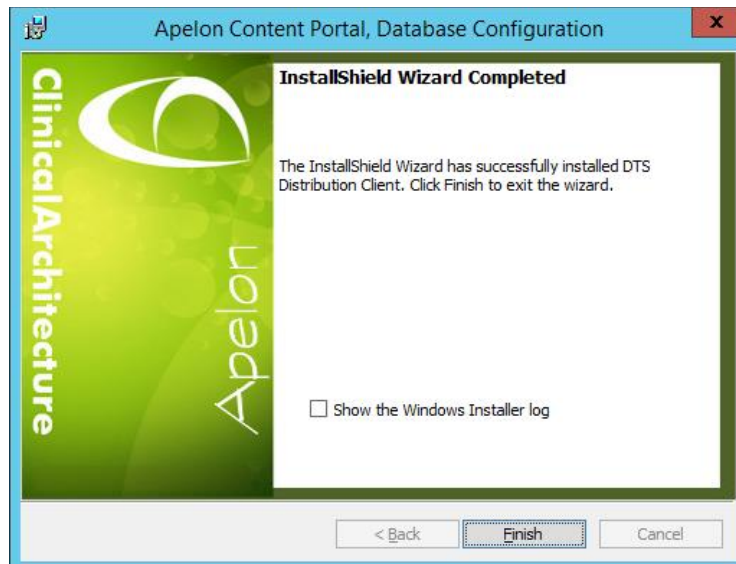
- **SMTP Server** — Type the name of your email server.
- **Server Credentials** — Type the user name and password for the email server.
- **SMTP Port** — Type the port number.
- **Use SSL** – Check box if SSL is to be used.
- **Sender Email:** The Notification sender's email address.
- **Receiver Email:** The Notification receiver's email address

Click **Next**.

*g. Ready to Install*



Click **Install** to initiate the installation process.  
The following window will display once install is complete:



Execute “**DTSDistributionClient-RunAll.bat**” from the installed **bin** directory to run the DTS Distribution Client, or run the installed **DTS Distribution Client** shortcut.

## B.2 Configuration Settings

The DTS environment utilizes client and node .property configuration files to control the distribution of subscription packages. Administrators can specify the settings for each component by editing the **DTSDistributionClient** and **DTSDistributionNode** files located within the "*Install Directory*\bin\". Before editing, the DTS Distribution server installation path and service configuration file locations must be known.

**Please note:** Unless otherwise specified, a restart of the DTS Distribution Client is required after changing configurations.

See the [Q&A](#) section below for additional how-to information such as:

- How do I: Move the package download directories
- How do I: Change the package download schedule in the DTS environment
- How do I: Clean out old packages

### B.2.1 Quartz Job Scheduler

A system scheduling application used by DTS to schedule when content packages are downloaded and applied. The quartz configuration files (quartz.properties and quartz\_data.xml) are located in the "*Install Directory*\bin\" directory. For more information on the Quartz Job Scheduler, see <http://www.quartz-scheduler.org/documentation/quartz-2.0.2/tutorials/crontrigger.html>.

See the [Q & A](#) section below for additional how-to information such as:

- How do I: Change the package download schedule
- How do I: Adjust the Quartz scheduler
- How do I: Run distribution client services separate from UI

### B.2.2 Apache Log4j

A java-based logging utility for the application located at: "...\*Install Directory*\bin\log4j.xml". The Apache log4j help can be found at: <http://logging.apache.org/log4j/2.x/manual/index.html>.

### B.2.3 DTSDistributionClient.properties

Property	Type	Default	Description
DISTRIBUTION_CLIENT_ENDPOINT	string	*required*	The endpoint address that allows the client service to find and communicate with the distribution service. This value is supplied by the distribution service administrator.
DISTRIBUTION_GROUP_MNEMONIC	string	*required*	The group mnemonic to be used by a set of DTS

			environments to uniquely identify the instance with the distribution server. This value is assigned by the distribution service administrator.
INCOMING_PATH	string	*required*	The path that specifies the directory where the distribution files are initially downloaded. Once fully downloaded, the distribution files are moved to the pending_path directory.
PENDING_PATH	string	*required*	The path that specifies the directory where fully downloaded files are moved to be processed.
BUFFER_SIZE	integer	500000	The buffer size used when downloading data. A value too large or too small can cause poor download performance.
DOWNLOAD_TRIGGER_INTERVAL_MINS	integer	15	If communication with the distribution server fails while downloading a distribution package, this property sets the amount of time (in minutes) the service will wait before trying again.
DOWNLOAD_TRIGGER_MAX_ATTEMPTS	integer	192	If communication with the distribution server fails, sets the number of consecutive times the service will try to reconnect.
USER_NAME	string		The account name sent to the distribution server as the person subscribing to a package.



DISABLE_IMMEDIATE_DOWNLOADS	boolean	0	If set to 0, the package is downloaded immediately upon subscribing to a distribution package. If 1, the files are downloaded per the cron schedule.
DISABLE_PACKAGE_DOWNLOADER	boolean	0	Use when running background service separate from the distribution client service.
EMAIL_ADDRESS_FROM	string	*required*	The sending address for outgoing mail.
EMAIL_ADDRESS_TO	string		The receiving email address.
EMAIL_LOGIN_NAME	string		The account used to log onto the email server.
EMAIL_LOGIN_PASSWORD	string		The account password used to log onto the email server.
EMAIL_SMTP_SERVER	string		Name of the SMTP email server.

Property	Example
DISTRIBUTION_CLIENT_ENDPOINT	= " <a href="http://apelon.clinicalarchitecture.com/DTSDistributionServicesExt/SymedicalDistributionExtService.svc">http://apelon.clinicalarchitecture.com/DTSDistributionServicesExt/SymedicalDistributionExtService.svc</a> "
DISTRIBUTION_GROUP_MNEMONIC	="GROUP_MNEMONIC"
INCOMING_PATH	="C:\Data\IncomingPath\"
PENDING_PATH	="C:\Data\PendingPath\"
BUFFER_SIZE	="500000"
DOWNLOAD_TRIGGER_INTERVAL_MINS	="15"
DOWNLOAD_TRIGGER_MAX_ATTEMPTS	="192"
DISABLE_IMMEDIATE_DOWNLOADS	="0"
DISABLE_PACKAGE_DOWNLOADER	="0"
USER_NAME	="John Smith"
EMAIL_ADDRESS_FROM	= " <a href="mailto:SendingAddress@yourcompany.com">SendingAddress@yourcompany.com</a> "
EMAIL_ADDRESS_TO	= " <a href="mailto:ReceivingAddress@yourcompany.com">ReceivingAddress@yourcompany.com</a> "
EMAIL_LOGIN_NAME	="email_user"

EMAIL_LOGIN_PASSWORD	password
EMAIL_SMTP_SERVER	="Server Name"

#### B.2.4 DTSDistributionNode.properties

Property	Type	Default	Description
DISTRIBUTION_NODE_MNEMONIC	string	*required*	The mnemonic used by the distribution node server to uniquely identify an individual DTS environment for this distribution group, such as "DEV", "TEST", and "PROD".
PENDING_PATH	string	*required*	The path that specifies the directory where fully downloaded files are moved to be processed. This is the directory that is monitored by background processing logic for packages to be processed.
REPORTS_PATH	integer	*required*	The path that specifies the directory where reports are generated.
DBTYPE	string	*required*	The database type of either Oracle® or SQL Server®.
USERNAME	string	*required*	The account used to log into the DTS database.
PASSWORD	string	*required*	The password used to log into the DTS database.
HOST	string	*required*	The name of the DTS host server.
DATABASE	string	*required*	The name of the DTS database.
PORT	integer	*required*	The port number for the host DTS server.
DATABASE_COMMIT_SIZE	integer	10000	The number of records that can be sent and committed to a table at one time.
AUTO_APPLY_ALL	boolean	0	If 1, all downloaded distribution packages are automatically applied during the next scheduled background apply process. If 0,

			individual packages require approval before being applied.
DROP_INDEXES	boolean	0	If 1, indexes for _arch tables are dropped before loading content and are then recreated before populating live concept data.
RUNANALYZE	boolean	0	If 1, the import runs analyze on tables for Oracle and MySQL and updates statistics in SQL Server.
PREPROCESSEDFILE	string		The name of the file containing a list of tasks that are required to run before the import process.
POSTPROCESSEDFILE	string		The name of the file containing a list of tasks that are required to run after the import process.
DISABLE_PACKAGE_APPLIER	boolean	0	Use when running distribution client separate from the background service.
DISABLE_PACKAGE_MONITOR	boolean	0	
AUTO_REFRESH_UI	boolean	0	Used when running GUI application, this property automatically refreshes package download and apply statuses. If 1, the UI automatically refreshes.
AUTO_REFRESH_RATE_IN_SECS	integer	60	The rate, in seconds, at which the UI automatically refreshes.

Property	Example
DISTRIBUTION_NODE_MNEMONIC	="DEV", "TEST", or "PROD"
PENDING_PATH	="C:\\Data\\DTSDistributionClient\\Pending\\"
REPORTS_PATH	="C:\\Data\\DTSDistributionClient\\Reports\\"
DBTYPE	="SQLSERVER", "ORACLE", or "MYSQL"
USERNAME	="DB User Name"
PASSWORD	DB password
HOST	="Host_Name"
DATABASE	="ORCL"
PORT	="1336"
DATABASE_COMMIT_SIZE	="10000"

AUTO_APPLY_ALL	= "0"
DROP_INDEXES	= "1"
RUNANALYZE	= "0"
PREPROCESSEDFILE	= "C:\\Data\\PreLoadProcess.txt"
POSTPROCESSEDFILE	= "C:\\Data\\PostLoadProcess.txt"
DISABLE_PACKAGE_APPLIER	= "0"
DISABLE_PACKAGE_MONITOR	= "0"
AUTO_REFRESH_UI	= "1"
AUTO_REFRESH_RATE_IN_SECS	= "15"

### B.3 DTS Distribution Client Files

Below are the scripts that can be used to open the Subscription Portal interface and client services, send test emails, and run reports. These .bat and .sh files are located within the “*Install Directory\bin\*”. Use the .bat files if installing on a Windows system and .sh files if installing on a Linux system.

#### B.3.1 DTSDistributionClient-RunAll

Launches the Subscription Portal user interface with all background and distribution client processes as one application.

#### B.3.2 DTSDistributionClient-RunDistClient

Starts the scheduled background processes separate from the user interface. The background processes download and apply distribution packages based on Quartz schedules defined in the “quartz\_data.xml” file. Background processes can be started and left running. When new distribution packages are available, the background process downloads the distribution file and sends an email notification relating that new content is available.

#### B.3.3 DTSDistributionClient-RunPortalOnly

Starts user interface separate from the background processes. This application is used to subscribe to desired content packages, run reports for selected differential packages and approve packages to be applied by background processes.

#### B.3.4 DTSDistributionClient-RunEmailTest

Sends a test email based on configuration values defined in DTSDistributionClient.properties file. The distribution client sends email notifications when new content has been downloaded and is ready to be applied or to have reports generated. Email notifications are also sent when an error occurs while downloading or applying a distribution package.

#### B.3.5 DTSDistributionClient-RunReports

Runs DTS change reports against all local namespaces for a selected differential content package. **Please note:** The full path to the differential .zip file is required within this .bat file.

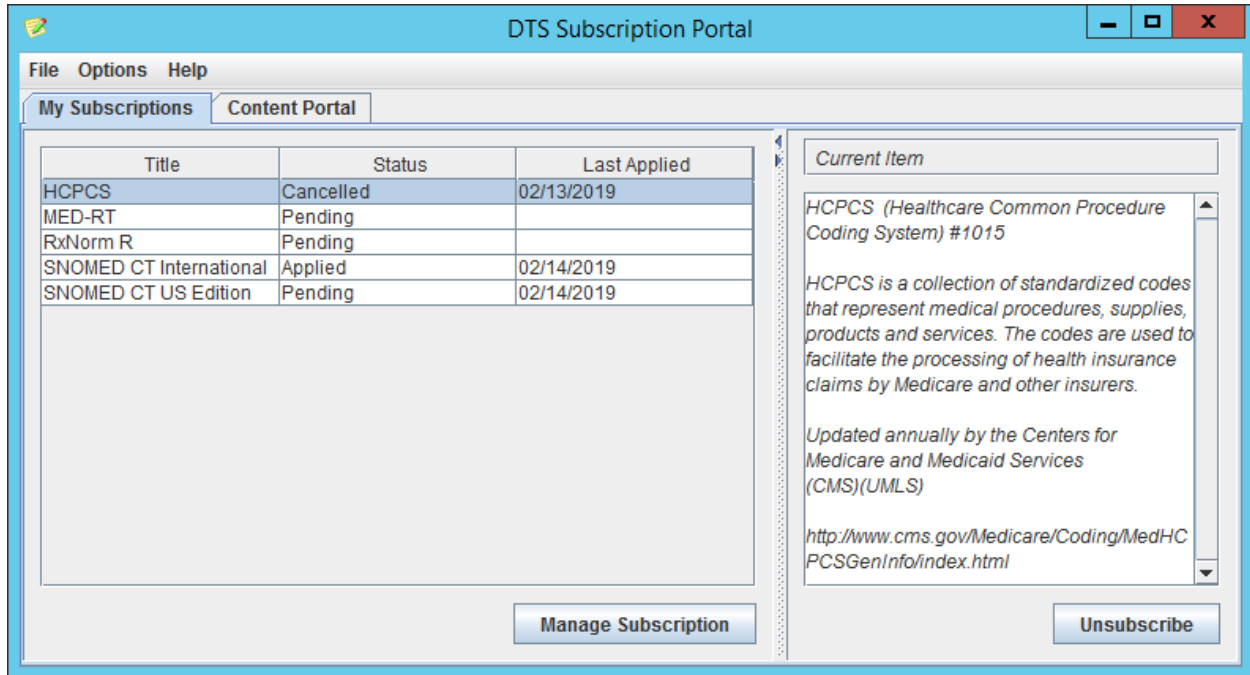
#### B.3.6 DTSRunReportsSingleLocalNamespace

Runs DTS change reports against a single specified local namespace for a selected differential content package. **Please note:** The full path to the differential .zip file and the local namespace is required within this .bat file.

#### B.3.7 DTSDistributionClient-ListCommands

Lists all possible command parameters that can be passed to the DTSDistributionClient.jar file. **Please note:** Please run in a Command Prompt from the “*Install Directory\bin\*” location.

## C. DTS Subscription Portal UI

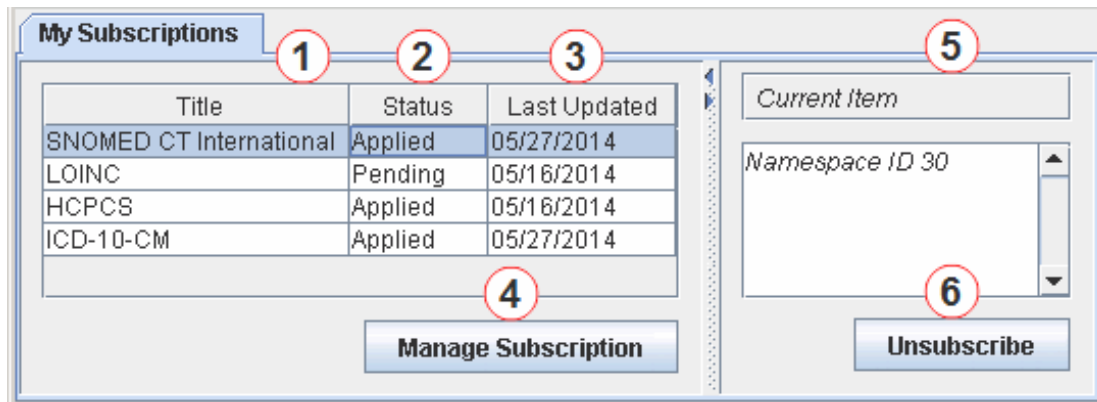


Use the **DTS Subscription Portal** user interface to manage and control the subscription and application of portal content. Accessed through the **DTSDistributionClient-RunAll.bat** and **DTSDistributionClient-RunPortalOnly.bat** files, the **DTS Subscription Portal** form is the central location for:

- Viewing and managing your active subscriptions (see My Subscriptions Tab).
- Exploring and subscribing to content (see Content Portal Tab).

The **DTS Subscription Portal** menu provides read-only access to database connection settings (**File**), automatic or manual page refresh (**Options**), and version and vendor information for the DTS Subscription Portal (**Help**).

## C.1 My Subscriptions Tab



Use **My Subscriptions** to view and manage your active subscriptions.

### C.1.1 My Subscriptions Tab Item List

Item	Description
1	<b>Title</b> – Displays the subscription name.
2	<b>Status</b> – Displays the import status for the newest subscription package. Values include: <ul style="list-style-type: none"> <li>• <b>Pending</b> – Package is received but is not yet approved for application.</li> <li>• <b>Approved</b> – Package is approved for application.</li> <li>• <b>Processing</b> – Package application is in progress.</li> <li>• <b>Applied</b> – Package application is complete.</li> <li>• <b>Cancelled</b> – Package application is stopped.</li> <li>• <b>Failed</b> – Package application failed.</li> <li>• <b>Pending Download</b> – Package has been subscribed to but is waiting to be downloaded.</li> </ul>
3	<b>Last Updated</b> – Displays the date updated package content was last applied.
4	<b>Manage Subscription</b> – Active only when the subscription status is "Pending," "Approved" or "Cancelled", click to view package information and manage package approval and application within the <a href="#">Content Subscription Manager</a> .
5	<b>Current Item</b> – Displays descriptive information for the selected subscription.
6	<b>Unsubscribe</b> – Click to prevent future subscription packages from being downloaded. Unsubscribing does not change the status on any existing downloaded packages.

## C.2 Content Subscription Manager

The screenshot shows the 'Content Subscription Manager' window. It includes a title bar, a 'Subscription Name' field (1), a 'Last Applied' date field (2), an 'Auto-Approve future updates' checkbox (3), a 'Package Files' table (4), a 'Content Description' text area (7), and three buttons at the bottom: 'Reports' (8), 'Approve' (9), and 'Pending' (10). A 'Close' button is also present.

File Name	Publish Date	Status
30_full_v4_2014.01.13AB_bin.zip	04/11/2014	Applied

Content Description:

Namespace ID 30  
 - Version ID 20140131  
 - Version Name 2014.01.13AB  
 - Version Date 2014-01-31 00:00:00.0  
 Publish Date: 04/11/2014  
 Received Date: 05/27/2014  
 Applied Date: 05/27/2014

Use the **Content Subscription Manager** to view subscription information, generate change reports, and manage the approval and application of subscribed packages (see Content Portal Tab).

See the [Q & A](#) section below for additional how-to information such as:

- How do I: Resume broken downloads
- How do I: Receive email when a file is analyzed, applied, or fails to download
- How do I: Run download service separate from background apply logic

### C.2.1 Content Subscription Manager Item List

Item	Description
1	<b>Subscription Name</b> – Displays the subscription name.
2	<b>Last Applied</b> – Displays the date the subscribed content was last applied.
3	<b>Auto-approve future updates</b> – Select to auto-approve the application of subsequent package updates. Clear to apply packages only through manual approval.
4	<b>File Name</b> – Displays the package file name.
5	<b>Publish Date</b> – Displays the date the subscription was published.



### C.2.2 Content Subscription Manager Item List (Continued)

Item	Description
6	<b>Status</b> – Displays the import status of the package. Values include: <ul style="list-style-type: none"> <li>• <b>Pending</b> – Package is received but is not yet approved for application.</li> <li>• <b>Approved</b> – Package is approved for application.</li> <li>• <b>Processing</b> – Package application is in progress.</li> <li>• <b>Applied</b> – Package application is complete.</li> <li>• <b>Cancelled</b> – Package application is stopped.</li> <li>• <b>Failed</b> – Package application failed.</li> <li>• <b>Pending Download</b> – Package has been subscribed to but is waiting to be downloaded.</li> </ul>
7	<b>Content Description</b> – Displays package content information, such as version and distribution dates.
8	<b>Reports</b> – Click to generate DTS change reports for the selected packages. The reports generated for this command are defined in the DTSReportSettings.xml file. <b>Please note:</b> Reports can only be generated when the package is an incremental and there is at least one local namespace in the DTS environment. Generating reports does not apply the selected packages.
9	<b>Approve</b> – Click to apply the selected packages.
10	<b>Pending</b> – Click to reset the selected package status to <b>Pending</b> .

### C.3 Content Portal Tab

The screenshot displays the 'Content Portal' tab. It features a table with three columns: 'Title', 'Subscribed', and 'Approved'. The table lists several items, with 'SNOMED CT International' highlighted. To the right of the table, there is a 'Current Item' section showing 'Namespace ID 30' and a 'Subscribe' button.

1	2	3
Title	Subscribed	Approved
Multum Devices	<input type="checkbox"/>	<input type="checkbox"/>
NDF-RT2	<input type="checkbox"/>	<input type="checkbox"/>
LOINC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
ICD-10-CM	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SNOMED CT International	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
HL7	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multum Drug	<input type="checkbox"/>	<input type="checkbox"/>
HCPCS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

4

Current Item

Namespace ID 30

5

Subscribe

Use the **Content Portal** tab to explore and subscribe to subscription content.

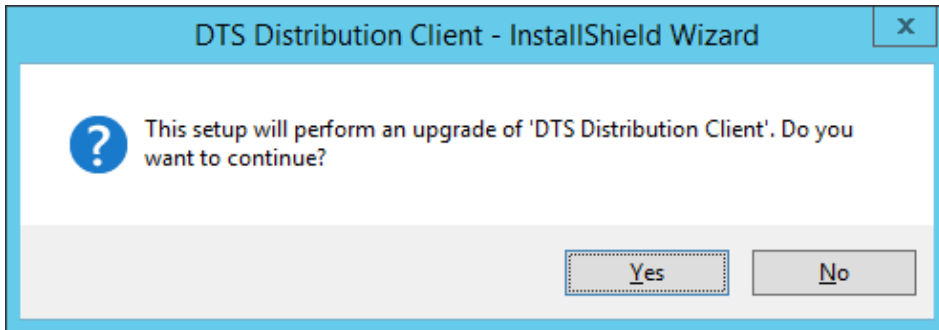
#### C.3.1 Content Portal Tab Item List

Item	Description
1	<b>Title</b> – Displays the subscription name.
2	<b>Subscribed</b> – A checkmark identifies packages that have been subscribed to and are either downloaded or pending download.
3	<b>Approved</b> – A checkmark identifies packages that can be subscribed to.
5	<b>Current Item</b> – Displays descriptive information for the package.
6	<b>Subscribe</b> – Click to enable the selected subscription content for download.

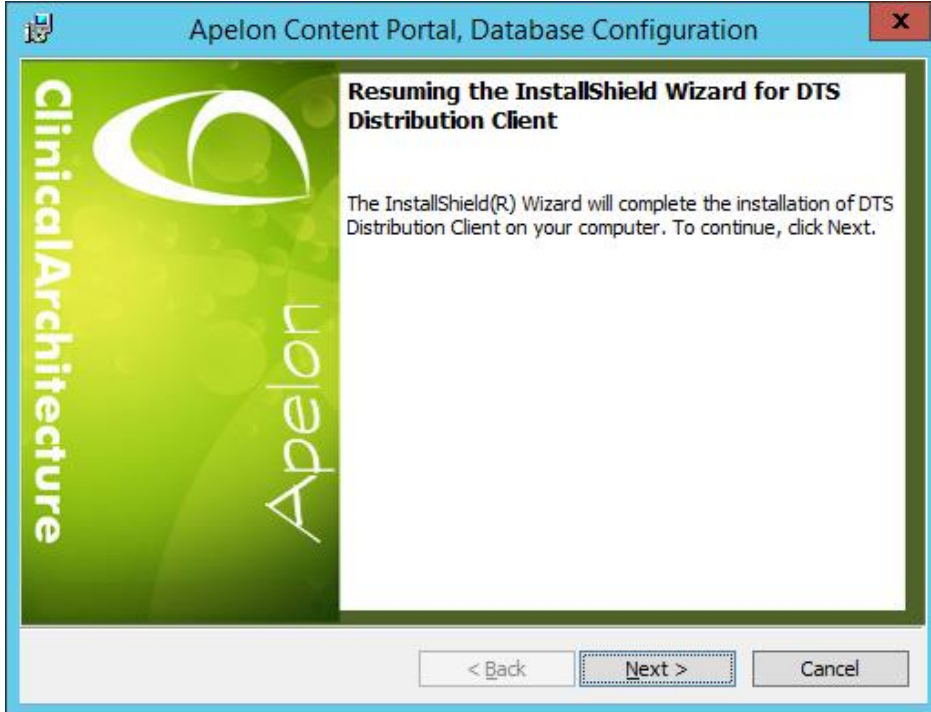
## D. Upgrading the DTS Distribution Client

Upgrades to the DTS Distribution Client can be applied by downloading the new release package and running the installer. Follow the instructions below to update the DTS Distribution Client.

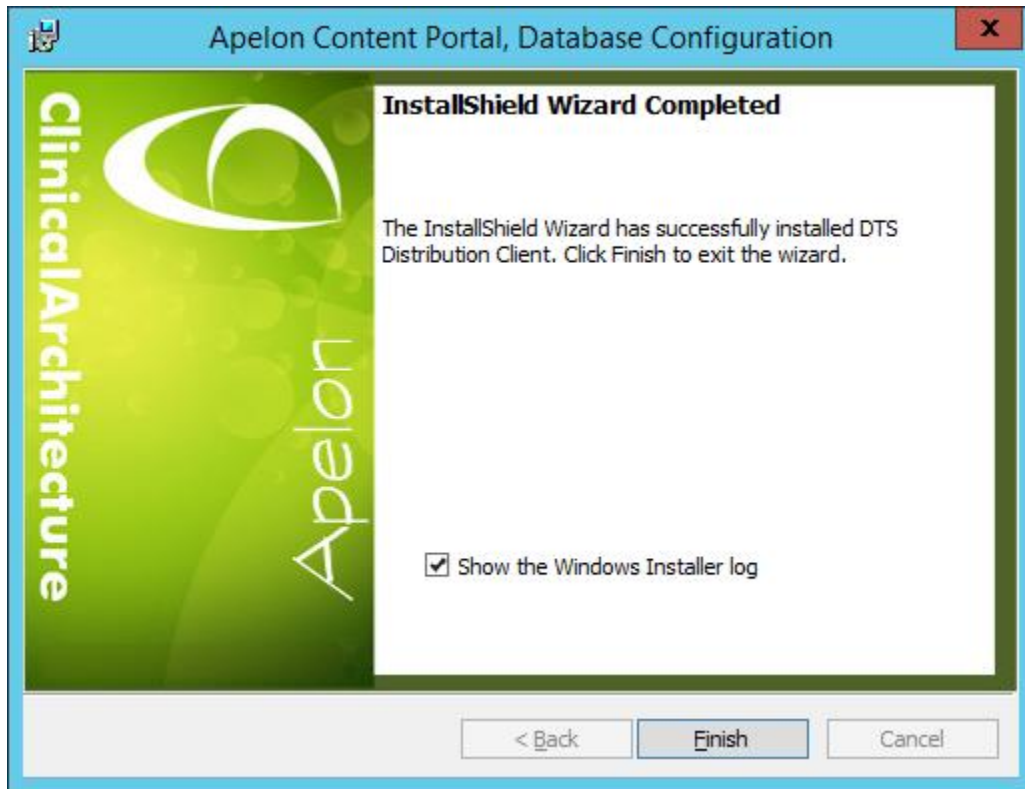
1. The DTS Distribution Client Microsoft® Windows® installer is contained within an .exe file named “**DTS Distribution Client.exe**” located in:  
..\DTSDistributionClient\Installers\Windows\
2. Open the **DTS Distribution Client.exe** file to start the Wizard.
3. The installer can identify that a previous version of the DTS Distribution Client is installed, click **Yes** to continue with the upgrade.



4. The installer will extract files to be used for the upgrade. Once complete, click **Next** to continue with the upgrade.



5. The installer will then complete the upgrade. You can select the **Show the Windows Installer log** option if you would like to view the log. Click **Finish** to complete the upgrade. You are now ready to use the upgraded DTS Distribution Client.



6. You can view the updated Release Notes from the “**ReleaseNotes.txt**” file located here:  
*Install Directory\Documentation\*

## E. Q & A

This section provides answers to commonly asked questions concerning the distribution services, DTS environment, and Quartz scheduler.

### E.1 How do I: Change the package download schedule

- 1) Open the DTSDistributionClient quartz jobs file (most likely at *Install Directory*\bin\quartz\_data.xml) **Please note:** If you cannot find the jobs file find the quartz.properties file and check the quartz.plugin.xml.fileName variable.
- 2) In the <cron> tag named "DTS Package Download Trigger", adjust the value in the <cronexpression> tag to meet your needs.

The scheduler automatically picks up this change within ten minutes if the default Quartz configuration settings are unaltered. A restart is not necessary. See [How do I: Adjust the Quartz scheduler](#).

### E.2 How do I: Move the package download directories

- 1) Open the DTSDistributionClientProperties files (most likely named DTSDistributionNode.properties and DTSDistributionClient.properties).
- 2) Find the following properties:
  - a) INCOMING\_PATH="C:\DirectoryA\"
  - b) PENDING\_PATH="C:\DirectoryB\"
- 3) Adjust the INCOMING\_PATH values to point to the new directory.
- 4) Move all downloaded packages to the new directory. This step is not required if all environments are up-to-date. See [How do I: Clean out old packages](#)
- 5) Also within the DTSDistributionNode.properties file, adjust the PENDING\_PATH values to match the new setting.

### E.3 How do I: Clean out old packages

- 1) Open the PENDING\_PATH directory found in the DTSDistributionNode.properties file. This directory contains all finished package downloads.
- 2) Manually determine the packages no longer needed and delete all that have been applied by all environments.

### E.4 How do I: Resume broken downloads

Downloads are automatically resumed the next time the download job runs. If there is a network failure, the service can be configured to temporarily suspend the current download schedule in favor of a more immediate one until a successful connection is made.

- 1) Open the DTSDistributionNode.properties file.
- 2) Find or add the following in the <appSettings> tag:
  - a) <add key="DownloadFailureResumeIntervalInMinutes" value="15"/>
  - b) <add key="DownloadFailureResumeMaxAttempts" value="192"/>
- 3) Adjust the values to meet your needs. **Please note:** If **DownloadFailureResumeMaxAttempts** is set to "0," this option is disabled and the default scheduler will not be temporarily suspended.

### E.5 How do I: Receive email when a file is analyzed, applied, or fails to download

- 1) Open the DTSDistributionClient.properties file.
- 2) Find the email values:
  - a) EMAIL\_ADDRESS\_FROM="SendingAddress@yourcompany.com"
  - b) EMAIL\_ADDRESS\_TO="ReceivingAddress@yourcompany.com"
  - c) EMAIL\_LOGIN\_NAME="name">
  - d) EMAIL\_LOGIN\_PASSWORD="password"
  - e) EMAIL\_SMTP\_SERVER="server name"
- 3) Adjust the configuration values to meet your needs while keeping the following in mind: **(a)** Only SMTP protocol is currently supported, **(b)** Many common webmail providers support POP3 email clients and provide instructions on configuring them. Those instructions should include outgoing mail (SMTP) settings, which are used in the configuration settings above.

### E.6 How do I: Change the package download schedule in the DTS environment

- 1) Find the quartz\_data.xml quartz jobs file at DTSDistributionClient\bin. **Please note:** If you cannot find the jobs file find the quartz.properties file and check the quartz.plugin.xml.fileName variable.
- 2) In the <cron> tag named "DTS Package Download Trigger," adjust the value in the <cronexpression> tag to meet your needs.

The scheduler will automatically pick up this change within ten minutes if the default Quartz configuration settings are unaltered. A restart is not necessary. See How do I: Adjust the Quartz scheduler.

### E.7 How do I: Adjust the Quartz scheduler

The Quartz scheduler offers a great deal of flexibility. With it you can schedule multiple jobs, assign multiple triggers, and customize many different settings. Most of these options are outside the scope of this document. DTSDistributionClient scheduler needs are met with two jobs and triggers.

Triggers are what store the actual scheduling information. Triggers come in three flavors, two of which cover most of our needs:

#### E.7.1 Simple Triggers

Simple triggers are used for jobs that simply need to repeat every X seconds without regard to the time of day.

The following trigger runs once a minute indefinitely:

```
<trigger>
  <simple>
    <name>Example Trigger</name>
    <description>Example simple trigger</description>
```

```

<job-name>Example Job</job-name>
<repeat-count>-1</repeat-count>
<repeat-interval>60000</repeat-interval>
</simple>
</trigger>

```

### E.7.2 Cron Triggers

Cron is a well-known scheduling system. Quartz supports extended cron expressions that can be used to schedule jobs by the second, minute, day, month, or even year.

The following trigger runs once a minute indefinitely:

```

<trigger>
  <cron>
    <name>Example Trigger</name>
    <description>Example cron trigger</description>
    <job-name>Example Job</job-name>
    <cron-expression>0 * * * * ? *</cron-expression>
  </cron>
</trigger>

```

The Quartz cron expression above has seven fields:

- second
- minute
- hour
- day of month (? if using day of week)
- month
- day of week (? if using day of month)
- year (optional)

### E.7.3 Cron Examples

There are many variations when writing cron expressions. The easiest way to learn the syntax is by example, and the easiest way to change an existing cron statement is by finding one that is already close to what you need. The table below lists some examples:

Expression	Description
0 0 12 * * ?	(Fire at 12pm (noon) every day)
0 15 10 ? * *	(Fire at 10:15am every day)
0 15 10 * * ?	(Fire at 10:15am every day)
0 15 10 * * ? *	(Fire at 10:15am every day)
0 15 10 * * ? 2005	(Fire at 10:15am every day during the year 2005)

Expression	Description
0 * 14 * * ?	(Fire every minute starting at 2pm and ending at 2:59pm, every day)
0 0/5 14 * * ?	(Fire every 5 minutes starting at 2pm and ending at 2:55pm, every day)
0 0/5 14,18 * * ?	(Fire every 5 minutes starting at 2pm and ending at 2:55pm, AND fire every 5 minutes starting at 6pm and ending at 6:55pm, every day)
0 0-5 14 * * ?	(Fire every minute starting at 2pm and ending at 2:05pm, every day)
0 10,44 14 ? 3 WED	(Fire at 2:10pm and at 2:44pm every Wednesday in the month of March)
0 15 10 ? * MON-FRI	(Fire at 10:15am every Monday, Tuesday, Wednesday, Thursday and Friday)
0 15 10 15 * ?	(Fire at 10:15am on the 15th day of every month)
0 15 10 L * ?	(Fire at 10:15am on the last day of every month)
0 15 10 ? * 6L	(Fire at 10:15am on the last Friday of every month)
0 15 10 ? * 6L 2002-2005	(Fire at 10:15am on every last Friday of every month during the years 2002, 2003, 2004 and 2005)
0 15 10 ? * 6#3	(Fire at 10:15am on the third Friday of every month)

### E.8 How do I: Run distribution client services separate from UI

Downloading and applying data content packages can be process intensive and use valuable system resources. For this reason, it might be best to schedule content package downloads and apply them during non-peak hours of operation. To achieve this, run the distribution client services continuously with the Quartz scheduler set for non-peak hours of operation. In this case, it might be best to run the services separate from the UI.

- 1) Launch services using DTSDistributionClient-RunDistClient.bat file.
- 2) Launch UI when needed using DTSDistributionClient-RunPortalOnly.bat file.

### E.9 How do I: Run download service separate from background apply logic

In some situations, it is good practice to download content packages once and apply the content in multiple DTS environments. For example, users with development, test, and production environments that download and apply the same content. To achieve this, download content packages to a shared directory using a single distribution client. Then use separate background processes to apply the content.

#### E.9.1 Configure Download Only Service

- 1) Copy code to download service server directory.
- 2) Change directory paths in DTSDistributionClient.properties to shared network directory.
- 3) Change logging information in log4j.xml.



- 4) Remove DTS Package Apply job and trigger from quartz\_data.xml.
- 5) Set DISABLE\_PACKAGE\_APPLIER in DTSDistributionNode.properties to 1.
- 6) Set DISABLE\_PACKAGE\_MONITOR in DTSDistributionNode.properties to 1.
- 7) Launch services using DTSDistributionClient-RunDistClient.bat file.

#### **E.9.2 Configure Background/GUI Application(s) – repeat as necessary for multiple environments**

- 1) Copy code to client server directory. Can be the same server as download service. Needs to be different code directory.
- 2) Change directory paths in DTSDistributionNode.properties to shared network directory.
- 3) Change logging information in log4j.xml to log separate from previously configured download service.
- 4) Remove DTS Package Download job and trigger from quartz\_data.xml.
- 5) Set DISABLE\_IMMEDIATE\_DOWNLOADS in DTSDistributionClient.properties to 1.
- 6) Set DISABLE\_PACKAGE\_DOWNLOADER in DTSDistributionClient.properties to 1.
- 7) Launch background services using DTSDistributionClient-RunDistClient.bat file and launch UI when needed using DTSDistributionClient-RunPortalOnly.bat file. Or, launch both together using DTSDistributionClient-RunAll.bat file.