



CODONICS[®]

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Safe Label System[™] Administration Tool

User's Manual

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Preface

Conventions Used in This Manual

Bulleted Lists

Bullets are used to display a list of nonprocedural items. For example:

You can also:

- Sort the Master Drug Database (MDD) and formulary drug lists by their column headers
- Search for drugs in the MDD or formulary

Numbered Steps

The  icon indicates the beginning of a procedure. The steps in a procedure are numbered. For example:



To add a drug
manually

1. With the MDD selected, click the **Add New** button.
The **New Drug** dialog box displays.
2. Enter the information for the new drug.

Notes and Tips

Notes contain additional information related to a topic or procedure. For example:



NOTE: *If a drug is also in the formulary, editing its information in the MDD will update the information in the formulary as well.*

Tips provide additional insights about a topic or procedure, such as a faster or alternative way to perform an operation. For example:



TIP: Multiple drug selections

To select a range of drugs, select the first entry and then Shift-click the last entry in the range. To select all drug entries or clear all selected drug entries, select or clear the check box in the column header row.

Cautions and Warnings

Cautions alert you to actions or situations that could cause harm to equipment or data. For example:



CAUTION The SLS customer is responsible for ensuring that the correct formulary is being installed in an SLS.

Warnings alert you to actions or situations that could result in personal injury. For example:



WARNING The Administration Tool user is ultimately responsible for the content of the formulary.

Important Information and Filenames

Bold type is used for emphasis, user interface object names, and paths or filenames. For example:

- When all of the available information has been entered, click the **Save** button.

Purpose and Scope

Refer to this User's Manual for procedures on how to use the Safe Label System's Administration Tool to create a formulary for deployment to Safe Label Systems.



CAUTION Federal law restricts this device to be sold for use by or on the order of a physician. Refer to this User's Manual for procedures on how to use the Safe Label System's Administration Tool to create a formulary for deployment to Safe Label Systems.

Regulatory Compliance

FDA cleared to market per 510(k) K101439, Class II, MDD CE, GMP/QSR, ISO13485: 2003.

Product Information

For technical assistance with the Safe Label System, call Codonics Technical Support at the following number:

Phone: +1.440.243.1198
Toll Free: 800.444.1198 (USA only)

Technical Support is available anytime. Technical Support is also available online via email and the Codonics web site:

Email: support@codonics.com
Web Site: www.codonics.com

General product information can also be requested by sending email to:

Email: info@codonics.com

Please include your postal mailing address and telephone number in the email message. Basic product information is returned via email. Complete product literature is sent by postal mail.

1

Introduction

The Codonics® Safe Label System™ Administration Tool is an important companion product to the Safe Label System SLS 500i itself.

The Administration Tool allows qualified site individuals to create the drug formulary for deployment to SLSs in a safe and reproducible fashion.

It allows qualified site individuals to specify SLS configuration settings and to create a configuration package that can be deployed to SLSs to define their operating configuration.

It also provides the capability to network, monitor, and send formulary and configuration packages to specified SLSs.

2

Safe Label System Concepts

This section explains important concepts of the Safe Label System (SLS) with which you should be familiar to effectively use the Administration Tool and to understand how the SLS operates. The Administration Tool allows users to:

- Add drug records to and manage the Master Drug Database.
- Add drugs that are in the Master Drug Database to the formulary.
- Create a formulary package for deployment to SLSs.
- Setup communication with multiple SLSs on a network.
- Monitor the status of SLSs.
- Deploy formulary and configuration packages to SLSs.
- Download SLS logs to the Administration Tool.

Master Drug Database (MDD)

To add drug records to the formulary for use with an SLS, drug records must first be added to the Master Drug Database (MDD). The MDD contains a superset of the drug records included in a formulary. For example, the MDD might contain the entire contents of a third-party drug database, whereas the formulary might contain only the specific drug records needed for anesthesiology.

To populate the MDD with drug records, single records can be added either manually or by scanning the barcode of a drug container (for example, a vial or ampoule). A batch of records can be added by importing them from an external data source (for example, a CSV file or third-party drug database).

Drug records in the MDD include the following fields:

- **Master ID.** Used as a unique drug record identifier in the USA.
- **Container ID.** Used as a drug record identifier.
- **Drug name.** Each record includes two drug name fields to support combination drugs.
- **Concentration.** Each record includes two concentration fields to support combination drugs.
- **Tallman lettering.** The Tallman lettering version of the drug name.
- **Route.** The route subcategory for the drug.
- **Status.** The status of the drug: active or obsolete.
- **Verification Status.** The status of a drug record in the MDD — Not Verified, Verified, or Failed — that indicates whether the drug record was correctly matched to the Container ID in a scanned drug container barcode.

Container IDs (Outside the USA)

Outside the USA, Container IDs are used to identify drugs. A drug's Container ID is included in its container barcode. In rare cases, the same Container ID could be used for different drugs.

To support the use of Container IDs outside of the USA, the MDD should be in the Other database mode. When in this mode, the MDD does not include a Master ID field in the drug records.

Container IDs and Master IDs (USA Only)

In the USA, 11-digit Master IDs and 10-digit Container IDs are used to identify drugs. A drug's Container ID is included in its container barcode.

Master IDs always uniquely identify a drug. However, in rare cases, the same Container ID could be used for up to three different drugs.

To support the use of 10-digit Container IDs and 11-digit Master IDs in the USA, the MDD should be in the US NDC database mode. When in this mode, the MDD includes a Master ID field in the drug records.

In US NDC mode, the Container ID is ultimately the key field on an SLS because it is the field that is compared to the scanned Container ID. The Master ID is used more for database management purposes and to map records to a scanned Container ID when the record does not initially contain a Container ID. Once there is a Container ID for a drug record on an SLS, the Master ID is not used except to possibly embed in the syringe barcode.

Matching Container IDs

Matching is the process that occurs when a drug container barcode is scanned and the system determines that the Container ID in the barcode equals (that is, *matches*) the Container ID of one or more drug records in the formulary database. An example of a Container ID is 0409-2305-17.

If there is more than one Container ID in the MDD that matches it, then the user will be able to select the correct drug from the list of matches.



NOTE: When a Formulary Report is created, it will list any drug records with duplicate Container IDs. You should consider adding the duplicate drugs in the MDD to the formulary. This will cause the user to have to always choose between the duplicate drugs when the matching Container ID is scanned, which will help to ensure that a drug will not inadvertently have a label printed with the wrong drug name on it.

Mapping Container IDs to Master IDs (USA Only)

Mapping is the process that occurs when a drug container barcode is scanned and there are 11-digit Master IDs that could potentially map to the scanned 10-digit Container ID.

There are three formats for Container IDs — 5-4-1, 5-3-2, and 4-4-2 — and one for Master IDs — 5-4-2. A given Container ID, for example 0123456789, could map to the following Master IDs, depending on the Container ID format used:

- If 5-4-1 format is used, the example Container ID (which would look like 01234-5678-9 on a container) would map to the Master ID 01234567809 (an extra zero is at the tenth digit position).
- If 5-3-2 format is used, the example Container ID (which would look like 01234-567-89 on a container) would map to the Master ID 01234056789 (an extra zero is at the sixth digit position).
- If 4-4-2 format is used, the example Container ID (which would look like 0123-4567-89 on a container) would map to the Master ID 00123456789 (an extra zero is at the first digit position).

Learning a Container ID (USA Only)

Learning is the process of associating the 10-digit Container ID (for example, 0123456789) from a scanned drug container barcode with a mapped 11-digit Master ID (for example, 00123456789).

Learning can be performed using the Administration Tool or can be performed at the SLS.

In Learn mode on the Administration Tool, when a user identifies a mapped drug to be the correct choice, the system saves the association of the selected drug (and its 11-digit Master ID) with the scanned 10-digit Container ID.

The next time the same drug container's barcode is scanned, it will be matched to the drug that was previously selected for it in the **Choose a drug to LEARN** dialog box.

The Administration Tool Looks for Container ID Matches

When the barcode is scanned, the Administration Tool looks for any drug records in the MDD whose Container ID matches the Container ID in the barcode. The Administration Tool then displays the matching drugs by drug name and concentration. Typically, there will be only one match if the drug is already in the MDD. After selecting the matching drug record, the user will have the option to edit its information.

However, in the USA, the same Container ID can be used for different drugs, as explained in "Container IDs and Master IDs (USA Only)" on page 2-3. If this occurs, the Administration Tool displays the multiple drug records (by drug name and concentration) whose Container IDs match the Container ID in the barcode. The user can then pick the correct drug and continue in the process.

The Administration Tool Looks for Container ID-Master ID Mappings (in USA Only)

In the USA, if the user indicates that none of the displayed drugs are correct or if no match was found in the MDD for the Container ID in the scanned drug container barcode, then the Administration Tool searches for any Master IDs that might possibly map to the barcode's Container ID.

If any potential Master IDs are found, the Administration Tool displays the corresponding drug records by drug name and concentration. The user can then pick the correct drug record. After selecting the mapped drug record, the user will have the option to edit its information.

If the Drug Is Not Found in the MDD

If the user indicates that none of the displayed drugs are correct, or if the Administration Tool finds no matching Container IDs or, in the USA, no potential Master ID mappings, then the user will have the option of creating a new drug record.

Formulary

Once drugs from the MDD have been added to the formulary, they can be edited to add the following information that is specific to the use of each drug with an SLS and the hospital's policies:

- Label Template (drug classification)
- Message
- Audio (typically, a WAV file that announces the drug name)
- Expire Time (in hours)
- Dilution Status (Dilution Allowed, Dilution Not Allowed, or Dilution Required)
- Dilutions
- Diluents (available values are preconfigured and can be edited)
- Miscellaneous

Formulary Promotion Levels

As a user prepares a formulary for use in an SLS, it is important to keep track of the formulary's current development stage and to prevent any changes to the formulary without proper notification and process. The Administration Tool ensures this by assigning a *promotion level* to the formulary to be deployed.

There are three formulary promotion levels:

- Under Development

- Test/Review
- Approved

The formulary can be in only one of these levels at a time.

Under Development

A formulary at this level can only be edited, and the formulary is considered to be unlocked. An Administration Tool user can promote the formulary to the Test/Review level. Doing so will lock the formulary and prevent edits.

Test/Review

The Test/Review promotion level allows the formulary to be used and studied in a non-clinical environment to ensure that the formulary is configured correctly (the right drugs are added, drug classifications are set properly, and so forth). Those tasks are part of the review and certification process to approve the formulary. To support the review and certification process, you can use the Administration Tool to generate a report that shows the contents of the formulary. Site administrators and clinicians can review this report and use it to sign off on the formulary.

While at this level, printed labels include the warning message “Test Label - Not for clinical use.”

When the formulary is approved for use, it is promoted to the Approved level.

Approved

As with the Test/Review level, a formulary at the Approved level is locked to prevent editing. The primary difference between the two levels is that the Approved level does **not** put a “Test Label - Not for clinical use” warning message on printed labels. Approved formularies are official clinical formularies.

At any point when the formulary is in the Test/Review or Approved level, the formulary can be demoted back to Under Development. This is the only way to unlock a formulary for editing.

Before moving to Approved status, the Administration Tool requires that a formulary report be generated.

Formulary Version Numbers

The formulary has a version number associated with it, starting at version 1. Demoting the formulary back to the Under Development promotion level not only unlocks it for editing, but also causes the version number to be incremented. Internally, the Administration Tool database maintains the contents of every version of the formulary. This ensures that, should an audit be necessary, it is possible to review the history of the formulary and determine when changes were made. The ability to see previous versions of the formulary is not available from the Administration Tool user interface; it is intended for auditors and investigators with low-level access to the database.

Multiple Separate Formularies

If you require multiple separate formularies for different areas of practice, install the Administration Tool on a separate PC for each formulary that is needed. Each Administration Tool should then be dedicated to creating formulary update packages for a specific set of SLSs.



WARNING To avoid installing different versions of the same formulary on different SLS systems, make sure that you always create a specific formulary using the same Administration Tool and PC. For example, if a formulary from Administration Tool A has been installed in an SLS, do not attempt to install a formulary from Administration Tool B on that SLS.

3

Basic Operations

Important Cautions and Notes



CAUTION Federal law restricts this device to be sold for use by or on the order of a physician.



CAUTION Practice standard information technology (IT) precautions to protect data associated with the formulary and Master Drug Database. These include performing regular backups of the formulary and Master Drug Databases, running anti-virus software on the PC on which the Administration Tool is running, securing the PC that is running the Administration Tool from theft, and securing the content of the USB flash drive on which the formulary update package is stored.



CAUTION The SLS customer is responsible for the accuracy of the data in the formulary, including drug data that has been copied from third-party sources such as drug databases.



CAUTION The SLS customer is responsible for ensuring that the correct formulary is being installed in an SLS.



CAUTION Users should read and understand all safety warnings and operating instructions prior to using the Administration Tool.

- The Administration Tool supports only one formulary.
- Do not install more than one Administration Tool application on a PC. If your site requires separate formularies, install the Administration Tool on a separate PC for each formulary that is needed. Each Administration Tool should then be dedicated to creating formularies for the same set of SLSs.
- Do not run more than one instance of the Administration Tool at a time.
- The monitor of the PC that is running the Administration Tool should be calibrated to ensure accurate color representation. Refer to the monitor's documentation for calibration instructions.

Installing the Administration Tool

Installation Requirements

The following hardware and software is recommended to run the Administration Tool:

- PC with Intel Core™ 2 Duo processor and 2 GB of RAM
- Windows® XP or greater
- Internet Explorer 8
- Excel 2003 or greater
- Oracle® Java® 6 (also referred to as version 1.6), update 23 or higher, 32-bit only



NOTE: *The Administration Tool's default resolution is 1150 x 768. If you cannot see the entire Administration Tool window on your monitor, you should change the monitor's resolution setting.*

Installing the Administration Tool



To install the
Administration
Tool

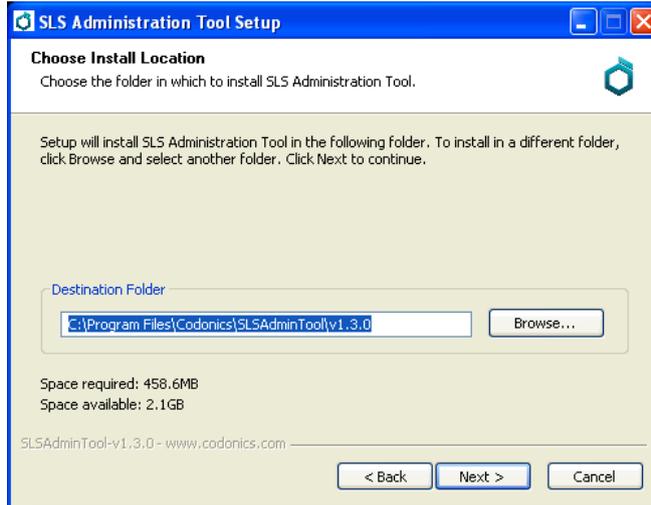
1. Locate the Administration Tool setup file, **SLSAdminTool-setup-1.3.0-RC10.exe**, on the installation disc. The Administration Tool installation wizard displays.



NOTE: The installation disc also includes a documentation folder regarding the Administration Tool.

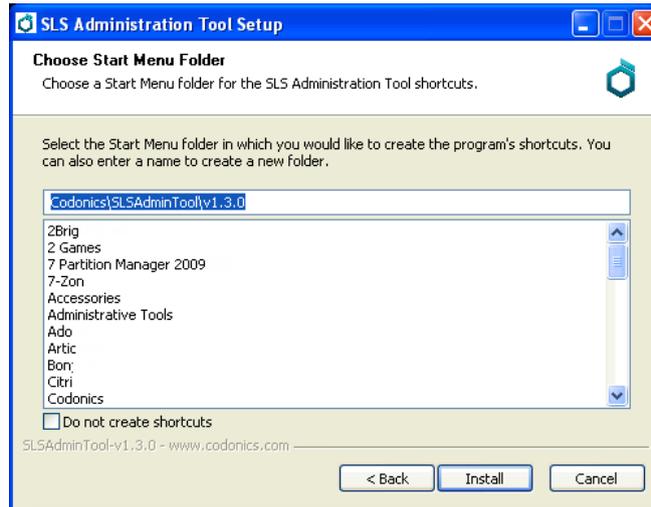
2. Click the **Next** button.

The **Choose Install Location** screen displays.



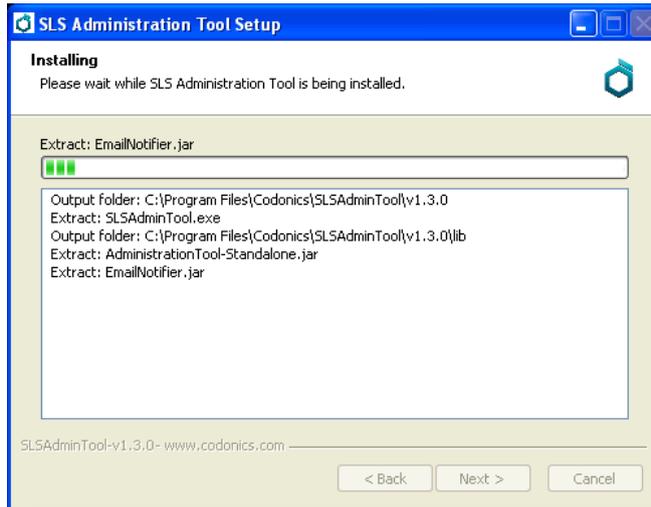
3. If desired, change the directory in which the Administration Tool will be installed. Then click the **Next** button.

The **Choose Start Menu Folder** screen displays.



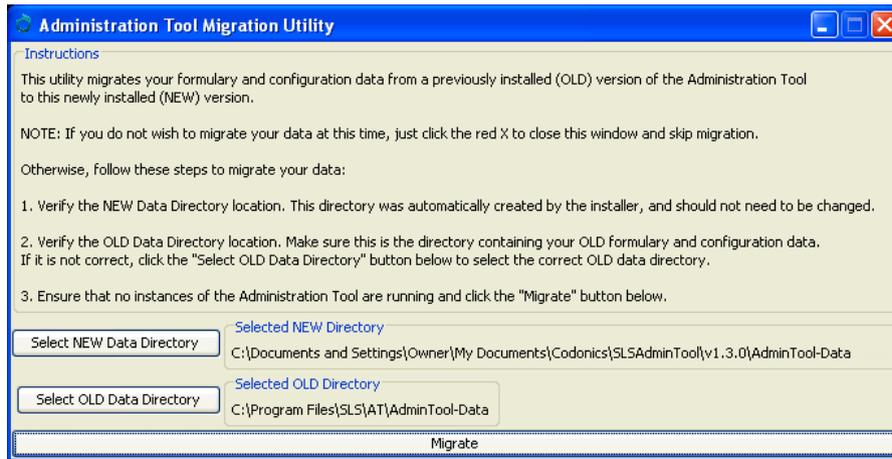
4. If desired, change the Start Menu folder in which to store the Administration Tool's shortcuts. Or, to not install shortcuts, select the **Do not create shortcuts** check box. Then click the **Install** button.

The installation process begins.



If a previous version of the Administration Tool does not exist on the PC, then the Install Complete screen displays when installation is complete. Go to step 9.

If a previous version of the Administration Tool's data directory is detected, the **Administration Tool Migration Utility** window displays. You can choose whether to migrate the old data directory to the new data directory. (For more information about the data directory, refer to "The Data Directory" on page 3-15.)



5. If you choose to **not migrate** the data directory, click the window's Close (X) button and return to the installation wizard window.

The **Install Complete** screen displays when installation is complete. Go to step 9.

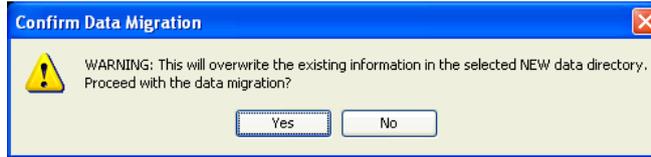
If you choose to **migrate** the old data directory, then you must verify whether the selected old directory location is correct. If not correct, click the **Select OLD Data Directory** button to navigate to and select the location of the old data directory to be migrated.



NOTE: The new data directory location is created automatically during the install process and should not need to be changed.

6. To start the migration process, click the **Migrate** button at the bottom of the window.

The **Confirm Data Migration** dialog box displays.



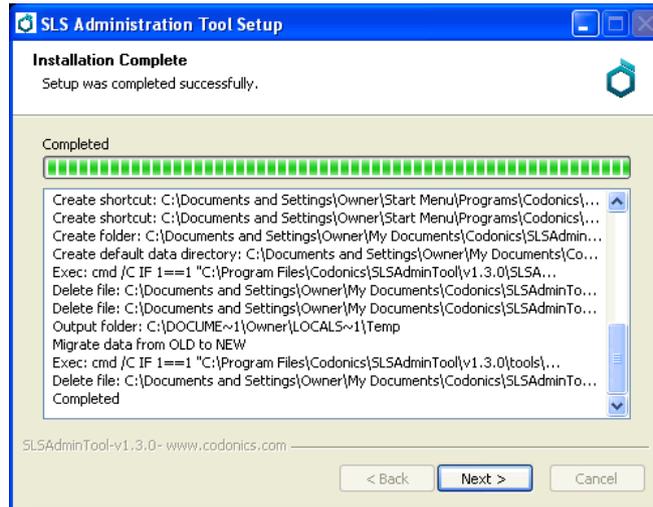
7. To continue with the migration, click the **Yes** button.

The migration process begins. The **Migration Status** dialog box indicates when the migration is complete.



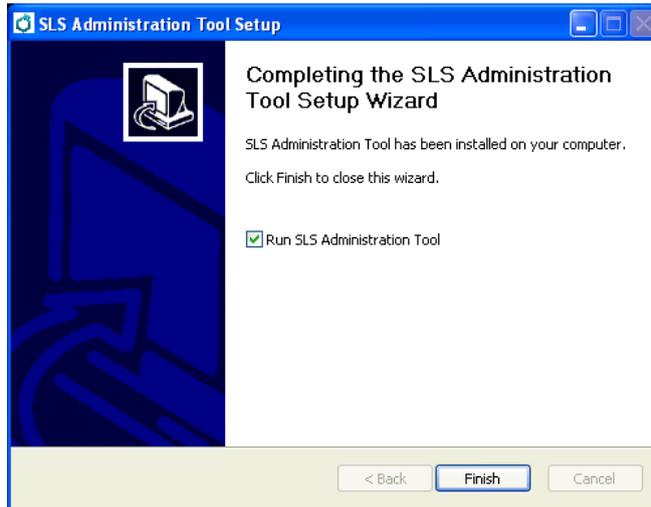
8. Click **OK** to close this dialog box, and then return to the installation wizard.

The **Installation Complete** screen displays when installation is complete.



9. Click the **Next** button.

The last screen of the installation wizard displays.

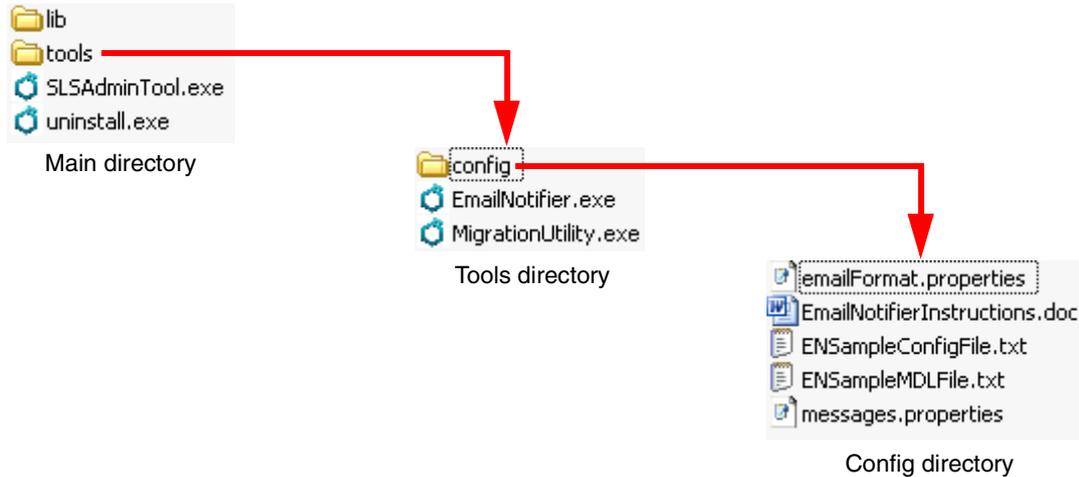


10. Click the **Finish** button to close the installation wizard.

You can now run the Administration Tool. Refer to “Starting the Administration Tool” on page 3-15.

Contents of the Administration Tool Directories

During installation, the following directories and files are created in the Administration Tool application directory:



The following files are of relevance for the Administration Tool user:

- **SLSAdminTool.exe.** Starts the Administration Tool. For more information, refer to “Running the Administration Tool” on page 3-15.
- **uninstall.exe.** Uninstalls the Administration Tool. For more information, refer to “Uninstalling the Administration Tool” on page 3-26.
- **EmailNotifier.exe.** The EmailNotifier application executable file.



NOTE: The EmailNotifier application must be run from a command line prompt, not from Windows Explorer. For more information, refer to “Starting the EmailNotifier” on page 7-31.

- **MigrationUtility.exe.** Launches the Migration utility, for migrating data directories from previous versions of the Administration Tool. For more information, refer to “Running the Migration Utility” on page 3-13.
- **EmailNotifierInstructions.doc.** Instructions for running the EmailNotifier application.
- **ENSampleConfigFile.txt.** A sample EmailNotifier configuration file. For more information about the EmailNotifier configuration file, refer to “EmailNotifier Configuration” on page 7-24.
- **ENSampleMDLFile.txt.** A sample Master Device List file whose file name matches the Master Device List specified in the sample EmailNotifier configuration file, **ENSampleConfigFile.txt.** For more information about the Master Device List file, refer to “Configuring the List of Managed SLS Devices” on page 7-6.

Running the Migration Utility

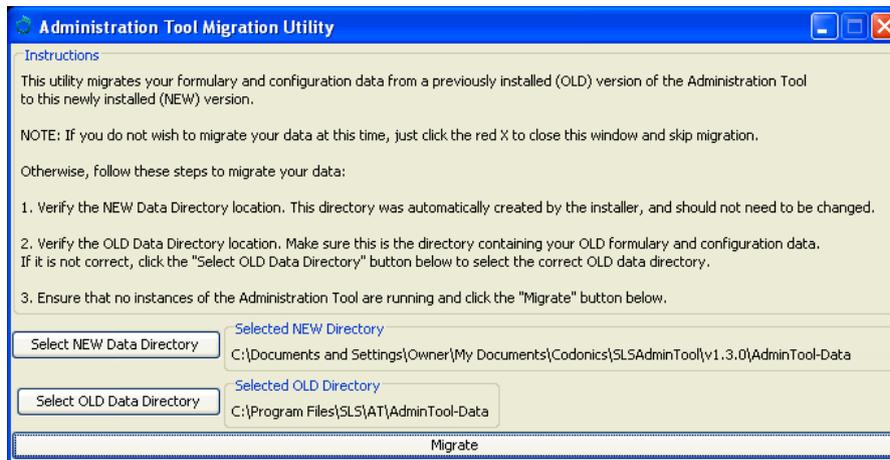
If the Migration utility was not run during the Administration Tool installation, it can be run later to migrate an older version of the data directory to a current version.



To run the Migration utility

1. In the Administration Tool' **tool** directory, double-click the  **MigrationUtility.exe** file.

The **Administration Tool Migration Utility** window displays.



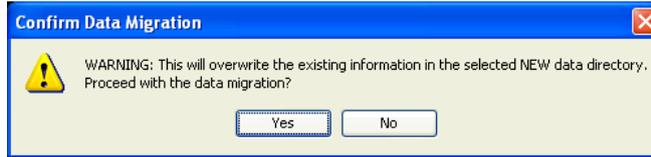
2. Verify whether the selected old directory location is correct. If not, use the **Select OLD Data Directory** button to navigate to and select the location of the old data directory to be migrated.



NOTE: The new data directory location is created automatically during the install process and should not need to be changed.

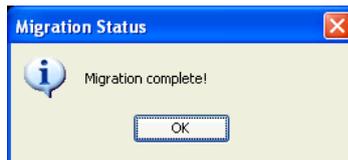
3. To start the migration process, click the **Migrate** button at the bottom of the window.

The **Confirm Data Migration** dialog box displays.



4. To continue with the migration, click the **Yes** button.

The migration process begins. The **Migration Status** dialog box indicates when the migration is complete.



5. Click **OK** to close this dialog box and the Migration Utility.

Running the Administration Tool

The Data Directory

When a user runs the Administration Tool, the application tries to find its *data directory*. This is the directory that will contain the database and log files for the Administration Tool, which include the formulary, as well as digital assets such as drug sounds, scalable vector graphic (SVG) label templates, and barcode definition templates. There is also a temporary directory created on the system that contains all of the application contents needed for running. This is created in the user's **temp** directory.

Starting the Administration Tool



NOTE: You can run only one instance of the Administration Tool at a time on the same PC. If you attempt to run the Administration Tool while another instance at the same version level is already running, the second instance will not open. Running multiple Administration Tools that are at different version levels at the same time is possible but is not recommended.

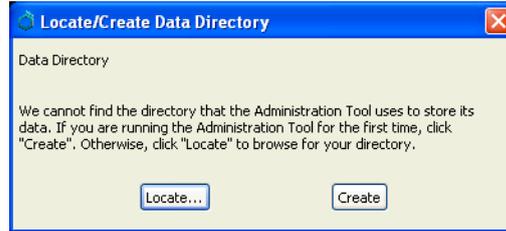


NOTE: It is recommended that only the number of Administration Tool instances that are needed to monitor SLS devices, update formularies, and deploy packages be opened. It is also recommended that no more than five Administration Tool Device Managers be open at the same time.



1. Double-click the Administration Tool executable file,  **SLSAdminTool.exe**.

- If the data directory cannot be found (for example, this is the first time that the Administration Tool is being run) or the data is invalid, you are prompted to locate a directory with valid data or create a new data directory. Go to step 2.



- If the data directory has been located in previous sessions, the **Confirm Data Directory** dialog box displays. It indicates the file that will be used as the data directory (the default name of the data directory is **AdminTool-Data**).



Choose one of the following options:

- **Use the indicated data directory.** Either do nothing (the dialog box will automatically close after a preconfigured timeout) or click the **Continue** button. The **Login** dialog box displays. Go to “Logging In” on page 3-17.

- **Use a different data directory.** Click the **Change** button. A dialog box displays that allows you to navigate and choose a different data directory. If the data in that data directory is valid, the **Login** dialog box displays. Go to “Logging In” on page 3-17.
2. **If the data directory needs to be created** (for example, this is the first time that the Administration Tool is being run), click the **Create** button. You are prompted to specify the location for the new data directory.

If a data directory already exists, click the **Locate** button. You are prompted to specify the location for the new data directory.

Once you specify the location of the data directory, the Administration Tool **Login** dialog box displays. Go to “Logging In” on page 3-17.

Logging In

The Administration Tool includes a preconfigured user login account — **Administrator**, with the password **password** — to use on the initial startup.



CAUTION After the initial login, change the password from the default. Refer to “Changing the Administrator Password” on page 3-19.



To log in

In the **Login** dialog box, enter the administrator username and password, and then click the **Log In** button.

Log In

Username: Administrator

Password: |

✓ Log In

If the username and password are valid, the Administration Tool displays.

The screenshot shows the CODONICS Administration Tool interface. The top navigation bar includes tabs for Formulary (Build formulary for SLS), Configuration (Build SLS Config File), and Devices (Manage SLS Devices). The user is logged in as Administrator. The left sidebar shows the Master Drug Database and SLS Formulary, both with 76 items. The main area displays a table of drugs with columns for Drug Name, Master ID, Container ID, Tallman, Concentration, Route, Verification, Status, and Actions.

Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status	Actions
<input type="checkbox"/> Atropine	00517040125	0517040125		0.4 mg/mL		Not Verified	ACTIVE	
<input type="checkbox"/> Atropine		1001925039		0.4 mg/mL		Not Verified	ACTIVE	
<input type="checkbox"/> Bupivacaine-Epineph	00409904201	0409904201	Bupivacaine-EP	0.25 % 1:200		Not Verified	ACTIVE	
<input type="checkbox"/> Bupivacaine-Epineph	00409904501	0409904501	Bupivacaine-EP	1 % 1:200,00	Injectable	Not Verified	ACTIVE	
<input type="checkbox"/> Cefazolin		6050507495	ceFAZolin	1 g		Verified	ACTIVE	
<input type="checkbox"/> Cefazolin		0781945170	ceFAZolin	1 g		Not Verified	ACTIVE	
<input type="checkbox"/> Cisatracurium		0074437805		2 mg/mL		Verified	ACTIVE	
<input type="checkbox"/> Clindamycin		0409405001		150 mg/mL		Verified	ACTIVE	
<input type="checkbox"/> Dexamethasone	00517490125	0517490125		4 mg/mL		Not Verified	ACTIVE	
<input type="checkbox"/> Dexamethasone	63323016505	6332316505		4 mg/mL		Not Verified	ACTIVE	
<input type="checkbox"/> Dexmedetomidine		0409163802		100 mcg/mL	Injectable	Verified	ACTIVE	
<input type="checkbox"/> Diphenhydramine		0641037621	diphenhydrAMI	50 mg/mL		Not Verified	ACTIVE	
<input type="checkbox"/> Ephedrine		1747851500	ePHEDrine	50 mg/mL		Verified	ACTIVE	



NOTE: If you have read-only access to the Administration Tool, you will see only the **Devices** tab. If you have full access to the Administration Tool, you will see the **Formulary**, **Configuration**, and **Devices** tabs.

Changing the Administrator Password



To change the administrator password

1. Click the username link at the upper right.

Username link

Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status	Actions
<input type="checkbox"/> Atropine	00517040125	0517040125		0.41 mg/mL		Not Verified	ACTIVE	
<input type="checkbox"/> Atropine		1001925039		0.4 mg/mL		Not Verified	ACTIVE	

The **Edit User Information** dialog box displays.

Edit user Information.

Change Password

Current Password:

New Password:

Confirm New Password:

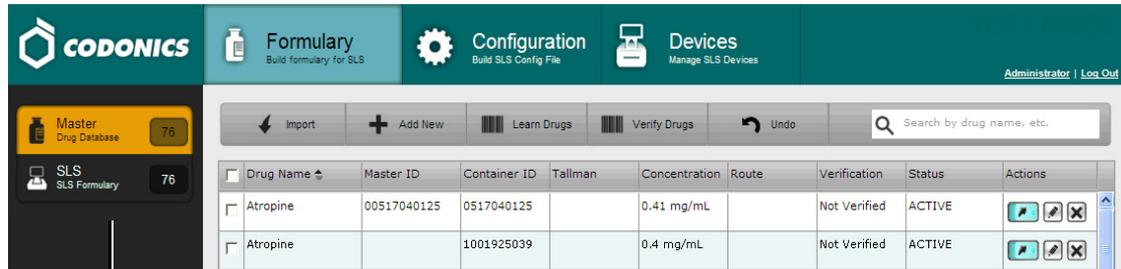
2. Enter the current password and then enter the new password twice.

Passwords must be at least 6, but not more than 15 alphanumeric characters. If the password entered is less than 6 characters, a message indicating that there is an error in editing user information will be displayed.

3. Click the **Update** button.

Navigating Between Administration Tool Functions

The **Formulary** tab is the initial tab that is displayed after logging in. The Master Drug Database (MDD) and the formulary drug lists are accessed from this tab by clicking their buttons in the left panel.



The screenshot shows the CODONICS administration tool interface. The top navigation bar has three tabs: 'Formulary' (Build formulary for SLS), 'Configuration' (Build SLS Config File), and 'Devices' (Manage SLS Devices). The left sidebar contains two buttons: 'Master Drug Database' (76) and 'SLS Formulary' (76). The main content area features a toolbar with 'Import', 'Add New', 'Learn Drugs', 'Verify Drugs', and 'Undo' buttons, along with a search bar. Below the toolbar is a table with the following data:

Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status	Actions
<input type="checkbox"/> Atropine	00517040125	0517040125		0.41 mg/mL		Not Verified	ACTIVE	
<input type="checkbox"/> Atropine		1001925039		0.4 mg/mL		Not Verified	ACTIVE	

Click the buttons in this panel to display the MDD or formulary drug list

You can access configuration functions from the **Configuration** tab.

You can access SLS device management functions from the **Devices** tab.

Logging Out



To log out

Click the **Log Out** link at the upper right of the window.

Log Out link

Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status	Actions
Atropine	00517040125	0517040125		0.41 mg/mL		Not Verified	ACTIVE	
Atropine		1001925039		0.4 mg/mL		Not Verified	ACTIVE	

The **Login** dialog box displays.

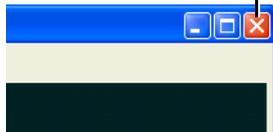
Exiting the Administration Tool



To exit the
Administration
tool

Click the Close Window button at the upper right corner of the Administration Tool window.

Close Window button



Master Drug Database Modes

The MDD can be in one of two modes: US NDC mode for the USA or Other mode for outside the USA.

US NDC Mode

The US NDC mode characteristics are:

- Both the 11-digit Master ID and the 10-digit Container ID are included in drug records and will be visible in the Administration Tool user interface.
- The Master ID field uniquely identifies the drug record.
- When importing data, you can choose to match external file drug IDs with either Master IDs or Container IDs.
- Master IDs must be 11 digits (if they exist) and Container IDs must be 10 digits (if they exist).
- Barcode configuration options are not available.

Other Mode

- Only Container IDs are included in drug records. The Master ID field will not be visible in the Administration Tool user interface.
- When importing data, the system will only match external file drug IDs with a Container ID field.
- Barcode configuration options are available to define various aspects of the barcode itself to conform to local standards.

Setting the Database Mode



To set the database mode

1. Click the **Configure Locale** button at the bottom left corner of the **Formulary** tab.

<input type="checkbox"/>	Drug Name	Mas
<input type="checkbox"/>	Atropine	005
<input type="checkbox"/>	Atropine	
<input type="checkbox"/>	Bupivacaine-Epineph	004
<input type="checkbox"/>	Bupivacaine-Epineph	004
<input type="checkbox"/>	Cefazolin	
<input type="checkbox"/>	Cefazolin	
<input type="checkbox"/>	Cisatracurium	
<input type="checkbox"/>	Clindamycin	
<input type="checkbox"/>	Dexamethasone	005
<input type="checkbox"/>	Dexamethasone	633
<input type="checkbox"/>	Dexmedetomidine	
<input type="checkbox"/>	Diphenhydramine	
<input type="checkbox"/>	Ephedrine	

Configure Locale button

The **Configure Localization** dialog box displays.

Configure Localization

Localization Pack
Active Localization Pack: en-US-1
+ Add New Localization Pack...

General
Date Display Format: MM/dd/yyyy HH:mm
Database Mode: Other

Barcode Settings
ID Length: 13

Enabled	Symbology	Prefix Start	Prefix	ID Start
<input type="checkbox"/>	UPC-A, UPC-E, UPC-E1, EAN-8, EAN-13	1		1
<input type="checkbox"/>	Data Matrix	1		1
<input checked="" type="checkbox"/>	Code 128, ISBT 128	1	01049	6

X Cancel ✓ Save

2. In the **Database Mode** list, select **US NDC** (for US NDC mode) or **Other** (for Other mode).



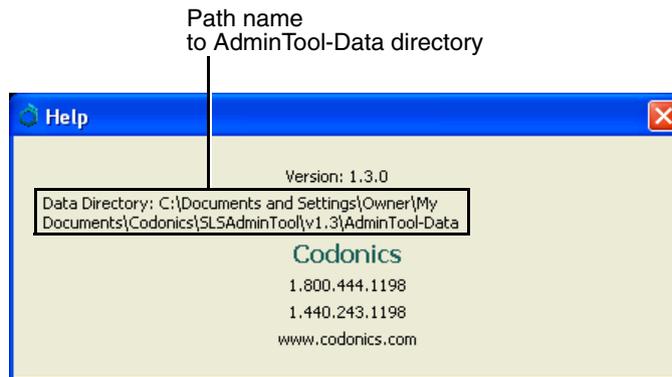
WARNING Once you select an MDD mode setting and save the changes in the **Configure Localization** dialog box, do not change the MDD mode setting. If you selected the wrong setting and want to change it, contact Codonics Technical Support (+1.440.243.1198).

3. Click the **Save** button to save your selection.

Backing Up the Databases and Related Files

You should periodically back up the formulary database, the configuration database, and their related files. You can do this by backing up the Administration Tool data directory, whose default name is **AdminTool-Data**.

To obtain the current location of the Administration Tool data directory, click the **Help** menu command. The **Help** dialog box displays.



Uninstalling the Administration Tool



To uninstall the
Administration
Tool

In the Windows **Start** menu, locate the Administration Tool menu directory and click **Uninstall SLS Administration Tool**.

or

In the Administration Tool main directory, double-click the  **uninstall.exe** file.

Deleting the executable file leaves the Administration Tool's data directory and the temporary directory (which is in your user account's **temp** directory) on the system. You can also delete those directories if you want to completely remove the application.

4

Creating a Formulary

Overview

The Administration Tool allows authorized users to manage the hospital's Master Drug Database (MDD) and create a formulary based on that list.

The workflow for creating and deploying a formulary is:

1. Add drug records to the MDD. You can add a single drug record, add a drug record using the Learning function, or add a batch of drugs using the Import function.
2. Edit drug information in the MDD.
3. Add drugs in the MDD to the formulary.
4. Edit the drugs in the formulary to include additional information about each drug that is required for use with an SLS.
5. Promote the formulary to Test/Review level.
6. Optionally, create a formulary update package to test the formulary on an SLS.
7. Create a formulary report. This step is required before moving the formulary to Approved level.
8. Have the hospital's clinical review board examine the formulary report. Demote the formulary to Under Development and make adjustments to the formulary as needed until the clinical review board approves the formulary.

9. Promote the formulary to Approved level.
10. Create a formulary update package for deploying the formulary to SLSs at your hospital.



NOTE: *It is strongly recommended that each SLS customer create and set up a process and audit plan to check that the latest, approved versions of the formulary and configuration are correctly deployed to each SLS.*

The tasks listed above are covered in this chapter.

You can also perform the following additional MDD and formulary tasks that are covered in Chapter 5:

- Sort the MDD and formulary drug lists by their column headers
- Search for drugs in the MDD or formulary
- Verify drugs in the MDD
- Edit multiple drug records at a time in the MDD
- Edit multiple drug records at a time in the formulary
- Delete drugs from the formulary
- Delete drugs from the MDD

Adding a Single Drug to the MDD



1. With the MDD drug list displayed, click the **Add New** button.

To add a single drug to the MDD

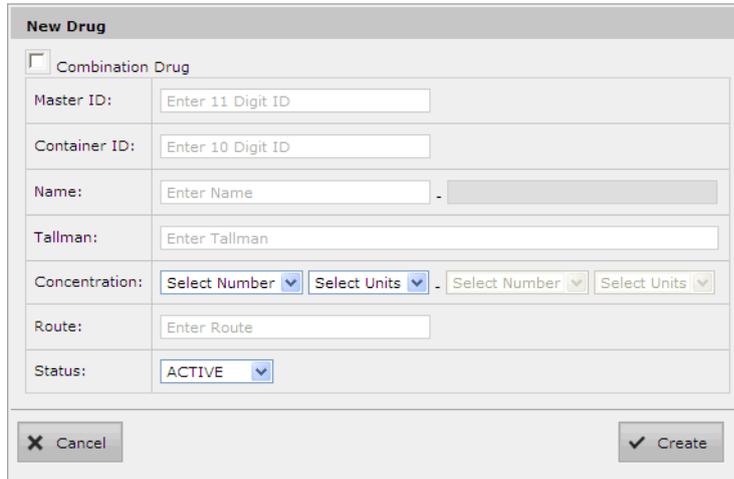
Add New button

The screenshot shows the Codonics SLS Administration Tool interface. The top navigation bar includes 'CODONICS', 'Formulary (Build formulary for SLS)', 'Configuration (Build SLS Config File)', and 'Devices (Manage SLS Devices)'. The user is logged in as 'Administrator'. The main toolbar contains 'Import', '+ Add New', 'Learn Drugs', 'Verify Drugs', and 'Undo'. A search bar is on the right. Below the toolbar is a table with columns: Drug Name, Master ID, Container ID, Tallman, Concentration, Route, Verification, Status, and Actions. Two rows of 'Atropine' are visible. A vertical line points from the 'Add New' button to the table.

<input type="checkbox"/>	Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status	Actions
<input type="checkbox"/>	Atropine	00517040125	0517040125		0.41 mg/mL		Not Verified	ACTIVE	
<input type="checkbox"/>	Atropine		1001925039		0.4 mg/mL		Not Verified	ACTIVE	

The **New Drug** dialog box displays.

2. Enter the information for the new drug.



The screenshot shows a 'New Drug' dialog box with the following fields and controls:

- Combination Drug
- Master ID: Enter 11 Digit ID
- Container ID: Enter 10 Digit ID
- Name: Enter Name - [Greyed out field]
- Tallman: Enter Tallman
- Concentration: Select Number [v] Select Units [v] - Select Number [v] Select Units [v]
- Route: Enter Route
- Status: ACTIVE [v]
- Buttons: X Cancel, [v] Create



NOTE: If there is no Tallman entry for the drug in the MDD and the drug name is all lower case letters, the Administration Tool will automatically display and the SLS will automatically print the initial letter capitalized. If there is a Tallman entry for the drug in the MDD, the Administration Tool will display and the SLS will print the drug name in exactly the case that was entered for it.

3. When all of the available information has been entered, click the **Create** button.

If any required information has not been entered or is invalid, the system indicates which field(s) require correction and redisplay the **New Drug** dialog box.

If all required information has been entered and is valid, the **Create Drug** dialog box displays. In addition to the information you entered, the dialog box can include any conflicts or warnings for the drug.

The screenshot shows a dialog box titled "Create Drug" with a sub-header "Confirm: Create this drug?". Below the header is a table with the following data:

Master ID	00003257020
Container ID	
Name	Azactam
Tallman	
Concentration	2 g
Route	
Status	ACTIVE

At the bottom of the dialog box, there are two buttons: "Yes" (with a checkmark icon) and "No" (with an 'X' icon).

4. Click the **Yes** button to confirm the addition of the new drug.

Click the **No** button to return to the **New Drug** dialog box.

If you click the **Yes** button and the MDD is in US NDC mode, the system also checks that the entered Master ID is unique and that it properly maps to the Container ID if one is entered.

- If the Master ID validation fails, the **New Drug** dialog box displays again so that you can fix the Master ID and/or Container ID entries. It includes a message that explains the error.
- If the validation passes, the drug record is added to the MDD.

Adding a Combination Drug to the MDD

When adding a single drug to the MDD, the **New Drug** dialog supports designating the entry as a combination drug.

The screenshot shows the 'New Drug' dialog box with the following fields and controls:

- Combination Drug**
- Master ID:
- Container ID:
- Name: -
- Tallman:
- Concentration: -
- Route:
- Status:
-

- To indicate that the new drug is a combination drug, select the **Combination Drug** check box.
- The **Name** entry includes two fields, one for each of the two ingredient drugs. The first field is for the first ingredient and the second field is for the second ingredient. If the **Combination Drug** check box is not selected, the second ingredient field is disabled.
- The **Concentration** entry has two sets of number and unit lists, one for each of the two ingredient drugs. The first set is for the first ingredient and the second set is for the second ingredient. If the **Combination Drug** check box is not selected, the second ingredient lists are disabled.

The MDD drug list accommodates combination drug entries as follows:

- The **Drug Name** column uses the following format for combination drugs:
drugname1 - drugname2
- The **Concentration** column uses the following format for combination drugs:
concentration1 concentration2

<input type="checkbox"/>	Drug Name ↕	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status
<input type="checkbox"/>	Bupivacaine-Epinephrine	00409904201	0409904201	Bupivacaine-EPINEPHRINE	0.5 % 1:200000		Not Verified	ACTIVE

Drug Name column

Concentration column

Learning a Drug

You can use the Administration Tool's Learning function if you want to check whether there is already a drug record in the MDD for a particular Container ID or Master ID (USA only). If there is, then you will have the option of editing the drug record information. If there is not, then you can create a new drug record with the Container ID or Master ID that you entered. In the USA, you can also use the Learning function to learn the Container ID for an existing drug record that has a Master ID but not the Container ID. The procedure is different if you are entering a Container ID (Other or US NDC mode) or a Master ID (US NDC mode only).

Learning can be performed using the Administration Tool or, if you prefer, at the SLS.



NOTE: During Learning when in Other database mode, make sure that the barcode symbology is properly configured for the drugs that you are going to learn/enter into the MDD. For more information about the barcode symbology settings in the Administration Tool, refer to "Configuring a Locale" on page 8-2.

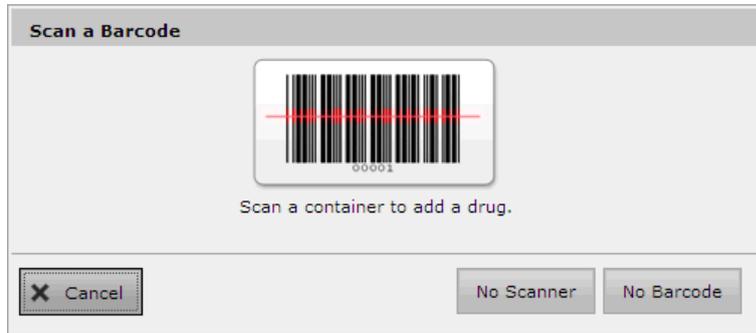
Using the Learning Function with a Container ID



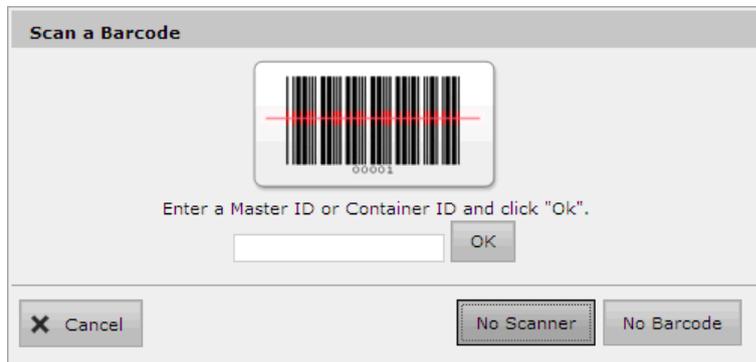
To use the Learning function with a Container ID

1. With the MDD drug list displayed, click the **Learn Drugs** button.

The **Scan a Barcode** dialog box displays.



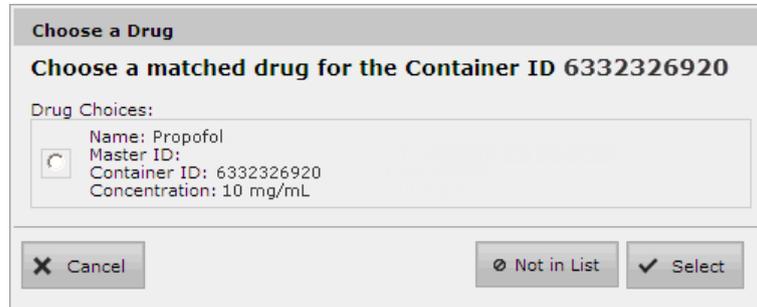
2. If you want to manually enter the Container ID because you do not have a scanner or barcode to scan, click either the **No Scanner** or **No Barcode** button. A field for entering the Container ID displays.



3. Either scan the drug container's barcode or enter the Container ID in the field and click the **OK** button.

The system searches the MDD for any records that match or map to the Container ID.

- If matches or mappings are found, then those records are displayed, as shown below. Go to step 4.



Choose a Drug

Choose a matched drug for the Container ID 6332326920

Drug Choices:

- Name: Propofol
Master ID:
Container ID: 6332326920
Concentration: 10 mg/mL

- If no matches or mappings are found, then you are prompted to confirm whether you want to add a new drug. If you click the **Yes** button, then the **New Drug** dialog box is displayed, as described in step 2 of the procedure in “Adding a Single Drug to the MDD” on page 4-3. The only difference is that the Container ID is automatically entered for you and it cannot be edited.
4. In the **Choose a Drug** dialog box, you have the following options:
 - If the drug that you entered is in the list, select it and then click the **Select** button.
You are prompted to confirm whether you want to edit the existing drug record. If you click the **Yes** button, then the **Editing Master Drugs** dialog box is displayed, as described in the procedure in “Editing a Single Drug’s Information in the MDD” on page 4-34. The only difference is that the Container ID cannot be edited.
 - If the drug that you entered is not listed, click the **Not in List** button.

You are prompted to confirm whether you want to add a new drug. If you click the **Yes** button, then the **New Drug** dialog box is displayed, as described in step 2 of the procedure in “Adding a Single Drug to the MDD” on page 4-3. The only difference is that the Container ID is automatically entered for you and it cannot be edited.

- To cancel the operation, click the **Cancel** button.

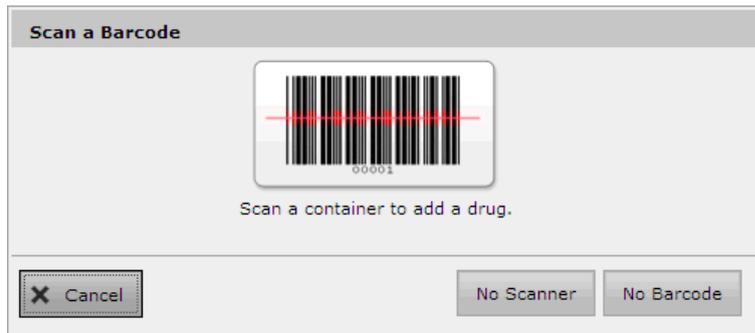
Using the Learning Function with a Master ID (US NDC Mode Only)



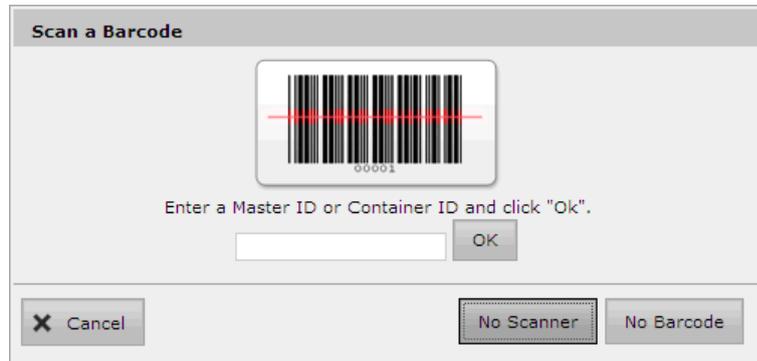
To use the Learning function with a Master ID

1. With the MDD drug list displayed, click the **Learn Drugs** button.

The **Scan a Barcode** dialog box displays.



2. Drug container barcodes include only Container IDs, so you have to manually enter the Master ID. Click the **No Barcode** button. A field for entering the Master ID displays.

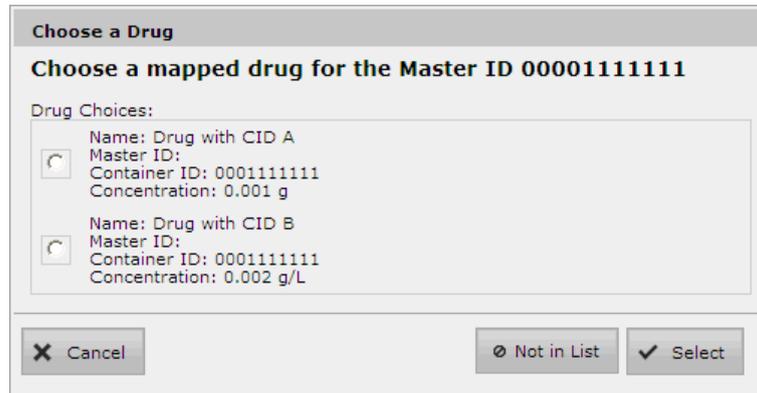


3. Enter the Master ID in the field and click the **OK** button.

The system searches the MDD for a record with the same Master ID or for any records that have an unmapped Container ID that is a mapping candidate for the entered Master ID.

- If no matches or mappings are found, then you are prompted to confirm whether you want to add a new drug. If you click the **Yes** button, then the **New Drug** dialog box is displayed, as described in step 2 of the procedure in “Adding a Single Drug to the MDD” on page 4-3. The only difference is that the Master ID is automatically entered for you and it cannot be edited.
- If a record with the same Master ID is found, you are prompted to confirm whether you want to edit the existing drug record. If you click the **Yes** button, then the **Editing Master Drugs** dialog box is displayed, as described in the procedure in “Editing a Single Drug’s Information in the MDD” on page 4-34. The only difference is that the Master ID cannot be edited.

- If a record with the same Master ID is not found but records with Container IDs that could map to the Master ID are found, then the mapped records are displayed, as shown below. Go to step 4.



4. You have the following options:

- To cancel the operation, click the **Cancel** button.
- If the drug that you entered is not listed, click the **Not in List** button.

You are prompted to confirm whether you want to add a new drug. If you click the **Yes** button, then the **New Drug** dialog box is displayed, as described in step 2 of the procedure in “Adding a Single Drug to the MDD” on page 4-3. The only difference is that the Master ID is automatically entered for you and it cannot be edited.

- If the drug that you entered is in the list, select it and then click the **Select** button.

You are prompted to confirm whether you want to edit the existing drug record. If you click the **Yes** button, then the **Editing Master Drugs** dialog box is displayed, as described in the procedure in “Editing a Single Drug’s Information in the MDD” on page 4-34. The only difference is that the Master ID cannot be edited.

Importing a Batch of Drugs to the MDD

Data Source Formats Supported

Drugs can be imported from the following sources. Each source contains some or all of the available data for a Master Drug.

Lexicomp



NOTE: To import a Lexicomp database, the MDD must be in US NDC mode.



NOTE: If you require the latest released version of the Lexicomp database or have questions about using a different drug database, contact Codonics Technical Support (+1.440.243.1198).

Lexicomp produces an Access database of various drug data that many hospitals use. The Lexicomp database is provided with the Administration Tool.

The Administration Tool can import the following fields from the Lexicomp database:

- Master ID
- Container ID
- Name
- Tallman
- Concentration
- Route
- Status

Lexicomp Import of Combination Drugs

During a Lexicomp import, a drug is considered a combination drug if it has more than one Lexicomp “ingredient” drug.

The first and second ingredient names for a drug are determined by splitting the manufacturer's generic name using a hyphen (for example, Bupivacaine-Epinephrine).

The concentrations for each ingredient are determined by matching the parsed names with the corresponding concentrations for the ingredient drugs.

A combination drug will be discarded and flagged as an unsupported combination drug in the **Import Results** dialog box and Pre-Import Report if any of the following are true:

- The drug has more than two ingredients
- The ingredient name does not include exactly one hyphen (-) delimiter

CSV

A comma-separated value format is a simple file format for importing data and can be easily created from many drug sources for import into the MDD.

A valid CSV file for the Administration tool contains nine value places in each line and in the order defined in Table 4-1.

Table 4-1. CSV File Format for Importing Drug Records

Position	Field	Required?	Format	Description
1	Master ID	US NDC mode: Must be entered if a Container ID is not entered. Other mode: Must be blank (null), as the Master ID is not used.	11-digit integer Blank (null)	In US NDC mode: The Master ID is the drug record unique identifier. NOTE: <i>If using Excel to create the CSV file, ensure that leading zeros in the Master ID field are not stripped. Use the Custom format for the cell and enter 11 zeros with no commas as the Type to define the length of the field.</i> NOTE: <i>Importing a CSV file in Other mode with no Master ID column will cause an error when importing. To correctly import it, the CSV file requires the first column to be at least a blank column for the Master ID. The second column should be the Container ID.</i>

Table 4-1. CSV File Format for Importing Drug Records (Continued)

Position	Field	Required?	Format	Description
2	Container ID	Other mode: Required. US NDC mode: Must be entered if a Master ID is not entered. If a Master ID is entered, then entering the Container ID is optional.	An integer whose length varies, depending on the Container ID for your locale. The length must be consistent for all drug entries. 10-digit integer	Used as the key field in either database mode, as it is the field to which scanned Container IDs is compared. NOTE: If using Excel to create the CSV file, ensure that leading zeros in the Container ID field are not stripped. Use the Custom format for the cell and enter 10 zeros with no commas as the Type to define the length of the field.
3	Drug Name 1	Yes	Alphanumeric	The drug name for a non-combination drug, or the drug name for the first drug of a combination drug.
4	Drug Name 2	Yes	Alphanumeric	The drug name for the second drug of a combination drug. A drug entry is considered a combination drug only if this field is populated. NOTE: For combination drugs, if the second drug name has a semicolon in it, the drug record will not be imported. Make sure there are no semicolons in the drug name.

Table 4-1. CSV File Format for Importing Drug Records (Continued)

Position	Field	Required?	Format	Description
5	Tallman Lettering	No	Alphanumeric	<p>The Tallman lettering version of the drug name.</p> <p>NOTE: If there is no Tallman entry for the drug in the MDD and the drug name is all lower case letters, the Administration Tool will automatically display and the SLS will automatically print the initial letter capitalized. If there is a Tallman entry for the drug in the MDD, the Administration Tool will display and the SLS will print the drug name in exactly the case that was entered for it.</p>
6	Concentration 1	Yes	Alphanumeric	<p>The concentration for a non-combination drug, or the concentration for the first drug of a combination drug.</p> <p>Must be a combination of a concentration value with concentration units (for example, 5 mg/mL).</p> <p>NOTE: The imported data is case-sensitive, so it is critical that the concentration units in the CSV file use the correct letter cases. Refer to “Correct Letter Cases for Concentration Units” on page 4-21.</p>

Table 4-1. CSV File Format for Importing Drug Records (Continued)

Position	Field	Required?	Format	Description
7	Concentration 2	Yes	Alphanumeric	<p>The concentration for the second drug of a combination drug.</p> <p>Must be a combination of a concentration value with concentration units (for example, 5 mg/mL).</p> <p>If the Drug Name 2 field is null (that is, there is no entry in that position in the CSV file), any entry for this field will be ignored.</p> <p>NOTE: <i>The imported data is case-sensitive, so it is critical that the concentration units in the CSV file use the correct letter cases. Refer to “Correct Letter Cases for Concentration Units” on page 4-21.</i></p>
8	Route	No	Alphanumeric	The route subcategory for the drug.
9	Status	No	Alphanumeric	The status of the drug: active or obsolete.

An example of a single CSV line for US NDC mode for a non-combination drug is:

```
06050507495,6050507495,Cefazolin,,ceFAZolin,1 g,,,ACTIVE
```

An example of a single CSV line for US NDC mode for a combination drug is:

```
00409904201,0409904201,Bupivacaine, Epinephrine,Bupivacaine-EPINEPHrine,0.5%,1:200000,,,ACTIVE
```

An example of a single CSV line for Other mode for a non-combination drug is:

```
,6050507495,Cefazolin,,ceFAZolin,1 g,,,ACTIVE
```

Note in the Other mode example that the line begins with a comma with no Master ID value entered before it (which would be the position at which the Master ID is entered if the MDD is in US NDC mode).

If the Drug Name 2 field is null (that is, there is no entry in that position in the CSV file), any entry for Concentration 2 will be ignored. For example, in the following line from a CSV file, the second concentration entry will be ignored.

```
6050507495,6050507495,Cefazolin,,ceFAZolin,1 g,5 mg/ml,,ACTIVE
```



NOTE: When creating a CSV with a text editor, use commas and not tab characters (inserted by pressing the Tab key) to separate the fields. Tab characters in concentration fields will result in dilution value errors.



NOTE: There should be no blank lines in the CSV file. Drug records following a blank line will not be imported into the MDD.

Correct Letter Cases for Concentration Units

The imported data is case-sensitive, so it is critical that the concentration units in the CSV file match the concentration unit letter cases that are coded in the Administration Tool.

The correct letter cases for the concentration units are:

g	Units	IU
g/L	Units/L	IU/L
g/mL	Units/mL	IU/mL
mg	K Units	mmol/mL
mg/L	M Units	PE
mg/mL	%	KIU
mcg	mEq	K KIU
mcg/L	mEq/L	M KIU
mcg/mL	mEq/mL	Unspecified

Truncating Concentration Decimal Values

The Administration Tool supports importing drug concentration values with up to five decimal digits. Values with more than five digits are truncated (for example, **.000065** would be truncated to **.00006**). To avoid truncating values, change the concentration units so that only five digits or less are needed.

Maximum Concentration Values

The value for a drug's concentration cannot exceed five digits. If the concentration value is greater than five digits, when the formulary is deployed to the SLS, the syringe label barcode cannot be created and the label will not be generated. To avoid this issue, change the units for the concentration. For example, instead of specifying the concentration for Heparin as 1000000 Units, it can be set as 1 M Unit.

Importing Drugs from a Consistent Source Format

To avoid the need to reconcile differences between database formats, it is strongly recommended that you import from the same format when importing new drugs into the MDD. For example, if you start by importing from a Lexicomp database, you should continue to import from a Lexicomp database and not a CSV file.

Drug Record Content Import Error or Warning Conditions

The following drug record conditions will cause an error or warning for a drug record during the import process:

- A required field is missing.
- A field is not in the proper format.
- The Container ID matches that of a drug currently in the MDD.
- When importing in Master ID mode, if the Container ID, drug name, and concentration match those of an existing drug in the MDD, but the Master ID does not match that of the existing drug, then the Pre-Import Report will include the error message "A drug with these values already exists," and the drug will not be imported. You should print out the report, search the MDD for the existing drug with the same Container ID, and use the report information to update the MDD drug entry. The key information that will likely need to be updated are the Master ID and the status.

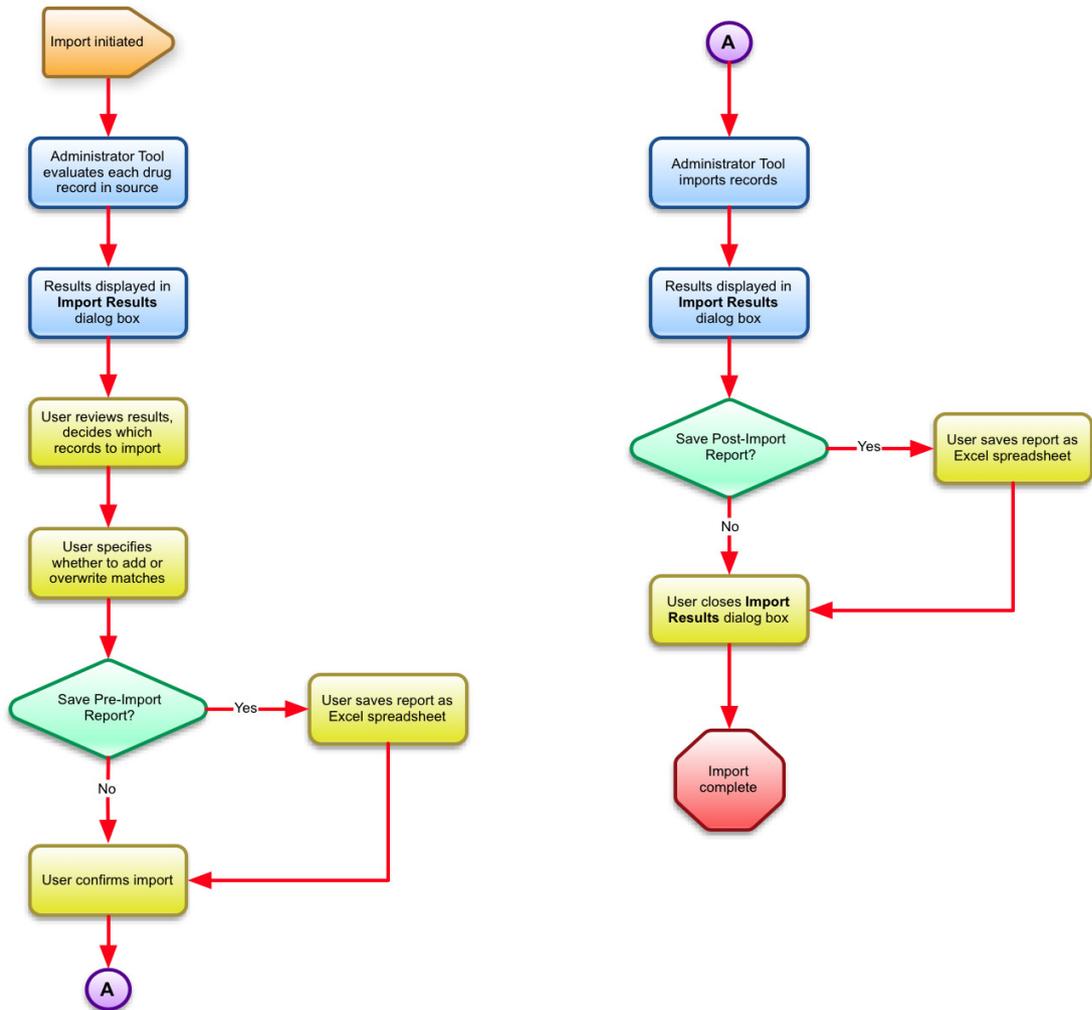
- When importing in Master ID mode, if the Container ID matches that of an existing drug in the MDD but the drug name and concentration do not match, then the Post-Import Report will include a warning message indicating that the imported drug matches an existing drug in the MDD. You should print the report, perform a search of the MDD using the Container ID identified in the report, and identify which entry is the existing entry and which entry is the newly added entry. If the two drug entries are different drugs, then both drugs should remain in the MDD and, if required, added to the formulary. If they are the same drug, you should update the Master ID and the status of the existing drug entry in the MDD and then delete the entry that was just added.
- The Master ID matches that of a drug currently in the MDD.
- The Container ID maps to a Master ID of another drug currently in the MDD.
- The Master ID does not map correctly to the Container ID in the same drug record.
- The Master ID maps to a Container ID of another drug currently in the MDD.

What Happens During the Import Process

During import, the Administration Tool first evaluates each drug record in the source data file (refer to the process flow diagram on the next page). When the evaluation is complete, the results are shown in the **Import Results** dialog box. This allows you to review which drug records will be imported, which records have warnings for which you will have a choice about whether to import them, and which records have errors and so will not be imported. You will also be given the option of adding new records or overwriting matches. From this dialog box, you can save the evaluation result summary — the Pre-Import Report — as an Excel file.

When you have determined how to handle drug records with warnings and proceed with the import, the drug records are added to the MDD.

When the import is complete, the results are shown in the Import Results dialog box. This allows you to review which drug records were imported and which had errors and so were not imported. At this point, you have the option to save the actual import result summary — the Post-Import Report — as an Excel file.



Importing drug records process flow

Importing the Drug Records



To import drug records from an external data source

1. Back up the database files before performing the import. Refer to “Backing Up the Databases and Related Files” on page 3-25.
2. In the **Formulary** tab, click the **Import** button.

<input type="checkbox"/>	Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification
<input type="checkbox"/>	Atropine	00517040125	0517040125		0.41 mg/mL		Not Verified
<input type="checkbox"/>	Atropine		1001925039		0.4 mg/mL		Not Verified

Import button

The **Import Drugs** dialog box displays.

Import Drugs

Import Format:

Route Filter:

ID Mode:

File Name:

3. Select the format of the data source from the **Import Format** list:
 - **CSV**: If importing a CSV file.
 - **Lexicomp**: If importing a Lexicomp database.
4. If importing a Lexicomp database, select the route filter from the **Route Filter** list.

Operating rooms commonly use **injectable, intravenous, or oral and injectable** as the route filter, so that only those drugs that are used in those filters would be imported.

NOTE: *The following types of errors can occur when importing Lexicomp databases:*

- The Master ID does not map correctly to a Container ID.
- Combination drugs (mixtures) are not supported.
- Units entries are missing.
- There is an invalid concentration entry.

These problems can be resolved by manually adding the affected drug records to the MDD.

5. Select the ID mode from the **ID Mode** list.
 - **Master ID** (11 digits). Select this mode if the MDD is in US NDC mode and:
 - You are importing a third-party database such as Lexicomp that uses the Master ID as a drug record's unique identifier, or
 - The MDD predominantly uses the Master ID as a drug record's unique identifier.
 - When importing a Lexicomp database, because Lexicomp does not support the Container ID as the key field.
 - **Container ID** (10 digits). Select this mode if the MDD is in Other mode or if the MDD is in US NDC mode and it predominantly uses Container IDs rather than Master IDs.



NOTE: Choose the ID Mode that best suits your data set needs.

6. Click the **Browse** button, and then navigate to and select the data source file.
7. Click the **Import** button.

The progress of the import process is displayed. When the data source file has been evaluated, the **Import Results** dialog box displays, showing a list of the drug records found in the data source.

Import Results

Total # of drugs in import file: 101
Total # of drugs to be imported: 61
Total # of matching drugs with no changes that will be skipped: 0

Master ID	Container ID	Name	Concentration	Type	Description
01110007701	0111007701	fileH-077	0.077 mg/mL	Error	Master ID already exists.
01110007801	0111007801	fileH-078	0.078 mg/mL	Error	Master ID already exists.
01110007901	0111007901	fileH-079	0.079 mg/mL	Error	Master ID already exists.
01110008001	0111008001	fileH-080	0.08 mg/mL	Error	Master ID already exists.
00111003601	0111003601	fileH-091	0.091 mg/mL	Warning	Container ID of imported drug matches an existing drug in the Master Drug Database with changed drug data in key fields.
00111003601		fileH-091	0.091 mg/mL	Warning	Master ID of imported drug maps to an existing drug in the Master Drug Database.
00111003701	0111003701	fileH-092	0.092 mg/mL	Warning	Container ID of imported drug matches an existing drug in the Master Drug Database with changed drug data in key fields.
00111003701		fileH-092	0.092 mg/mL	Warning	Master ID of imported drug maps to an existing drug in the Master Drug Database.
00111003801	0111003801	fileH-093	0.093 mg/mL	Warning	Container ID of imported drug matches an existing drug in the Master Drug Database with changed drug data in key fields.
00111003801		fileH-093	0.093 mg/mL	Warning	Master ID of imported drug maps to an existing drug in the Master Drug Database.

Skip Matches Overwrite Matches Add

The **Type** field indicates one of the following types of conditions, and the **Description** field explains the condition:

- **Addition:** There is no error or warning associated with the record and it will be added to the MDD.

- **Warning:** There is an issue with the record, such as the Container ID matches an existing record but with changed data in key fields. You have the option of adding these records as new records (the **Add** button; displayed only if Container ID was selected in the **ID Mode** list), overwriting the existing records (the **Overwrite Matches** button), or not importing these records (the **Skip Matches** button).
 - **Error:** There is an issue with the record such that it will not be imported. For example, the Master ID of the drug record matches that of a record already in the MDD.
8. To save the results as a Pre-Import Report, click the **Pre-Import Report** button.
You are prompted to download the report file.
 9. Click the **Download** button.
You are prompted to open the report in Excel or save the report as an Excel file. After opening or saving the Excel file, the **Import Results** dialog box is displayed again.



WARNING The Pre-Import Report does not display differences between matching drugs. The Pre-Import Report detects matches between multiple drug entries, but it does not display any differences between the drug entries.



WARNING The Pre-Import Report does not indicate that a drug will not be imported when the second drug name has a semicolon in it. If importing drugs from a CSV file, make sure there are no semicolons in the drug name.

10. To **discard the results and cancel the import**, click the **Discard** button. You are prompted to confirm that you want to discard the import operation.
To accept the results, click the **Accept** button. You are prompted to confirm accepting the import operation. Go to step 10.
11. To confirm the import operation, click the **Yes** button.

When the import is complete, the **Import Results** dialog box displays, showing a list of the drug records that were imported.

Import Results

Total # of drugs with changes that were skipped: 0
Total # of drugs with no changes that were skipped: 0

Master ID	Container ID	Name	Concentration	Description
00002050101	0002050101	Nebcin Pediatric	10 mg/mL	Drug added.
00002050301	0002050301	Nebcin	40 mg/mL	Drug added.
00002050901	0002050901	Nebcin	40 mg/mL	Drug added.
00002140701	0002140701	Quinidine Gluconate	80 mg/mL	Drug added.
00002145001		Glucagon	1 mg	Drug added.
00002145101		Glucagon	1 mg	Drug added.
00002146201		Protamine Sulfate	10 mg/mL	Drug added.
00002149725	0002149725	Kefzol	500 mg	Drug added.
00003095035		Tubocurarine Chloride	3 mg/mL	Drug added.
00003111101		Prohance	279.3 mg/mL	Drug added.
00003111102		Prohance	279.3 mg/mL	Drug added.
00003111103		Prohance	279.3 mg/mL	Drug added.
00003111104		Prohance	279.3 mg/mL	Drug added.
00003255010		Azactam	500 mg	Drug added.
00003255010		Azactam	1 g	Drug added.

X Close Post-Import Report

12. To save the results as a Post-Import Report, click the **Post-Import Report** button.

You are prompted to download the report file.

13. Click the **Download** button.

You are prompted to open the report in Excel or save the report as an Excel file. After opening or saving the Excel file, the **Import Results** dialog box is displayed again.



WARNING If a CSV file has one or more drugs with no drug name, then the Administration Tool will not import those drugs and will not provide information about them in the Post-Import Report. The error message “No Drug Name” is provided in the Pre-Import Report.

14. To close the dialog box and return to the **Formulary** tab, click the **Close** button.

The MDD drug list is updated with the drug records that were imported.

15. If you are not satisfied with the import and want to undo it, click the **Undo** button.

Undo button

The screenshot shows the Codonics SLS Administration Tool interface. The top navigation bar includes the Codonics logo, 'Formulary' (Build formulary for SLS), 'Configuration' (Build SLS Config File), and 'Devices' (Manage SLS Devices). The user is logged in as 'Administrator'. The left sidebar shows 'Master Drug Database' (76) and 'SLS Formulary' (76). The main content area has a toolbar with 'Import', 'Add New', 'Learn Drugs', 'Verify Drugs', and 'Undo' buttons. A search bar is also present. Below the toolbar is a table with the following data:

Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status	Actions
<input type="checkbox"/> Atropine	00517040125	0517040125		0.41 mg/mL		Not Verified	ACTIVE	
<input type="checkbox"/> Atropine		1001925039		0.4 mg/mL		Not Verified	ACTIVE	

You are prompted to confirm undoing the import.



NOTE: Only one level of undo is supported.

For Other Mode, Master ID Column in Import Reports

When the Administration Tool is set to Other mode, Pre-Import and Post-Import Reports will include a column of blank Master IDs for the drug records even though Other mode implies that only Container IDs are being used. However, in Other Mode, the MDD and the formulary drug lists do not include the Master ID column.

Verifying Concentration Values and Units When Importing from a CSV File

The import process does not verify the concentration values and units when importing drug records from a CSV file.

You should confirm the concentrations and units for imported drugs using the Post-Import Report, the formulary, and the Formulary Report.

Potential for Two Drugs with the Same Container ID

Because of the current NDC numbering system, it is possible that two drugs have the same Container ID (for example, a 10-digit NDC).

Therefore, after importing or adding drugs to the MDD, you should sort the MDD drug list by Container ID and determine if there are any duplicates.

- If the duplicates are the same drug, delete one of the entries.
- If the duplicates are different drugs, determine if both drugs will ever be used in the operating room:
 - If they will both be used, add both drug entries to the formulary.
 - If either of the drugs will never be used, the drug that will not be used can be deleted from the formulary.



WARNING Do not delete the drug from the formulary that will not be used unless you are certain that the deleted drug will never be used in the operating room.

Drug Names That Are Too Long

If a drug name is too long (for example, Penicillin G Potassium), it will be truncated on the label. Ellipses will be printed to indicate that the name has been truncated.

If the drug has been added to the formulary, you can check to see if the drug name will fit on a label. Open the drug in the formulary for editing (refer to “Editing a Drug’s Information in the Formulary” on page 4-45) and click the **Drug Classifications** button in the **Editing Formulary Drug(s)** dialog box to display a gallery of the available labels. If the name is too long, a warning message will display indicating that the name might exceed the printable field on the label.

To prevent truncating a drug name, enter it in the Tallman field, which uses a smaller font.

Editing a Single Drug's Information in the MDD



NOTE: If a drug is also in the formulary, editing its information in the MDD will update the information in the formulary as well.

In addition to editing a single drug's information, as explained here, you can also edit multiple drugs at a time. For more information, refer to “Editing Multiple Drugs in the MDD” on page 5-8.



1. With the MDD drug list displayed, click the drug record's Edit icon.

To edit a single drug's information in the MDD

The screenshot shows the CODONICS MDD interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. Below this is a toolbar with 'Import', 'Add New', 'Learn Drugs', 'Verify Drugs', and 'Undo'. A search bar is present on the right. The main content area displays a table of drugs. The 'Atropine' drug record is selected, and the 'Edit icon' (a pencil) is highlighted with a red arrow and the text 'Edit icon'.

Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status	Actions
<input type="checkbox"/> Atropine	00517040125	0517040125		0.41 mg/mL		Not Verified	ACTIVE	 
<input type="checkbox"/> Atropine		1001925039		0.4 mg/mL		Not Verified	ACTIVE	 

The **Editing Master Drug(s)** dialog box displays.

Editing Master Drug(s) Fentanyl	
<input type="checkbox"/> Combination Drug	
Master ID:	Enter 11 Digit ID
Container ID:	1001903839
Name:	Fentanyl -
Tallman:	fentaNYL
Concentration:	50 mcg/mL - Select Number Select Units
Route:	Enter Route
Status:	ACTIVE
<input type="button" value="X Cancel"/> <input type="button" value="✓ Save"/>	

Editing Master Drug(s) — Non-Combination Drug

Editing Master Drug(s) Bupivacaine-Epinephrine

Combination Drug

Master ID: 00409904201

Container ID: 0409904201

Name: Bupivacaine - Epinephrine

Tallman: Bupivacaine-EPINEPHrine

Concentration: 0.25 % - 1:200,000 Ratio

Route: Enter Route

Status: ACTIVE

Editing Master Drug(s) — Combination Drug

2. Edit the information as needed.

For important notes about changing drug information, refer to “Notes About Changing Drug Information in the MDD” on page 4-38.

3. Click the **Save** button to save your changes.

A confirmation dialog box displays. In addition to the information you entered, the dialog could include any conflicts or errors for this drug.

Edit Drug	
Confirm: Edit this drug? <i>This will also update the drug in the formulary.</i>	
Master ID	
Container ID	1001903839
Name	Fentanyl
Tallman	fentaNYL
Concentration	50 mcg/mL
Route	
Status	ACTIVE
<input type="checkbox"/> Yes <input type="checkbox"/> No	

4. Click the **Yes** button to confirm the changes to the drug information.

Click the **No** button to return to the **Editing Master Drug(s)** dialog box.

If you click the **Yes** button and the MDD is in US NDC mode, the system also checks that the entered Master ID is unique and that it properly maps to the Container ID if one is entered.

- If the Master ID validation fails, the **Editing Master Drug(s)** dialog box displays again so that you can fix the Master ID and/or Container ID entries. It includes a message that explains the error.
- If the validation passes, the drug record is updated.

Notes About Changing Drug Information in the MDD

- For information about the length of the drug name, refer to “Drug Names That Are Too Long” on page 4-33.
- If you change the **Combination Drug** setting, a warning message is displayed.
- If a drug is in the formulary and you change its settings in the MDD, a warning message is displayed indicating that the settings in the formulary, such as audio, dilutions, and the drug classification template, might no longer be correct. For example, if you change the drug name, the audio setting in the formulary might no longer be correct. You should go to the formulary, verify the drug entry’s settings, and modify them as needed. Refer to “Editing a Drug’s Information in the Formulary” on page 4-45.
- If a drug is in the formulary and you change its **Combination Drug** setting in the MDD, the drug classification template in the formulary will be set to none. A warning message is displayed indicating that the drug classification template setting in the formulary for this drug must be updated, and that other settings such as audio and dilutions might no longer be correct. You will have to go to the formulary and select a template for the drug before a formulary package can be created. You should also verify that the other formulary settings are still correct. For more information about selecting a drug classification template, refer to Table 4-2 on page 4-48.

Adding Drugs to the Formulary

To specify which drugs will be available on an SLS, you add drugs in the MDD to the formulary. You can then create a formulary update package, which can be deployed to multiple SLSs at your hospital.

You can add single drugs from the MDD to the formulary, or multiple drugs at one time.

Adding a Single Drug to the Formulary



To add a single drug to the formulary

1. With the MDD drug list displayed, click the drug record's Add to Formulary switch icon to its On state.

Add to Formulary switch icon

Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status	Actions
Atropine	00517040125	0517040125		0.41 mg/mL		Not Verified	ACTIVE	  
Atropine		1001925039		0.4 mg/mL		Not Verified	ACTIVE	  



Formulary switch:
Off state



Formulary switch:
On state

The drug is added to the formulary.

2. Click the **SLS Formulary** button to see that the drug was added to the formulary drug list.

SLS Formulary button

The screenshot shows the CODONICS Formulary interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The left sidebar has 'Master Drug Database' and 'SLS Formulary' buttons. The 'SLS Formulary' button is highlighted in yellow. Below the sidebar, there are buttons for 'Promote To Test/Review', 'Demote To Under Development', 'Create Package', 'Create Report', and 'Undo'. A table of drugs is displayed below these buttons.

Master ID	Container ID	Name	Concentration	Tallman	Template	Message	Actions
<input type="checkbox"/>	00517040125	Atropine	0.4 mg/mL		Miscellaneous White L		
<input type="checkbox"/>	1001925039	Atropine	0.4 mg/mL		Miscellaneous White L		
<input type="checkbox"/>	00409904201	Bupivacaine-Epineph	0.25 % 1:200,00	Bupivacaine-EPINEPH	Miscellaneous White C		

3. If you want to undo the addition of the drug to the formulary, click the **Undo** button.

Undo button

The screenshot shows the same CODONICS Formulary interface as above. The 'Undo' button in the top toolbar is highlighted with a vertical line and the label 'Undo button'.

You are prompted to confirm undoing the addition.



NOTE: Only one level of undo is supported.

Adding a Batch of Drugs to the Formulary



To add a batch of drugs to the formulary

1. With the MDD drug list displayed, select the check box for each drug to be added to the formulary.

Drug selection check boxes

The screenshot shows the Codonics SLS Administration Tool interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The left sidebar shows 'Master Drug Database' (76) and 'SLS Formulary' (71). The main area displays a table of drugs with columns for Drug Name, Master ID, Container ID, Tallman, Concentration, Route, Verification, Status, and Actions. A callout box highlights the 'Add to Formulary' button at the bottom of the table, which also includes a 'Delete Selected' button. The status bar at the bottom indicates 'Drugs selected: 4'.

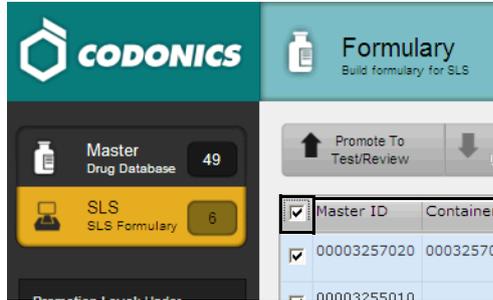
Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status	Actions
<input checked="" type="checkbox"/> Atropine	00517040125	0517040125		0.4 mg/mL		Not Verified	ACTIVE	[Icons]
<input checked="" type="checkbox"/> Atropine		1001925039		0.4 mg/mL		Not Verified	ACTIVE	[Icons]
<input checked="" type="checkbox"/> Bupivacaine-Epineph	00409904201	0409904201	Bupivacaine-EP	0.25 % 1:200		Not Verified	ACTIVE	[Icons]
<input checked="" type="checkbox"/> Bupivacaine-Epineph	00409904501	0409904501	Bupivacaine-EP	1 % 1:200,00	Injectable	Not Verified	ACTIVE	[Icons]
<input type="checkbox"/> Cefazolin		6050507495	ceFAZolin	1 g		Verified X	ACTIVE	[Icons]
<input type="checkbox"/> Cefazolin		0781945170	ceFAZolin	1 g		Not Verified	ACTIVE	[Icons]
<input type="checkbox"/> Cisatracurium		0074437805		2 mg/mL		Verified X	ACTIVE	[Icons]
<input type="checkbox"/> Clindamycin		0409405001		150 mg/mL		Verified X	ACTIVE	[Icons]
<input type="checkbox"/> Dexamethasone	00517490125	0517490125		4 mg/mL		Not Verified	ACTIVE	[Icons]
<input type="checkbox"/> Dexamethasone	63323016505	6332316505		4 mg/mL		Not Verified	ACTIVE	[Icons]
<input type="checkbox"/> Dexmedetomidine		0409163802		100 mcg/mL	Injectable	Verified X	ACTIVE	[Icons]
<input type="checkbox"/> Diphenhydramine		0641037621	diphenhydrAMI	50 mg/mL		Not Verified	ACTIVE	[Icons]
<input type="checkbox"/> Ephedrine		1747851500				Verified X	ACTIVE	[Icons]

Add to Formulary button



TIP: Multiple drug selections

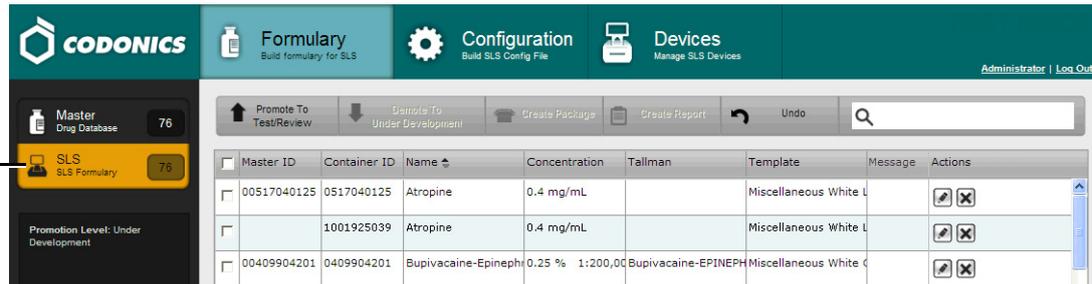
To select a range of drugs, select the first entry and then Shift-click the last entry in the range. If you want to select all of the drugs, or clear them all to reselect them, select or clear the check box in the column header row (shown below).



Sets or clears all drug record check boxes

2. Click the **Add to Formulary** button at the bottom of the screen.
The drugs are added to the formulary.
3. Click the **SLS Formulary** button to confirm that the drugs were added to the formulary drug list.

SLS Formulary button



4. If you want to undo the addition of the drugs to the formulary, click the **Undo** button.

Undo button

The screenshot shows the Codonics SLS Administration Tool interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The 'Formulary' section is active, displaying a table of drugs. The 'Undo' button is highlighted in the top toolbar, with a line pointing to it from the label 'Undo button' above. The table contains the following data:

Master ID	Container ID	Name	Concentration	Tallman	Template	Message	Actions
<input type="checkbox"/>	00517040125	Atropine	0.4 mg/mL		Miscellaneous White U		
<input type="checkbox"/>	1001925039	Atropine	0.4 mg/mL		Miscellaneous White U		
<input type="checkbox"/>	00409904201	Bupivacaine-Epineph	0.25 % 1:200,00	Bupivacaine-EPINEPH	Miscellaneous White C		

You are prompted to confirm undoing the addition.



NOTE: Only one level of undo is supported.

Formulary Drug List

The Formulary drug list accommodates combination drug entries in a manner similar to the MDD drug list, as described in “Adding a Combination Drug to the MDD” on page 4-6. In addition:

- There are two columns for the drug ingredient audio files. **Audio** displays the audio file name for the first ingredient, and **Audio 2** displays the audio file name for the second ingredient.

Tallman	Template	Message	Dilution Status	Dilutions	Diluents	Audio	Audio 2	Actions
Bupivacaine-EPINEPHrine	Miscellaneous White c		Not Allowed		Sterilized Water,	bupivacaine.wav	epinephrine.wav	 

- For non-combination drugs, the **Audio 2** column includes the entry N/A (that is, not applicable).

Editing a Drug's Information in the Formulary

In the formulary drug list, you can edit various additional parameters for each drug. These parameters are specific to the use of the drug and the hospital's policies within the SLS. They are listed and described in Table 4-2 on page 4-48.



NOTE: The concentration is not in the audio file but is included on the SLS based on the text entered in the Concentration field in the formulary.



1. With the formulary drug list displayed, click the drug record's Edit icon.

To edit a drug's information in the formulary

The screenshot shows the Codonics SLS Administration Tool interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The main content area displays a table of drugs in the formulary. The table has the following columns: Master ID, Container ID, Name, Concentration, Tallman, Template, Message, and Actions. The first row shows a drug with Master ID 00517040125, Container ID 0517040125, Name Atropine, and Concentration 0.4 mg/mL. The Actions column for this row contains an edit icon (a pencil) and a delete icon (an X). An arrow labeled 'Edit icon' points to the pencil icon.

Master ID	Container ID	Name	Concentration	Tallman	Template	Message	Actions
00517040125	0517040125	Atropine	0.4 mg/mL		Miscellaneous White L		[Edit] [X]
	1001925039	Atropine	0.4 mg/mL		Miscellaneous White L		[Edit] [X]
00409904201	0409904201	Bupivacaine-Epineph	0.25 % 1:200,00	Bupivacaine-EPINEPH	Miscellaneous White C		[Edit] [X]

The **Editing Formulary Drug(s)** dialog box displays.

Editing Formulary Drug(s) Atropine

Atropine

Prepared: 12/13/2011 04:23
Expires: 12/14/2011 04:23

By: [Barcode]

0.41 mg/mL

Template: Anticholinergic Agents [v] Drug Classifications [i]

Message: []

Audio: atropine.wav [v] [▶ Play]

[] No Audio (Silence) [v] [▶ Play]

Expire Time: 24 [] Hours

Dilution Status: Not Allowed [v]

Dilutions: [+ Edit]

Diluents:

- Sterilized Water
- Custom 1 [pencil]
- Normal Saline
- Custom 2 [pencil]
- DSW
- Custom 3 [pencil]

[X] Cancel [v] Save

Editing Formulary Drug(s) — Non-Combination Drug

Editing Formulary Drug(s) Bupivacaine-Epinephrine

Bupivacaine-EPINEPHrine
 0.25 % 1:200,000
 Prepared: 12/13/2011 04:07 By:
 Expires: 12/14/2011 04:07



Template:	Miscellaneous White Combination Label	Drug Classifications
Message:	<input type="text"/>	
Audio:	bupivacaine.wav	▶ Play
	epinephrine.wav	▶ Play
Expire Time:	24	Hours
Dilution Status:	Not Allowed	
Dilutions:	+ Edit	
Diluents:	Diluents are not editable for combination drugs.	
Miscellaneous:	<input type="text"/>	

Editing Formulary Drug(s) — Combination Drug

2. Edit the information as needed.



CAUTION The use of label colors is intended only as an aid in the identification of drug groups and does not absolve the user from the duty of reading the label and correctly identifying the drug prior to use.

The fields are described in Table 4-2.

Table 4-2. Formulary Information

Field	Description
-------	-------------

Template

The drug classification template to use for this drug. When adding drugs to the formulary from the MDD, the default template for all non-combination drugs is Miscellaneous White Label and the default template for all combination drugs is Miscellaneous White Combination.

Because configuring the printed label parameters for every drug in the formulary would be tedious, these properties are grouped into named drug classification templates. Instead of individually assigning the label properties to each drug, you can select a drug classification template for the drug (for example, select the Induction Agent profile for Propofol).

Drug classification templates provide a way to assign a set of label properties that will be used when the drug's syringe label is printed. These properties specify what the printed label will look like.

To display a gallery of the available labels to help you decide which template to choose (shown below), click the **Drug Classifications** button. Table 4-3 on page 4-53 lists the available syringe label templates.

Name	Preview	Actions
Anticholinergic Agents		
Epinephrine		
Heparin		
Hypotensive Agents		

For non-combination drugs, the **Template** list includes only drug classification templates that are compatible with non-combination drugs.

Table 4-2. Formulary Information (Continued)

Field	Description
<p>Template <i>(continued)</i></p>	<p>For combination drugs, the Template list includes only drug classification templates that are compatible with combination drugs. There are two standard combination drug classification templates: Miscellaneous White Combination Label and Narcotic/Tranquilizer Combination.</p> <p>For combination drugs, the Drug Name portion of the label takes the following form unless Tallman is specified for the drug:</p> <ul style="list-style-type: none"> • drugname1-drugname2 • concentration1-concentration2 <p>If a Tallman entry is specified for the drug, then the Tallman entry is used in place of Drug Name entries, so that you can control what will be printed for the drug name.</p> <div data-bbox="782 686 1194 843" style="border: 1px solid black; padding: 5px; margin: 10px 0;">  </div> <p>You can create drug classification templates based on existing templates but with custom colors.</p>
<p>Message</p>	<p>Message text for the drug.</p> <p>NOTE: A message that is too long (for example, "WARNING: This is a Paralyzing Agent") will be truncated on a label. Ellipses will be printed to indicate that the message has been truncated. You should shorten the message to prevent the truncation.</p>

Table 4-2. Formulary Information (Continued)

Field	Description
Audio	<p>Specifies the audio WAV file to use when announcing the drug's name. The system will automatically select an audio file if one with a file name that matches the drug name can be found.</p> <p>Each audio file defaults to a matching drug name if it exists; otherwise, the audio file defaults to No Audio (Silence).</p> <p>The Audio entry has two lists. The first list is for the first ingredient of a combination drug, and the second list is for the second ingredient. Each audio list has its own Play button to play the audio file selected.</p> <p>For non-combination drugs, the second audio list is disabled.</p>
 CAUTION	You must always verify and ensure that the auto-audio selection specified for each drug is accurate and correct. The auto-audio selection is a system convenience.
Expire Time	<p>The number of hours after which the syringe use will have expired.</p> <p>If 0 is entered for expiration time, the label will include "Expires:" with a blank line. This alerts the user to manually enter the correct expiration time, or to tell their SLS administrator to enter the correct expire time in the formulary drug record.</p>
Dilution Status	Specifies whether the SLS user will be allowed to select the dilution for this drug (Allowed, Not Allowed), or whether the user must select a dilution (Required).

Table 4-2. Formulary Information (Continued)

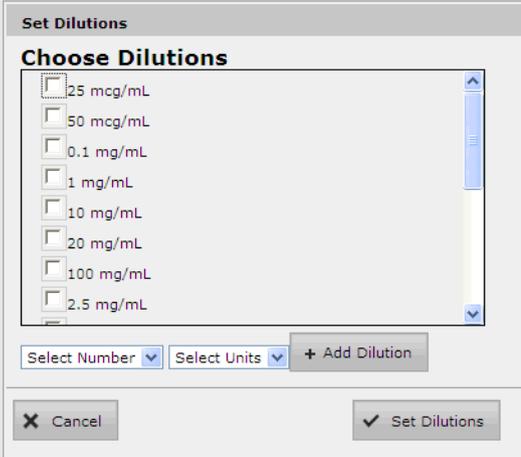
Field	Description
Dilutions	<p>Select the check box to allow other dilution selections than the default settings.</p> <p>To add dilution choices, click the Edit button. The Set Dilutions dialog box displays.</p> <div data-bbox="777 425 1298 882"></div> <p>For each choice, select a dilution value and a unit, and then click the Add Dilution button. When you are finished adding dilutions, click the Set Dilutions button.</p> <p>Because specifying dilutions for combination drugs is not supported, the Dilution Status, Dilutions, and Diluents fields are disabled. The Diluents field is replaced with the text “Diluents are not editable for combination drugs.”</p>

Table 4-2. Formulary Information (Continued)

Field	Description
Diluents	<p>A list of the available diluents for the selected template.</p> <p>To add a custom diluent, refer to “Adding a Custom Diluent” on page 4-66.</p> <p>NOTE: <i>Combination drugs in the formulary will display, by default, the five standard diluents (that is, Sterilized Water, Normal Saline, D5W, Ringers Lactate, and Other). However, dilutions for combination drugs are not supported.</i></p> <p>NOTE: <i>The Administration Tool allows a formulary package to be created when Required is selected for the Dilution Status option and then only Other is selected as a diluent.</i></p>
Miscellaneous	Miscellaneous text to be included in the formulary and in the formulary report for additional information about the drug.

3. Click the **Save** button to save your changes.

Syringe Label Templates

Table 4-3 lists samples of the available syringe label templates.

Table 4-3. Sample Syringe Label Templates

Template Name	Sample
Induction Agents	 <p>Propofol</p> <p>Prepared: 04/04/2011 12:20 By: BES Expires: 04/04/2011 18:20</p> <p>10 mg/mL</p>
Tranquilizers	 <p>Midazolam</p> <p>Preservative Free</p> <p>Prepared: 04/04/2011 15:42 By: BES Expires: 04/05/2011 15:42</p> <p>1 mg/mL</p>
Tranquilizer Antagonists	 <p>Flumazenil</p> <p>Prepared: 04/05/2011 10:38 By: BES Expires: 04/06/2011 10:38</p> <p>0.1 mg/mL</p>
Muscle Relaxants	 <p>Vecuronium</p> <p>Paralyzing Agent Normal Saline</p> <p>Prepared: 04/04/2011 15:42 By: BES Expires: 04/05/2011 15:42</p> <p>*DILUTION* 1 mg/mL</p>

Table 4-3. Sample Syringe Label Templates (Continued)

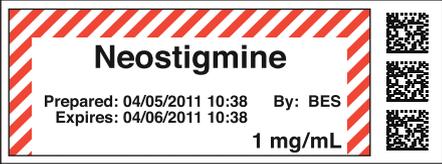
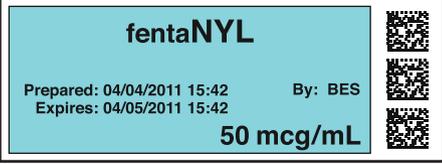
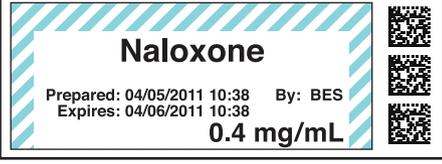
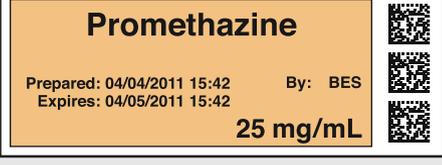
Template Name	Sample
Relaxant Antagonists	 <p>Neostigmine Prepared: 04/05/2011 10:38 By: BES Expires: 04/06/2011 10:38 1 mg/mL</p>
Narcotics	 <p>fentaNYL Prepared: 04/04/2011 15:42 By: BES Expires: 04/05/2011 15:42 50 mcg/mL</p>
Narcotic Antagonists	 <p>Naloxone Prepared: 04/05/2011 10:38 By: BES Expires: 04/06/2011 10:38 0.4 mg/mL</p>
Major Tranquilizers	 <p>Promethazine Prepared: 04/04/2011 15:42 By: BES Expires: 04/05/2011 15:42 25 mg/mL</p>
Narcotic/Tranquilizer Combinations	 <p>Meperidine - Promethazine 25 mg/mL 25 mg/mL Prepared: 10/08/2011 10:22 By: BES Expires: 10/09/2011 10:22</p>

Table 4-3. Sample Syringe Label Templates (Continued)

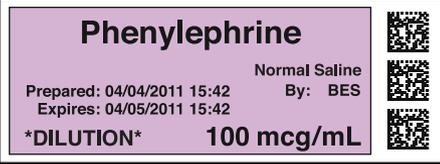
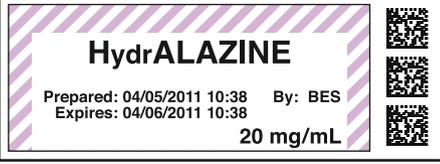
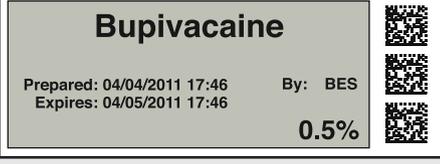
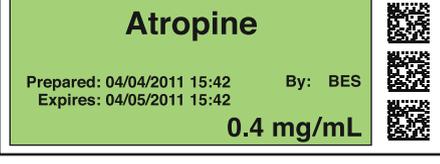
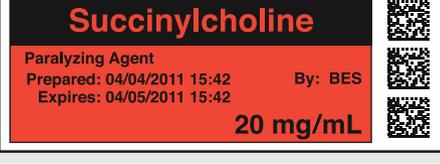
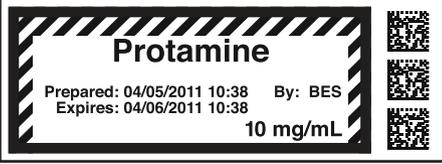
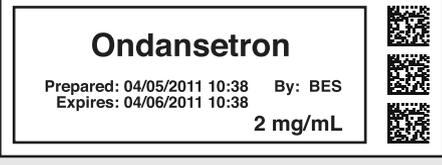
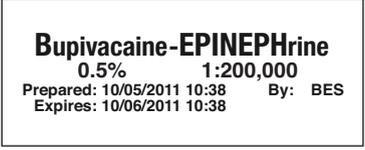
Template Name	Sample
Vasopressors	 <p>Phenylephrine Normal Saline Prepared: 04/04/2011 15:42 By: BES Expires: 04/05/2011 15:42 *DILUTION* 100 mcg/mL</p>
Hypotensive Agents	 <p>HydrALAZINE Prepared: 04/05/2011 10:38 By: BES Expires: 04/06/2011 10:38 20 mg/mL</p>
Local Anesthetics	 <p>Bupivacaine Prepared: 04/04/2011 17:46 By: BES Expires: 04/05/2011 17:46 0.5%</p>
Anticholinergic Agents	 <p>Atropine Prepared: 04/04/2011 15:42 By: BES Expires: 04/05/2011 15:42 0.4 mg/mL</p>
Succinylcholine	 <p>Succinylcholine Paralyzing Agent Prepared: 04/04/2011 15:42 By: BES Expires: 04/05/2011 15:42 20 mg/mL</p>

Table 4-3. Sample Syringe Label Templates (Continued)

Template Name	Sample
Epinephrine	 <p>EPINEPHrine</p> <p>Prepared: 04/04/2011 15:42 By: BES Expires: 04/05/2011 15:42</p> <p>1 mg/mL</p>
Protamine	 <p>Protamine</p> <p>Prepared: 04/05/2011 10:38 By: BES Expires: 04/06/2011 10:38</p> <p>10 mg/mL</p>
Heparin	 <p>Heparin</p> <p>Prepared: 10/05/2011 10:38 By: BES Expires: 10/06/2011 10:38</p> <p>10,000 Units/mL</p>
Blank White Label	 <p>Ondansetron</p> <p>Prepared: 04/05/2011 10:38 By: BES Expires: 04/06/2011 10:38</p> <p>2 mg/mL</p>
Dual Blank White Label	 <p>Bupivacaine-EPINEPHrine</p> <p>0.5% 1:200,000</p> <p>Prepared: 10/05/2011 10:38 By: BES Expires: 10/06/2011 10:38</p>

Creating a Drug Classification Template with Custom Colors

You can create a new drug classification template that is based on one of the standard templates by customizing the background, line, and text colors.



WARNING Creation of user-defined labels will deviate from ISO and ASTM standards governing user-applied labels. End users must take responsibility for confirming the legibility and usability of the resultant labels.



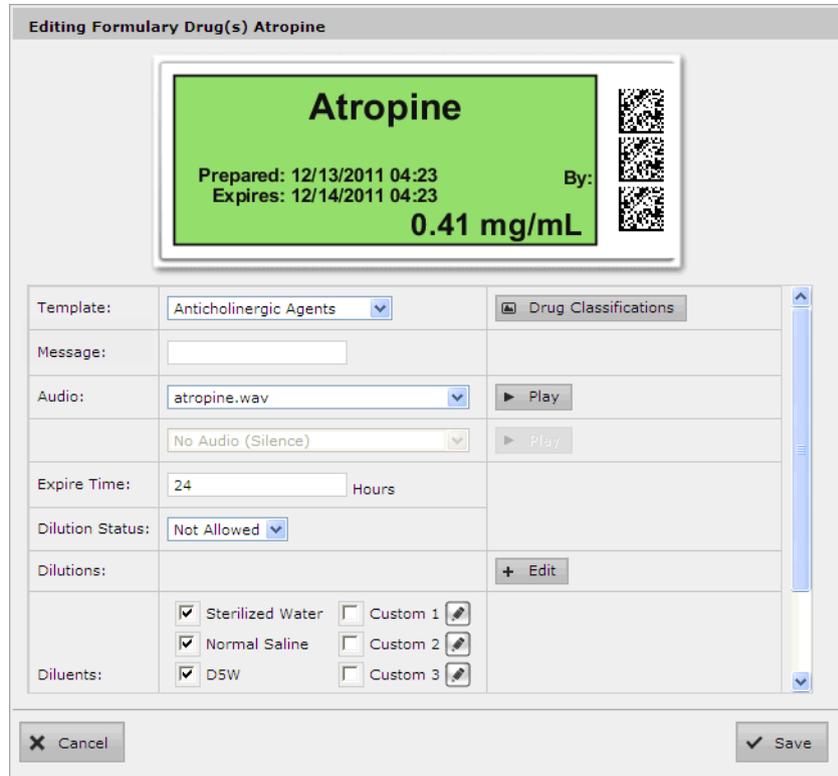
NOTE: *Standard drug classification templates cannot be edited.*



To create a drug classification template with custom colors

1. With the Formulary drug list displayed, click a drug record Edit () icon.

The **Editing Formulary Drug(s)** dialog box displays.



Editing Formulary Drug(s) Atropine

Atropine

Prepared: 12/13/2011 04:23
Expires: 12/14/2011 04:23
By: 
0.41 mg/mL 


Template: Anticholinergic Agents   Drug Classifications 

Message:

Audio: atropine.wav   Play

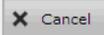
  Play

Expire Time: 24 Hours

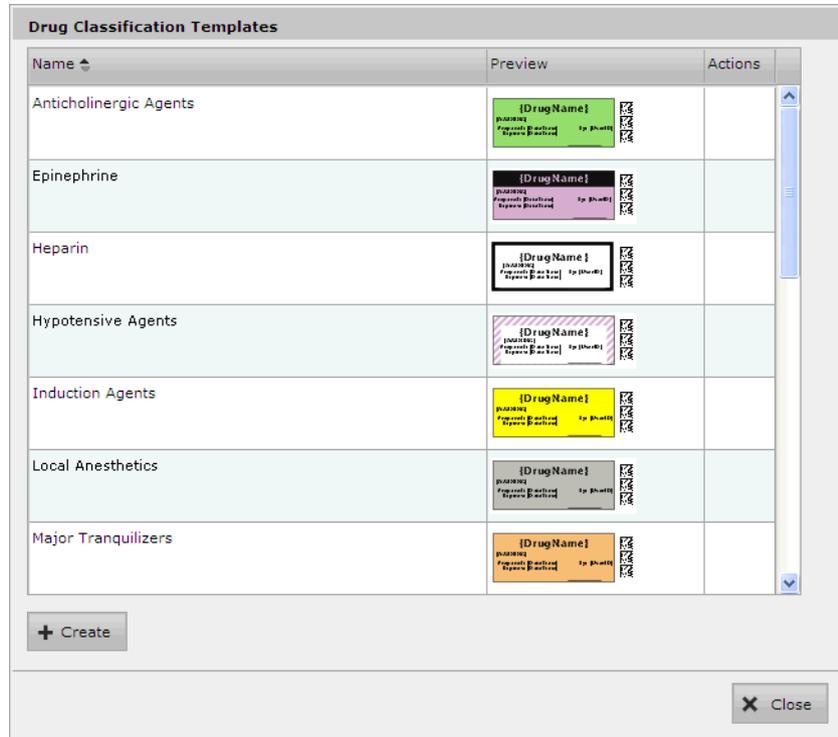
Dilution Status: Not Allowed 

Dilutions:  + Edit

Diluents: Sterilized Water Custom 1 
 Normal Saline Custom 2 
 DSW Custom 3 

 Cancel 

2. Click the **Drug Classifications** button that is to the right of the **Template** list. The **Drug Classification Templates** dialog box displays.



3. Click the **Create** button.

The **Create Drug Classification Template** dialog box displays.

Create Drug Classification Template

WARNING: Creation of user defined labels will deviate from ISO and ASTM standards governing user applied labels. End-users must take responsibility for confirming legibility and usability of the resultant labels.

{DrugName}
{WARNING}
Prepared: {DateTime} By: {UserID}
Expires: {DateTime}

Name:	<input type="text"/>
File Name:	syringe-template-1.svg
Background Color:	Select a color
Primary Stripe Color:	Select a color
Secondary Stripe Color:	Select a color
Label Pattern:	Solid
Border Color:	Select a color
Text Color:	Select a color

4. In the **Name** field, enter a name for the new custom template.

5. In the **File Name** list, select one of the standard templates on which to base the new template.

Standard templates are provided for specific drug categories, as listed in the following table.

Table 4-4. Standard Templates for Drug Categories

Standard Template	Drug Categories
syringe-template-1	Induction Agents, Tranquilizers, Muscle Relaxants, Narcotics, Major Tranquilizers, Vasopressors, Local Anesthetics, Anticholinergic Agents
syringe-template-2	Antagonists
syringe-template-3	Succinylcholine, Epinephrine
syringe-template-4	Heparin, Protamine
syringe-template-5	Combination drugs

A preview of the selected label is displayed at the top of the dialog box. The lists of elements whose color you can select are enabled, depending on the standard template that you selected.

6. Select the color for each of the enabled label elements.
The label preview updates with each color selection.

Create Drug Classification Template

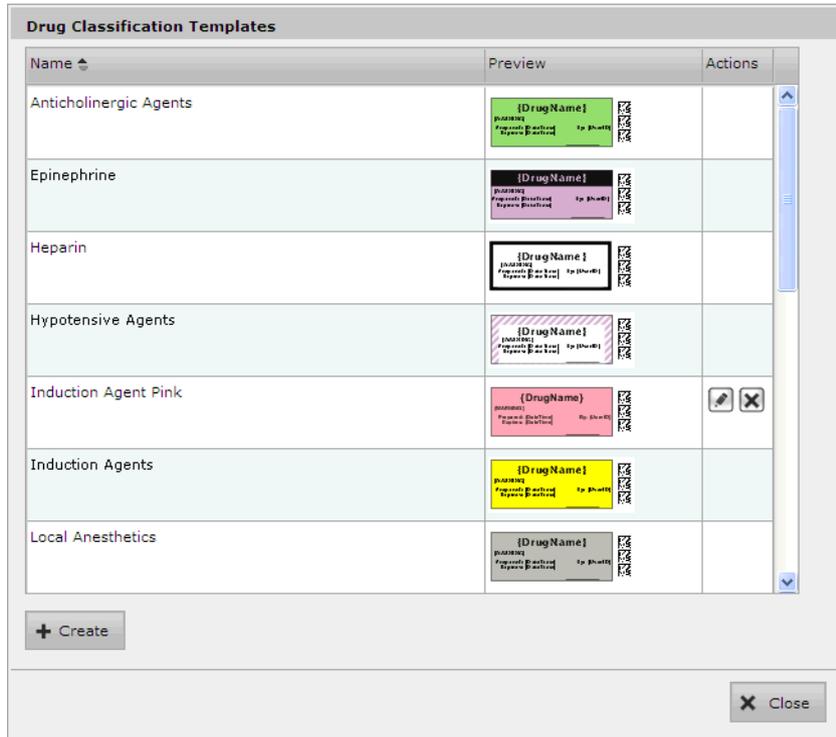
WARNING: Creation of user defined labels will deviate from ISO and ASTM standards governing user applied labels. End-users must take responsibility for confirming legibility and usability of the resultant labels.



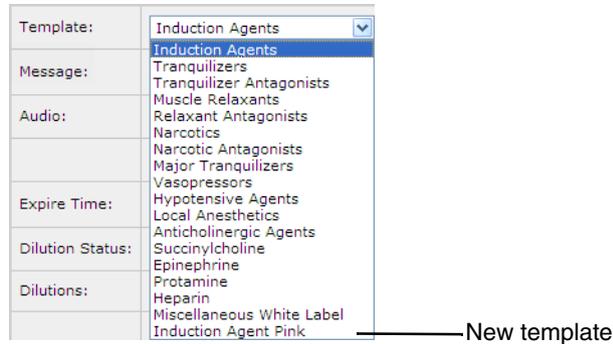
Name:	Induction Agent Pink
File Name:	syringe-template-1.svg
Background Color:	#FFAEB9
Primary Stripe Color:	Select a color
Secondary Stripe Color:	Select a color
Label Pattern:	Solid
Border Color:	Select a color
Text Color:	#191919

7. Click the **Create** button to save the new template.

The new template is added to the list in the **Drug Classification Templates** dialog box.



- Click the **Close** button to return to the **Editing Formulary Drug(s)** dialog box. The new template is now included in the **Template** list.



Editing a Template with Custom Colors

You can edit a template with custom colors that you have already created.



WARNING Editing the custom label will change the custom label for all drugs that use this label in the formulary. To identify all drugs that use this label template, sort the Formulary drug list by Template.

Template column

Tallman	Template	Message	Dilution Status	Dilutions	Diluents	Audio	Audio 2	Actions
Bupivacaine-EPINEPHrine	Miscellaneous White C		Not Allowed		Sterilized Water,	bupivacaine.wav	epinephrine.wav	



To edit a template with custom colors

1. On the **Drug Classification Templates** dialog box, click the Edit () icon of the template that you want to edit.

The **Edit Drug Classification Template** dialog box displays.

The dialog box is titled "Edit Drug Classification Template Induction Agent Pink". It contains a warning message in a yellow box: "WARNING: Creation of user defined labels will deviate from ISO and ASTM standards governing user applied labels. End-users must take responsibility for confirming legibility and usability of the resultant labels. Editing the custom label will change the custom label for all drugs that use this label in the formulary. In order to identify all drugs that use this label template, sort in the SLS Formulary on Template." Below the warning is a preview of a pink label with the text: "{DrugName}", "{WARNING}", "Prepared: {DateTime}", "Expires: {DateTime}", and "By: {UserID}". To the right of the label are three QR code icons. Below the preview is a form with the following fields: "Name:" (Induction Agent Pink), "File Name:" (syringe-template-1.svg), "Background Color:" (#FFAEB9), "Primary Stripe Color:" (Select a color), "Secondary Stripe Color:" (Select a color), "Label Pattern:" (Solid), "Border Color:" (Select a color), and "Text Color:" (#191919). At the bottom are "Cancel" and "Update" buttons.

2. After making your changes, click the **Update** button.
3. The template colors are updated.

Deleting a Template with Custom Colors

You can delete a template with custom colors that you have created.



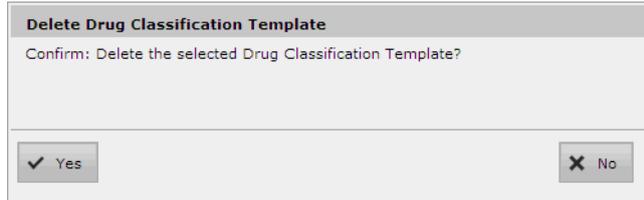
NOTE: Standard drug classification templates cannot be deleted.



To delete a template with custom colors

1. On the **Drug Classification Template** dialog box, click the **Delete** () icon of the template that you want to delete.

You are prompted to confirm the deletion of the template.



Delete Drug Classification Template

Confirm: Delete the selected Drug Classification Template?

✓ Yes

✗ No

2. Click the **Yes** button to confirm the deletion, or the **No** button to cancel it.

Adding a Custom Diluent

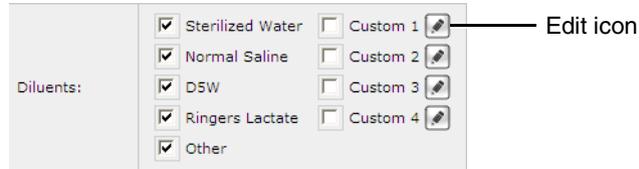


NOTE: Editing the name of a custom diluent is a global change in the formulary. Therefore, changing the specific custom diluent name for one drug changes the specific custom diluent name for all drugs in the formulary. For example, naming the Custom 1 diluent to **Lidocaine 1%** for Ketamine sets the custom diluent field to Lidocaine 1% for all drugs in the formulary that use Custom 1 diluent. If the Custom 1 field was checked for another drug, it will remain checked but the diluent name will be changed.



To add a custom diluent when editing a formulary drug

1. With the **Editing Formulary Drug(s)** dialog box displayed, click the custom diluent's Edit icon.

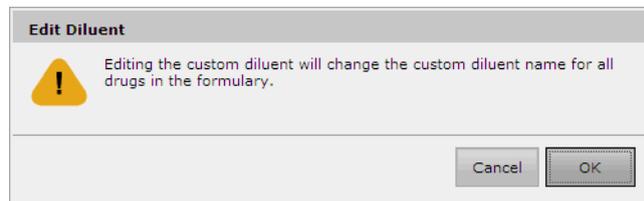


The **Edit Diluent** dialog box displays.



2. In the **Value** field, enter the diluent's name, then click the **Save** button.

You are cautioned that changing the custom diluent name will change it for all drugs in the formulary.



3. Click **OK** to confirm the name change.

The name of the custom diluent is updated.

Diluents:	<input checked="" type="checkbox"/> Sterilized Water	<input type="checkbox"/> Lidocaine	
	<input checked="" type="checkbox"/> Normal Saline	<input type="checkbox"/> Custom 2	
	<input checked="" type="checkbox"/> D5W	<input type="checkbox"/> Custom 3	
	<input checked="" type="checkbox"/> Ringers Lactate	<input type="checkbox"/> Custom 4	
	<input checked="" type="checkbox"/> Other		

Promoting the Formulary

You can promote and demote the formulary between the three formulary promotion levels:

- Under Development
- Test/Review
- Approved



NOTE: It is recommended that a review board of qualified individuals review new formulary drug entries and either approve or deny the promotion of the formulary to Approved prior to actually changing the formulary promotion level to Approved in the Administration Tool. The Formulary Report can be used to review the status of the formulary as part of this approval process. For more information about this report, refer to “Creating a Formulary Report” on page 4-70.

For more information about these promotion levels, refer to “Formulary Promotion Levels” on page 2-6.

The promotion/demotion buttons in the **Formulary** tab change, depending on the current promotion level of the formulary. For example, if the formulary is at the Test/Review level, then the two buttons are **Promote to Approved** and **Demote to Under Development**.

To be able to create a formulary update package, the formulary must be at the Test/Review or Approved level. If a formulary at the Test/Review level is installed in an SLS, the warning message “Test Label - Demo Use Only” will be printed on all drug labels.



To promote/
demote the
Formulary

1. With the formulary drug list displayed, click the appropriate promotion or demotion button.

Promotion
and demotion
buttons

Master ID	Container ID	Name	Concentration	Tallman	Template	Message	Actions
<input type="checkbox"/>	00517040125	0517040125	Atropine	0.4 mg/mL		Miscellaneous White L	
<input type="checkbox"/>		1001925039	Atropine	0.4 mg/mL		Miscellaneous White L	
<input type="checkbox"/>	00409904501	0409904501	Bupivacaine-Epineph	1 % 1:200,000	Bupivacaine-EPINEPH	Miscellaneous White C	
<input type="checkbox"/>		0781945170	Cefazolin	1 g	ceFAZolin	Miscellaneous White L	
<input type="checkbox"/>		6050507495	Cefazolin	1 g	ceFAZolin	Miscellaneous White L	
<input type="checkbox"/>		0074437805	Cisatracurium	2 mg/mL		Miscellaneous White L	

A dialog box displays, explaining the results of the change in promotion level if you choose to proceed.

Promote Formulary

This will lock the MDD and the formulary, preventing any editing unless the formulary is demoted back to "Under Development". Demoting back to "Under Development" will increment the formulary version.

2. Click the **OK** button to proceed with the promotion/demotion.

If the formulary has been demoted, the formulary version is incremented.

Creating a Formulary Report

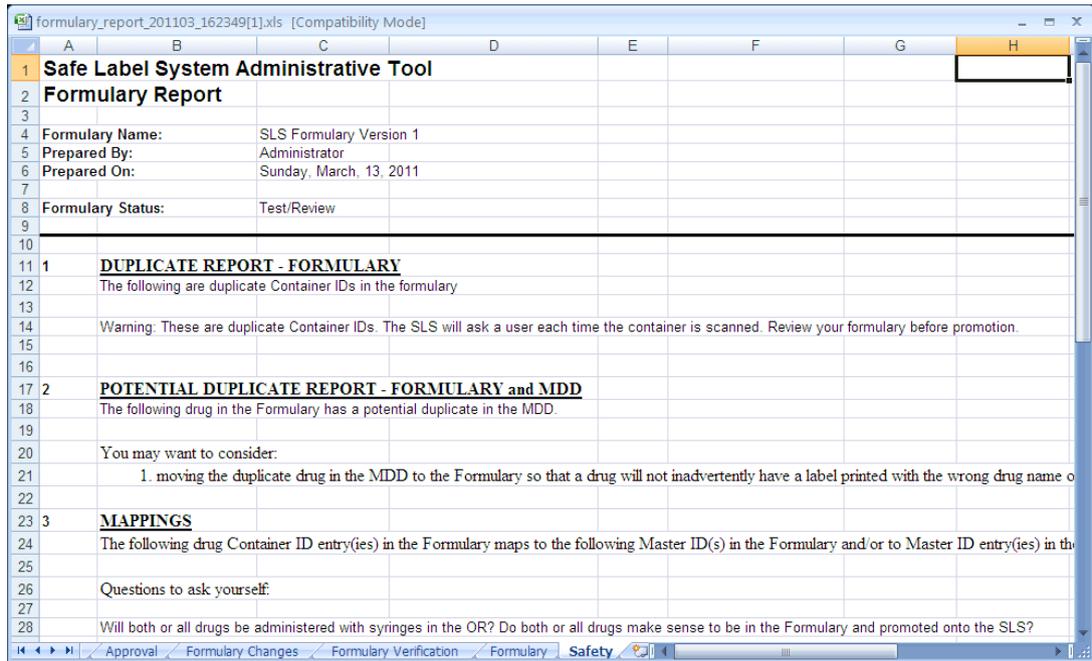
Prior to the formulary being moved from the Test/Review to the Approved level, you must generate a Formulary Report. The report can be used during the approval process of the formulary content that takes place before the formulary is deployed to SLSs.



WARNING The customer must carefully and thoroughly review the Formulary Report to ensure that each and every drug in the formulary is correct before deploying the formulary to an SLS. For additional information, refer to “Reviewing the Formulary Report for Duplicates” on page 4-73.

You can also generate a Formulary Report when the formulary is at the Approved level.

The report format is an Excel spreadsheet. A sample is shown below.



There are several worksheets in the report:

- **Approval.** Includes an area for a Management Review Board to indicate whether they approve or do not approve the contents of the formulary.
- **Formulary Changes.** A listing of the changes made to the formulary since the prior version of it.
- **Formulary Verification.** A list of the drugs in the formulary with their verification status indicated.

- **Formulary.** A list of the drugs in the formulary with all MDD and formulary database field entries included.
- **Safety.** A list of potential duplicate drug records in the formulary or different drugs with the same Container ID. Also includes warnings when concentration units do not match dilution units.



WARNING Duplicate Container IDs in the formulary are reported, but the duplicates are not necessarily displayed next to each other. To view duplicate Container IDs next to each other, you can sort the spreadsheet on Container ID.



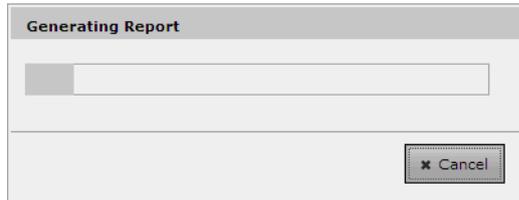
With the formulary drug list displayed, click the **Create Report** button.

To create a
Formulary
Report

Master ID	Container ID	Name	Concentration	Tallies	Template	Message	Actions
	0517040125	Atropine	0.4 mg/mL		Miscellaneous White L		[Copy] [Delete]
	1001925039	Atropine	0.4 mg/mL		Miscellaneous White L		[Copy] [Delete]
	0003257020	Azactam	2.5 g		Miscellaneous White L		[Copy] [Delete]
	0409904201	Bupivacaine-Epinephr	0.25 % 1:200,000	Bupivacaine-EPINEPH	Miscellaneous White C		[Copy] [Delete]
	0409904501	Bupivacaine-Epinephr	1 % 1:200,000	Bupivacaine-EPINEPH	Miscellaneous White C		[Copy] [Delete]
	0781945170	Cefazolin	1 g	cefAZolin	Miscellaneous White L		[Copy] [Delete]

Create Report button

The progress of the report generation is displayed.



When the report file has been created, you are prompted to open it or save it to the file system.

If you chose to open the report and have finished reviewing and saving it, close the application and return to the Administration Tool window.

Reviewing the Formulary Report for Duplicates

You should review the Safety section of the Formulary Report for duplicates, potential duplicates, or mappings (for example, 10 to 11) for which the drug name and concentration are the same.

For these entries, make sure to check the status (that is, ACTIVE, OBSOLETE) of the possible duplicate drugs.

- If the drug entries are different drugs, then they all should remain in the MDD and, if required, be added to the formulary.
- If the drugs are the same, you should merge the information of the drug entries together in the MDD to the most current information, delete the extra entry or entries, and review the drug entry's information in the formulary.

Formulary Update Package

To deploy the formulary, you must create a formulary update package. This package can then be remotely installed on SLSs in your hospital that are on the same network as the PC running the Administration Tool. The package can also be copied to a USB flash drive for local installation on SLSs.



WARNING The Administration Tool user is ultimately responsible for the content of the formulary.

Package Validation

An electronic signature is created for any digital asset that could be included in a formulary update package. Digital assets include drug sounds, SVG label templates, and barcode definition templates.

Before the Administration Tool creates a formulary update package, it confirms that the electronic signature of each asset has not changed from the original electronic signature for that asset. If the confirmation fails, the formulary update package is not created and the Administration Tool indicates the cause of the failure.

In addition, a package will not be created if any of the following required fields are missing:

- Template.
- Audio.
- Expire Time.
- Dilutions. Required if Dilution Status is required and not permitted if Dilution Status is not allowed.

If a formulary update package fails validation, then a dialog box displays that lists the invalid drugs and the reasons they failed. The user has the option to output this list to an Excel spreadsheet to assist them with correcting the errors.

Creating a Formulary Update Package

Once all the drugs have been properly edited in the formulary and the formulary has been promoted to Test/Review or Approved, a formulary update package can be created.

When creating the formulary update package, you will need to agree to a liability agreement regarding the formulary.



To create a formulary update package

1. With the formulary drug list displayed, click the **Create Package** button.

The screenshot shows the Codonics SLS Administration Tool interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The main content area displays a table of drugs in the formulary. The 'Create Package' button is located in the top toolbar of the main content area.

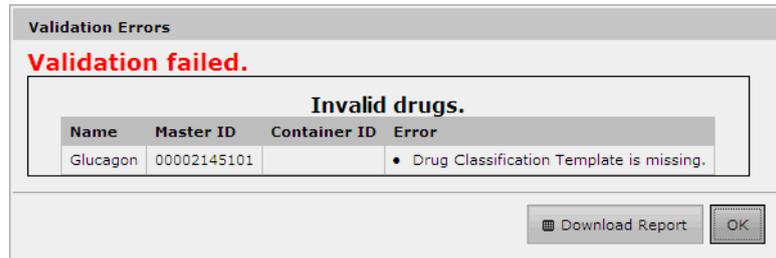
Master ID	Container ID	Name	Concentration	Tallman	Template	Message	Actions
<input type="checkbox"/>	0517040125	Atropine	0.4 mg/mL		Miscellaneous White L		
<input type="checkbox"/>	1001925039	Atropine	0.4 mg/mL		Miscellaneous White L		
<input type="checkbox"/>	0003257020	Azactam	2.5 g		Miscellaneous White L		
<input type="checkbox"/>	0409904201	Bupivacaine-Epinephr	0.25% 1:200,000	Bupivacaine-EPINEPH	Miscellaneous White C		
<input type="checkbox"/>	0409904501	Bupivacaine-Epinephr	1% 1:200,000	Bupivacaine-EPINEPH	Miscellaneous White C		
<input type="checkbox"/>	0781945170	Cefazolin	1 g	ceFAZolin	Miscellaneous White L		

Create Package button

The system begins validating the package:

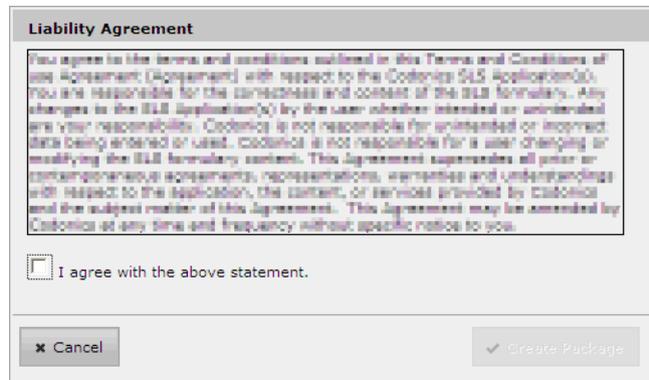
- If the validation passes, the **Liability Agreement** dialog box displays. Go to step 2.

- If the validation fails, a **Validation Errors** dialog box displays.



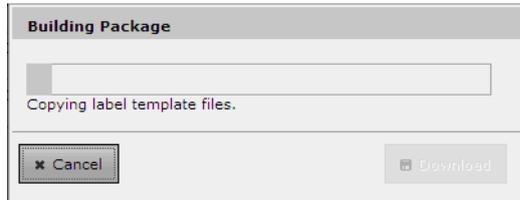
It describes the error for each drug record that did not pass the validation. To create an Excel file that lists the invalid drugs, click the **Download Report** button. Otherwise, click the **OK** button to close the dialog box and correct the drug records. You will have to demote the formulary to the Under Development level first to be able to edit the drug records.

2. Review the agreement.



3. If you agree with the statement, select the **I Agree** check box and then click the **Create Package** button.

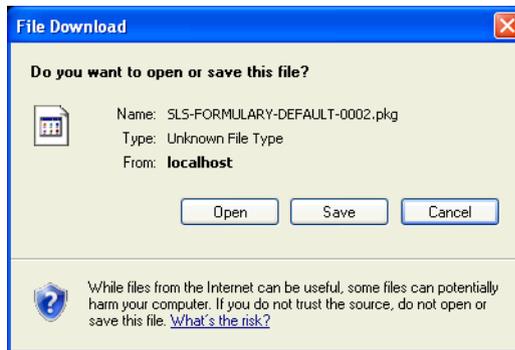
The progress of the formulary update package creation is displayed.



When the formulary update package has been created, the **Download** button is enabled.

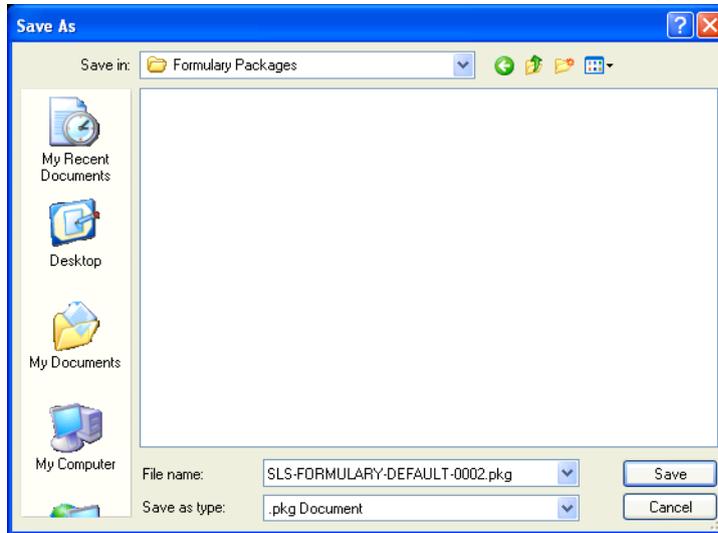
4. To proceed with saving the package file, click the **Download** button.

A **File Download** dialog box is displayed.



5. Click the **Save** button.

You are prompted to specify a destination folder for the formulary update package file.



6. Navigate to the destination folder (for example, on the USB flash drive that will be used to deploy the formulary to the SLSs), optionally change the default name for the package, and click the **Save** button.



NOTE: The formulary update package includes a date/time stamp to ensure that the SLS can properly recognize whether or not the package should be applied.

Once the formulary update package has been created, it can be remotely installed on SLSs that are on the same network as the PC running the Administration Tool. For more information, refer to “Installing Packages on SLS Devices” on page 7-19.

You can also copy the formulary update package to a USB flash drive and then install it on SLSs from the USB flash drive. For information, refer to Chapter 5 of the Safe Label System User's Manual.



WARNING Having multiple Administration Tools running or permitting multiple users to have Read-Write access to the Administration Tool Device Manager introduces the risk of deploying formulary or configuration packages with different content by the same names. Therefore, it is strongly recommended that each SLS customer create and set up a process and audit plan to check that the latest, approved versions of the formulary and configuration are correctly deployed to each SLS (for example, only create and deploy packages from one Administration Tool). It is also strongly recommended that each customer closely control which Administration Tool users receive Device Manager Read-Only and Read-Write privileges, as users with Read-Write privileges can deploy formulary and configuration packages to SLS devices.

Package Versioning

The Administration Tool assigns a version number to each formulary update package that is created. This is done to help a hospital keep track of versions of the formulary.

The formulary version number starts at version 1. Creating a new package increments the version number. The Administration Tool also maintains audit logs that contain the chronological history of all drugs added to the formulary, edits made to drugs in the formulary, and the creation of packages.

5

Additional Database Operations

Overview

The tasks in the standard database workflow to create a formulary package are covered in Chapter 4. This chapter covers the additional database operations that can be performed, which include:

- Sort the MDD and formulary drug lists by their column headers
- Search for drugs in the MDD or formulary
- Verify drugs in the MDD
- Edit multiple drug records at a time in the MDD
- Edit multiple drug records at a time in the formulary
- Delete drugs from the MDD
- Delete drugs from the formulary

Sorting Drug Record Lists

The drug records in the MDD and formulary can be sorted by any of the columns in the list.

Click the column header to sort on the column; click the column header again to toggle between ascending and descending order

The screenshot shows the CODONICS Formulary application interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The main content area displays a table of drug records. The table has the following columns: Drug Name, Master ID, Container ID, Tallman, Concentration, Route, Verification, Status, and Actions. Two rows of Atropine are visible, with different Master IDs and Container IDs. The 'Drug Name' column header is highlighted with a box, and a vertical line points to it from the instruction text above.

Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status	Actions
Atropine	00517040125	0517040125		0.41 mg/mL		Not Verified	ACTIVE	[Icons]
Atropine		1001925039		0.4 mg/mL		Not Verified	ACTIVE	[Icons]

For combination drugs, the **Drug Name** and **Concentration** columns sort according to the first drug or concentration. The second drug or concentration is used as a secondary sort to the first drug or concentration.

Searching for Drugs

You can search for drug records in the MDD or formulary using search criteria that matches the content of the fields in the drug records.

MDD searches are performed against the fields shown in the MDD drug list. Formulary searches are performed against the fields shown in the formulary drug list.

For combination drugs, the drug name searches are based on the format:

drugname1 - drugname2

For example, you can search for “Bupivacaine-Epinephrine”.

The system will return all records in which data “contains” the text being searched. For example, if you searched for the **Bupivacaine**, the search would return both **Bupivacaine** and **Bupivacaine-Epinephrine**.



To search for a drug record

1. With either the MDD or formulary drug list displayed, click the Search text field at the upper right corner of the screen.

The screenshot shows the Codonics SLS Administration Tool interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. A search bar is located in the upper right corner, with a magnifying glass icon labeled 'Search icon' and the text 'Search by drug name, etc.' labeled 'Search field'. Below the search bar is a table with columns: Drug Name, Master ID, Container ID, Tallman, Concentration, Route, Verification, Status, and Actions. The table contains two rows of data for Atropine.

Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status	Actions
<input type="checkbox"/> Atropine	00517040125	0517040125		0.41 mg/mL		Not Verified	ACTIVE	
<input type="checkbox"/> Atropine		1001925039		0.4 mg/mL		Not Verified	ACTIVE	

2. Enter search criteria in the field, and then click the Search icon.

A list of the drug records that match the search criteria is displayed.



To redisplay all
drugs in the list
after a search

Click the Search text field's Clear icon () or press the Escape (Esc) key.

Drug Verification

Drug verification consists of scanning a drug container barcode and verifying that the system can find the correct drug record in the MDD for the container's drug. This ensures that the correct drug information will be printed on the syringe label at an SLS.

With the **Verify On SLS** safety configuration setting, drug verification is also performed the first time that a container is scanned on each SLS for usage, providing that there is a unique match in the formulary.

Verification on the Administration Tool is performed using the Verify function. After starting the Verify function and scanning the barcode of the container to be verified, the system searches the MDD for a matching drug record. If a single match is found, you indicate whether the match is correct. If you confirm the match, the drug verification status is set to Verified. If you indicate that the matching drug in the MDD is not correct, that drug's verification status is set to Failed. You can also change a drug's verification status back to Not Verified.

If the formulary includes any drugs whose verification status is Failed, a formulary update package cannot be created.



CAUTION A failed verification is a serious issue. It means that the drug record information is wrong. The drug record should be corrected so that it can be successfully verified.



NOTE: During Verification when in Other database mode, make sure that the barcode symbology is properly configured for the drugs that you are going to learn/enter into the MDD. For more information about the barcode symbology settings in the Administration Tool, refer to “Configuring a Locale” on page 8-2.



NOTE: If a drug that is being added to the MDD already maps to a verified drug in the MDD, the verified drug's status will be changed to Unverified.

Verifying a Drug



To verify a drug

1. With the MDD drug list displayed, click the **Verify Drugs** button.

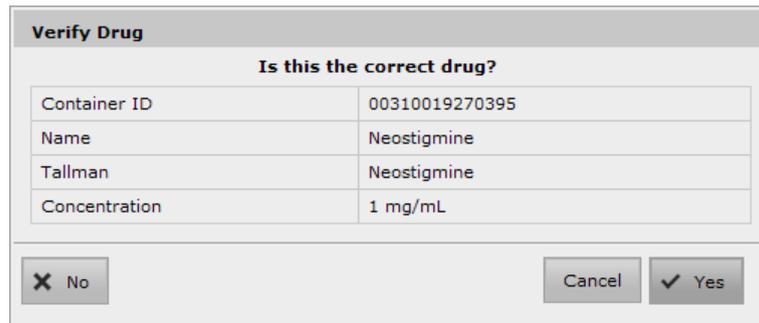
The **Verify Drug** dialog box displays.



2. Scan the drug container's barcode.

The system parses the Container ID from the barcode. The system then determines whether it matches any Container IDs in the MDD and whether it maps to any Master IDs in the MDD. The system displays a dialog box with the matching/mapping results as follows:

- If no matches or mappings are found, or if multiple matches or mappings are found, the system displays a message indicating that verification is not possible and so the drug is not verified.
- If only one match is found and that drug is currently marked as Verified, the system displays a message indicating that the drug is already verified.
- If only one match is found and that drug is not currently marked as Verified, the system prompts you to confirm if the matching drug is the correct drug. Go to step 3.



The dialog box is titled "Verify Drug" and contains the question "Is this the correct drug?". It displays a table with the following information:

Container ID	00310019270395
Name	Neostigmine
Tallman	Neostigmine
Concentration	1 mg/mL

At the bottom of the dialog box, there are three buttons: "No" (with an 'X' icon), "Cancel", and "Yes" (with a checkmark icon).

3. To confirm that the matching drug is correct, click the **Yes** button. The drug's verification status is set to Verified.

To indicate that the matching drug is not correct, click the **No** button. The system displays a dialog box to allow you to confirm that the matching drug is not correct. Go to step 4.

4. To confirm that the matching drug is not correct, click the **Yes** button. The drug's verification status is set to Failed.

To indicate that you are not sure if the matching drug is not correct, click the **No** button. The system prompts you to confirm if the matching drug is the correct drug. Go to step 3.

Resetting a Drug's Verification Status to Not Verified



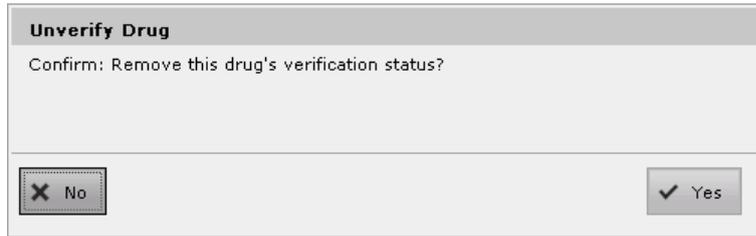
To reset a drug's verification status to Not Verified

1. With the MDD drug list displayed, navigate to the drug.
2. Click the drug's Verified entry in the **Verification** field.

Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status	Actions
Atropine	00517040125	0517040125		0.41 mg/mL		Verified X	ACTIVE	
Atropine		1001925039		0.4 mg/mL		Verified X	ACTIVE	

Verified entry

A confirmation dialog box displays.



3. To confirm the resetting, click the **Yes** button. The drug's verification status is reset to Not Verified.

To cancel the resetting, click the **No** button.

Editing Multiple Drugs in the MDD

If the drug names of all of the selected drug records match, you can edit the drug name and Tallman entries for multiple drug records in the MDD.



NOTE: *If the drugs are also in the formulary, editing their information in the MDD will update their information in the formulary as well.*



To edit multiple
drugs in the
MDD

1. With the MDD drug list displayed, select the check box of each drug to be edited.

Drug selection check boxes

The screenshot shows the Codonics SLS Administration Tool interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The left sidebar shows 'Master Drug Database' (76) and 'SLS SLS Formulary' (70). The main area displays a table of drugs with columns: Drug Name, Master ID, Container ID, Tallman, Concentration, Route, Verification, Status, and Actions. Two 'Atropine' entries are selected, indicated by checked checkboxes in the first column. A tooltip is visible over the 'Edit Selected' button in the Actions column, showing options: 'Add to Formulary', 'Edit Selected', and 'Delete Selected'. Below the tooltip, it says 'Drugs selected: 2'.

Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status	Actions
<input checked="" type="checkbox"/> Atropine	00517040125	0517040125		0.4 mg/mL		Not Verified	ACTIVE	
<input checked="" type="checkbox"/> Atropine		1001925039		0.4 mg/mL		Not Verified	ACTIVE	
<input type="checkbox"/> Bupivacaine-Epineph	00409904501	0409904501	Bupivacaine-EP	1 % 1:200,00	Injectable	Not Verified	ACTIVE	
<input type="checkbox"/> Bupivacaine-Epineph	00409904201	0409904201	Bupivacaine-EP	0.25 % 1:200		Not Verified	ACTIVE	
<input type="checkbox"/> Cefazolin		6050507495	ceFAZolin	1 g		Verified X	ACTIVE	
<input type="checkbox"/> Cefazolin		0781945170	ceFAZolin	1 g		Not Verified	ACTIVE	
<input type="checkbox"/> Cisatracurium		0074437805		2 mg/mL		Verified X	ACTIVE	
<input type="checkbox"/> Clindamycin		0409405001		150 mg/mL		Verified X	ACTIVE	
<input type="checkbox"/> Dexamethasone	63323016505	6332316505		4 mg/mL		Not Verified	ACTIVE	
<input type="checkbox"/> Dexamethasone	00517490125	0517490125		4 mg/mL		Not Verified	ACTIVE	
<input type="checkbox"/> Dexmedetomidine		0409163802		100 mcg/mL	Injectable	Verified X	ACTIVE	
<input type="checkbox"/> Diphenhydramine		0641037621	diphenhydrAMI	50 mg/mL		Not Verified	ACTIVE	
<input type="checkbox"/> Ephedrine						Verified X	ACTIVE	

Edit Selected button



NOTE: To select a range of drug records at a time, click the check box of the drug at one end of the range, then Shift-click the check box of the drug at the other end of the range.



NOTE: The number of drugs selected is displayed in the pop-up button bar.



2. Click the **Edit Selected** button.



NOTE: Clicking a drug record's Edit icon in the Action column will only edit that drug record, even if multiple drug records are selected. You must click the **Edit Selected** button at the bottom of the screen to edit multiple drug records at a time.

The **Editing Master Drug(s)** dialog box displays.

Editing Master Drug(s) Atropine

Combination Drug

Master ID:

Container ID:

Name: -

Tallman:

Concentration: -

Route:

Status:

Editing Master Drug(s) — Non-Combination Drug

Editing Master Drug(s) Bupivacaine-Epinephrine

Combination Drug

Master ID:

Container ID:

Name: -

Tallman:

Concentration: -

Route:

Status:

Editing Master Drug(s) — Combination Drug

3. Edit the information as needed.

For important notes about changing drug information, refer to “Notes About Changing Drug Information in the MDD” on page 4-38.

4. Click the **Save** button to save your changes.

A confirmation dialog box displays. In addition to the information you entered, the dialog could include any conflicts or errors for this drug.

Edit Multiple Drugs

Confirm: Edit these drugs?

5. Click the **Yes** button to confirm the changes to the drug information.
Click the **No** button to return to the **Editing Master Drug(s)** dialog box.

Editing Multiple Drugs in the Formulary

If the drug names of all of the selected drug records match, you can edit the following fields for multiple drug records in the formulary:

- Drug Classification Label Template
- Audio
- Expire Time
- Audio File (which, by default, is the drug name when possible)
- Dilution Status (only editable if Concentrations for each of the drug records match)
- Dilutions (only editable if Concentrations for each of the drug records match)
- Diluents (only editable if Concentrations for each of the drug records match)



1. With the formulary drug list displayed, select the check box of each drug to be edited.

To edit multiple drugs in the formulary

Drug selection check boxes

The screenshot displays the Codonics SLS Administration Tool interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The main content area shows a table of drugs with columns for Master ID, Container ID, Name, Concentration, Tallman, Template, Message, and Actions. Two checkboxes in the first column are selected. A tooltip is visible over the 'Edit Selected' button, showing 'Edit Selected' and 'Delete Selected' options. The status bar at the bottom indicates 'Drugs selected: 2'.

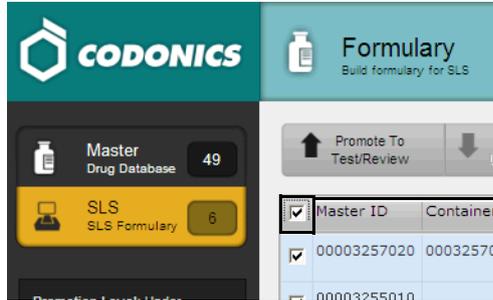
<input checked="" type="checkbox"/>	Master ID	Container ID	Name	Concentration	Tallman	Template	Message	Actions
<input checked="" type="checkbox"/>	00517040125	0517040125	Atropine	0.4 mg/mL		Miscellaneous White L		
<input checked="" type="checkbox"/>		1001925039	Atropine	0.4 mg/mL		Miscellaneous White L		
<input type="checkbox"/>	00409904201	0409904201	Bupivacaine-Epineph	0.25 % 1:200,000	Bupivacaine-EPINEPH	Miscellaneous White C		
<input type="checkbox"/>	00409904501	0409904501	Bupivacaine-Epineph	1 % 1:200,000	Bupivacaine-EPINEPH	Miscellaneous White C		
<input type="checkbox"/>		0781945170	Cefazolin	1 g	ceFAZolin	Miscellaneous White L		
<input type="checkbox"/>		6050507495	Cefazolin	1 g	ceFAZolin	Miscellaneous White L		
<input type="checkbox"/>		0074437805	Cisatracurium	2 mg/mL		Miscellaneous White L		
<input type="checkbox"/>		0409405001	Clindamycin	150 mg/mL		Miscellaneous White L		
<input type="checkbox"/>	00517490125	0517490125	Dexamethasone	4 mg/mL		Miscellaneous White L		
<input type="checkbox"/>	63323016505	6332316505	Dexamethasone	4 mg/mL		Miscellaneous White L		
<input type="checkbox"/>		0409163802	Dexmedetomidine	100 mcg/mL		Miscellaneous White L		
<input type="checkbox"/>		0641037621	Diphenhydramine	50 mg/mL	diphenhydRAMINE	Miscellaneous White L		
<input type="checkbox"/>		1747851500	Ephedrine			oppressors		

Edit Selected button



TIP: Multiple drug selections

To select a range of drugs, select the first entry and then Shift-click the last entry in the range. If you want to select all of the drugs, or clear them all to reselect them, select or clear the check box in the column header row (shown below).



Sets or clears all drug record check boxes



NOTE: The number of drugs selected is displayed in the pop-up button bar.



2. Click the **Edit Selected** button.

The **Editing Formulary Drug(s)** dialog box displays.

Editing Formulary Drug(s) Atropine

Atropine

Prepared: 12/13/2011 04:16
Expires: 12/14/2011 04:16
By: {CONCENTR...}

Template: Anticholinergic Agents Drug Classifications

Message:

Audio: atropine.wav Play

Play

Expire Time: Hours

Dilution Status: Not Allowed

Dilutions: + Edit

Diluents:

- Sterilized Water
- Lidocaine
- Normal Saline
- Custom 2
- DSW
- Custom 3

Cancel Save

Editing Formulary Drug(s) — Non-Combination Drug

Editing Formulary Drug(s) Bupivacaine-Epinephrine

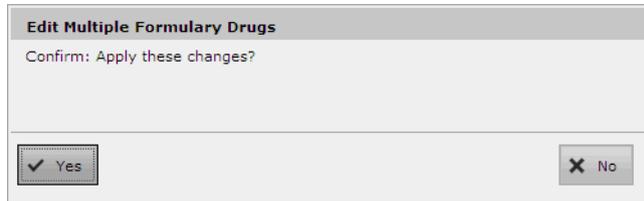
Bupivacaine-EPINEPHrine
{CONCENTR...
 Prepared: 12/13/2011 04:19 By:
 Expires: 12/14/2011 04:19

Template:	Miscellaneous White Combination Label ▾	Drug Classifications
Message:	<input type="text"/>	
Audio:	bupivacaine.wav ▾	▶ Play
	epinephrine.wav ▾	▶ Play
Expire Time:	24 <input type="text"/> Hours	
Dilution Status:	Not Allowed ▾	
Dilutions:	+ Edit	
Diluents:	Not Editable. Selected drugs do not have matching diluents.	
Miscellaneous:	<input type="text"/>	

Editing Formulary Drug(s) — Combination Drug

3. Edit the information as needed.
 For information about the fields, refer to Table 4-2 on page 4-48.
4. Click the **Save** button to save your changes.

A confirmation dialog box displays. In addition to the information you entered, the dialog could include any conflicts or errors for this drug.



5. Click the **Yes** button to confirm the changes to the drug information.
Click the **No** button to return to the **Editing Formulary Drug(s)** dialog box.

Deleting Drugs from the MDD

You can delete single drugs from the MDD, or a batch of drugs at one time. Deleting drugs in the MDD automatically deletes them from the formulary.



NOTE: *It is recommended that you back up the database before performing extensive deletions. For more information, refer to "Backing Up the Databases and Related Files" on page 3-25.*

Deleting a Single Drug from the MDD



To delete a single drug from the MDD

1. With the MDD drug list displayed, click the drug record's Delete icon.

Delete icon

The screenshot shows the CODONICS software interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The main content area displays a table of drug records. The table has columns for Drug Name, Master ID, Container ID, Tallman, Concentration, Route, Verification, Status, and Actions. Two rows of 'Atropine' are visible. The second row has a 'Delete' icon (an 'X' in a square) in the Actions column, which is highlighted by a line from the text 'Delete icon'.

Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status	Actions
Atropine	00517040125	0517040125		0.41 mg/mL		Not Verified	ACTIVE	
Atropine		1001925039		0.4 mg/mL		Not Verified	ACTIVE	

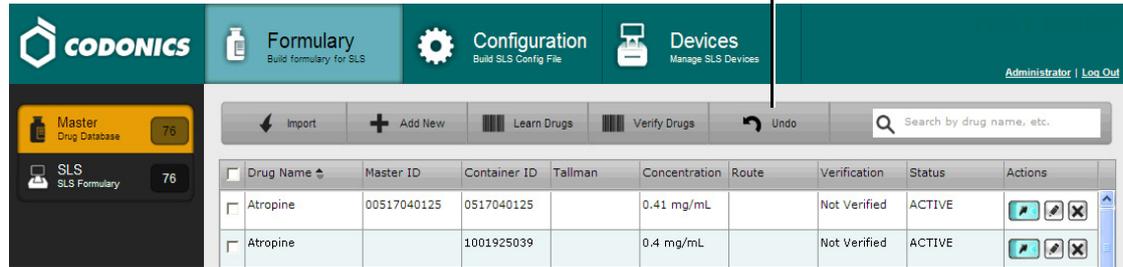
You are prompted to confirm the deletion. If the drug has been added to the formulary and you confirm the deletion, it will be deleted from the formulary as well.

2. Click the **Yes** button to continue with the deletion.

The drug record is deleted and is no longer listed in the MDD drug list.

3. If you want to undo the deletion of the drug from the MDD, click the **Undo** button.

Undo button



The screenshot shows the Codonics SLS Administration Tool interface. The top navigation bar includes the Codonics logo, 'Formulary' (Build formulary for SLS), 'Configuration' (Build SLS Config File), and 'Devices' (Manage SLS Devices). The user is logged in as 'Administrator'. The main content area features a sidebar with 'Master Drug Database' (76) and 'SLS SLS Formulary' (76). The top toolbar contains 'Import', 'Add New', 'Learn Drugs', 'Verify Drugs', and 'Undo' buttons. A search bar is also present. Below the toolbar is a table with the following data:

<input type="checkbox"/>	Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status	Actions
<input type="checkbox"/>	Atropine	00517040125	0517040125		0.41 mg/mL		Not Verified	ACTIVE	 
<input type="checkbox"/>	Atropine		1001925039		0.4 mg/mL		Not Verified	ACTIVE	 

You are prompted to confirm undoing the deletion.



NOTE: Only one level of undo is supported.

Deleting a Batch of Drugs from the MDD



1. With the MDD drug list displayed, select the check box of each drug to be deleted.

To delete a batch of drugs from the MDD

Drug selection check boxes

The screenshot shows the CODONICS SLS Formulary interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The main area displays a table of drugs with columns for Drug Name, Master ID, Container ID, Tallman, Concentration, Route, Verification, Status, and Actions. A list of drugs is shown, with checkboxes in the first column. A tooltip is visible over the 'Delete Selected' button in the Actions column.

Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status	Actions
<input checked="" type="checkbox"/> Atropine	00517040125	0517040125		0.4 mg/mL		Not Verified	ACTIVE	[Icons]
<input checked="" type="checkbox"/> Atropine		1001925039		0.4 mg/mL		Not Verified	ACTIVE	[Icons]
<input checked="" type="checkbox"/> Bupivacaine-Epinept	00409904201	0409904201	Bupivacaine-EP 0.25 %	1:200		Not Verified	ACTIVE	[Icons]
<input checked="" type="checkbox"/> Bupivacaine-Epinept	00409904501	0409904501	Bupivacaine-EP 1 %	1:200,00	Injectable	Not Verified	ACTIVE	[Icons]
<input type="checkbox"/> Cefazolin		6050507495	ceFAZolin	1 g		Verified X	ACTIVE	[Icons]
<input type="checkbox"/> Cefazolin		0781945170	ceFAZolin	1 g		Not Verified	ACTIVE	[Icons]
<input type="checkbox"/> Cisatracurium		0074437805		2 mg/mL		Verified X	ACTIVE	[Icons]
<input type="checkbox"/> Clindamycin		0409405001		150 mg/mL		Verified X	ACTIVE	[Icons]
<input type="checkbox"/> Dexamethasone	00517490125	0517490125		4 mg/mL		Not Verified	ACTIVE	[Icons]
<input type="checkbox"/> Dexamethasone	63323016505	6332316505		4 mg/mL		Not Verified	ACTIVE	[Icons]
<input type="checkbox"/> Dexmedetomidine		0409163802		100 mcg/mL	Injectable	Verified X	ACTIVE	[Icons]
<input type="checkbox"/> Diphenhydramine		0641037621	diphenhydrAMI	50 mg/mL		Not Verified	ACTIVE	[Icons]
<input type="checkbox"/> Ephedrine		1747851500				Verified X	ACTIVE	[Icons]

Delete Selected button



TIP: Multiple drug selections

To select a range of drugs, select the first entry and then Shift-click the last entry in the range. If you want to select all of the drugs, or clear them all to reselect them, select or clear the check box in the column header row (shown below).

Sets or clears all drug record check boxes

<input checked="" type="checkbox"/>	Drug Name	Master ID	Cont
<input type="checkbox"/>	Atropine		1001
<input checked="" type="checkbox"/>	Atropine		0517



NOTE: The number of drugs selected is displayed in the pop-up button bar.

Add to Formulary Edit Selected Delete Selected

Drugs selected: 2

2. Click the **Delete Selected** button at the bottom of the screen.

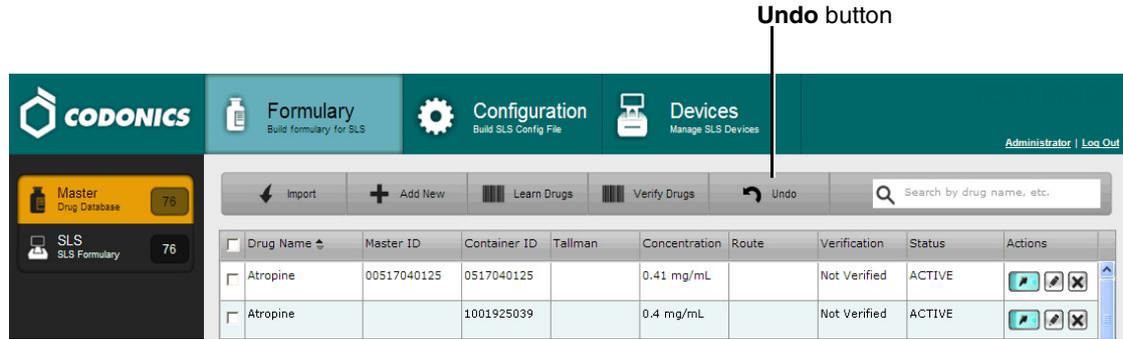
You are prompted to confirm the deletion. If any of the drugs have been added to the formulary and you confirm the deletion, they will be deleted from the formulary as well.

3. Click the **Yes** button to continue with the deletion.

The drug records are deleted and are no longer listed in the MDD drug list.

4. If you want to undo the deletion of the drugs from the MDD, click the **Undo** button.

Undo button



The screenshot shows the CODONICS software interface. The top navigation bar includes the CODONICS logo and three main sections: 'Formulary' (Build formulary for SLS), 'Configuration' (Build SLS Config File), and 'Devices' (Manage SLS Devices). On the right of the navigation bar, there is a user profile for 'Administrator' and a 'Log Out' link. Below the navigation bar is a toolbar with buttons for 'Import', 'Add New', 'Learn Drugs', 'Verify Drugs', and 'Undo'. A search bar is located to the right of the toolbar. On the left side, there are two sidebar items: 'Master Drug Database' with a count of 76 and 'SLS SLS Formulary' with a count of 76. The main content area displays a table with the following data:

Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status	Actions
Atropine	00517040125	0517040125		0.41 mg/mL		Not Verified	ACTIVE	  
Atropine		1001925039		0.4 mg/mL		Not Verified	ACTIVE	  

You are prompted to confirm undoing the deletion.



NOTE: Only one level of undo is supported.

Deleting Drugs from the Formulary

You can delete single drugs from the formulary, or a batch of drugs at one time.

Deleting a Single Drug from the Formulary



To delete a single drug from the formulary

1. With the formulary drug list displayed, click the drug record's Delete icon.

Delete icon

The screenshot shows the Codonics SLS Administration Tool interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The main content area displays a table of drugs in the formulary. The table has columns for Master ID, Container ID, Name, Concentration, Tallman, Template, Message, and Actions. Three drug records are visible: Atropine (0.4 mg/mL) and Bupivacaine-Epinephrine (1% 1:200,000). The Actions column for each record contains a trash can icon (delete) and a cross icon (cancel).

Master ID	Container ID	Name	Concentration	Tallman	Template	Message	Actions
<input type="checkbox"/> 00517040125	0517040125	Atropine	0.4 mg/mL		Miscellaneous White L		
<input type="checkbox"/>	1001925039	Atropine	0.4 mg/mL		Miscellaneous White L		
<input type="checkbox"/> 00409904501	0409904501	Bupivacaine-Epineph	1% 1:200,000	Bupivacaine-EPINEPH	Miscellaneous White C		

You are prompted to confirm the deletion.

2. Click the **Yes** button to continue with the deletion.

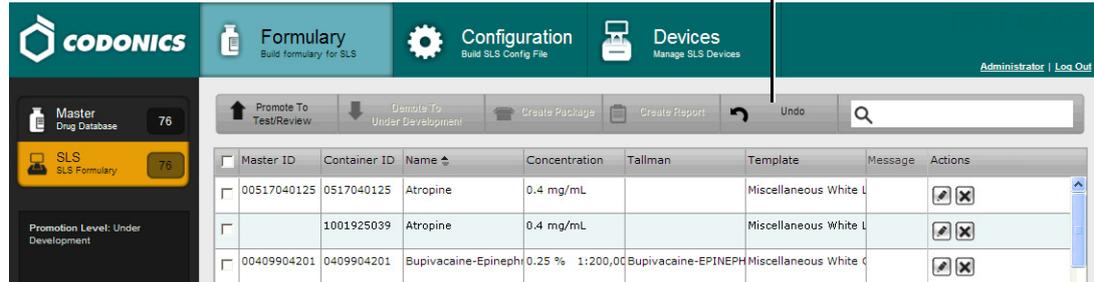
The drug is deleted from the formulary.



NOTE: Deleting a drug from the formulary does not delete it from the MDD.

3. If you want to undo the deletion of the drug from the formulary, click the **Undo** button.

Undo button



The screenshot shows the CODONICS Formulary interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The main content area features a table of drugs with columns for Master ID, Container ID, Name, Concentration, Tallman, Template, Message, and Actions. An 'Undo' button is visible in the top right of the main content area, with a line pointing to it from the label 'Undo button' above. The table contains three rows of drug data.

Master ID	Container ID	Name	Concentration	Tallman	Template	Message	Actions
00517040125	0517040125	Atropine	0.4 mg/mL		Miscellaneous White U		 
	1001925039	Atropine	0.4 mg/mL		Miscellaneous White U		 
00409904201	0409904201	Bupivacaine-Epineph	0.25 % 1:200,000	Bupivacaine-EPINEPH	Miscellaneous White C		 

You are prompted to confirm undoing the deletion.



NOTE: Only one level of undo is supported.

Deleting a Batch of Drugs from the Formulary



1. With the formulary drug list displayed, select the check box of each drug to be deleted.

To delete a batch of drugs from the formulary

Drug selection check boxes

The screenshot shows the Codonics SLS Administration Tool interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The main content area displays a table of drugs with columns for Master ID, Container ID, Name, Concentration, Tallman, Template, Message, and Actions. Two drugs, Atropine, are selected, indicated by checked checkboxes in the first column. A 'Delete Selected' button is highlighted in the bottom right corner of the table area.

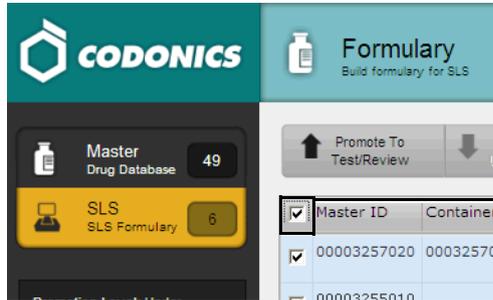
Master ID	Container ID	Name	Concentration	Tallman	Template	Message	Actions
<input checked="" type="checkbox"/>	00517040125	Atropine	0.4 mg/mL		Miscellaneous White L		
<input checked="" type="checkbox"/>	1001925039	Atropine	0.4 mg/mL		Miscellaneous White L		
<input type="checkbox"/>	00409904201	Bupivacaine-Epineph	0.25 % 1:200,000	Bupivacaine-EPINEPH	Miscellaneous White C		
<input type="checkbox"/>	00409904501	Bupivacaine-Epineph	1 % 1:200,000	Bupivacaine-EPINEPH	Miscellaneous White C		
<input type="checkbox"/>	0781945170	Cefazolin	1 g	ceFAZolin	Miscellaneous White L		
<input type="checkbox"/>	6050507495	Cefazolin	1 g	ceFAZolin	Miscellaneous White L		
<input type="checkbox"/>	0074437805	Cisatracurium	2 mg/mL		Miscellaneous White L		
<input type="checkbox"/>	0409405001	Clindamycin	150 mg/mL		Miscellaneous White L		
<input type="checkbox"/>	00517490125	Dexamethasone	4 mg/mL		Miscellaneous White L		
<input type="checkbox"/>	63323016505	Dexamethasone	4 mg/mL		Miscellaneous White L		
<input type="checkbox"/>	0409163802	Dexmedetomidine	100 mcg/mL		Miscellaneous White L		
<input type="checkbox"/>	0641037621	Diphenhydramine	50 mg/mL	diphenhydrAMINE	Miscellaneous White L		
<input type="checkbox"/>	1747851500	Ephedrine			Miscellaneous White L		

Delete Selected button



TIP: Multiple drug selections

To select a range of drugs, select the first entry and then Shift-click the last entry in the range. If you want to select all of the drugs, or clear them all to reselect them, select or clear the check box in the column header row (shown below).



Sets or clears all drug record check boxes



NOTE: The number of drugs selected is displayed in the pop-up button bar.



2. Click the **Delete Selected** button.
You are prompted to confirm the deletion.
3. Click the **Yes** button to continue with the deletion.
The drugs are deleted from the formulary.



NOTE: Deleting a drug from the formulary does not delete it from the MDD.

4. If you want to undo the deletion of the drugs from the formulary, click the **Undo** button.

Undo button

The screenshot shows the Codonics SLS Administration Tool interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The left sidebar shows 'Master Drug Database' and 'SLS Formulary'. The main content area has a toolbar with buttons for 'Promote To Test/Review', 'Demote To Under Development', 'Create Package', 'Create Report', and 'Undo'. Below the toolbar is a table with columns: Master ID, Container ID, Name, Concentration, Tallman, Template, Message, and Actions. The 'Undo' button in the toolbar is highlighted with a red box and a line pointing to the label 'Undo button' above it.

Master ID	Container ID	Name	Concentration	Tallman	Template	Message	Actions
00517040125	0517040125	Atropine	0.4 mg/mL		Miscellaneous White L		
	1001925039	Atropine	0.4 mg/mL		Miscellaneous White L		
00409904201	0409904201	Bupivacaine-Epineph	0.25 % 1:200,00	Bupivacaine-EPINEPH	Miscellaneous White C		

You are prompted to confirm undoing the deletion.



NOTE: Only one level of undo is supported.

6

Configuration Manager

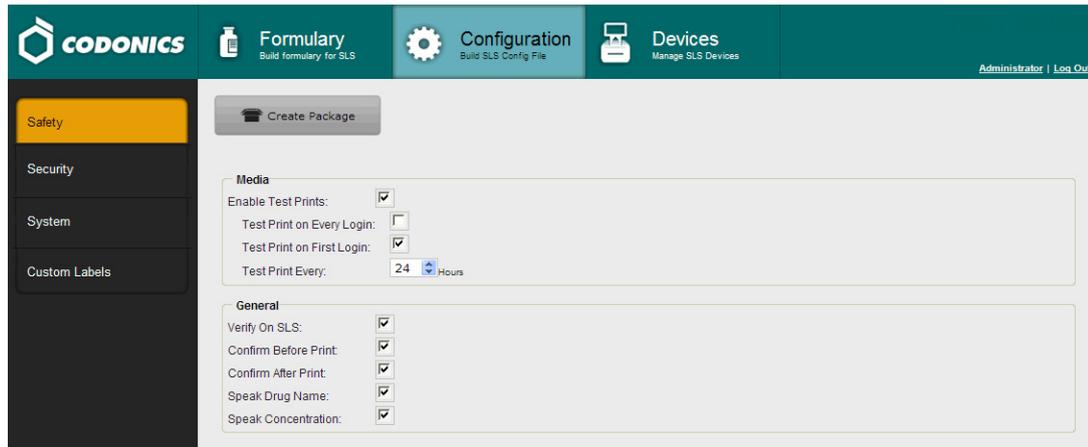
The Configuration Manager allows authorized users to configure safety settings, security settings, system features, and custom labels for SLSs.

The Configuration Manager section, in the **Configuration** tab, includes several tabs, each responsible for a certain aspect of SLS configuration.

The screenshot shows the Codonics Configuration Manager interface. The top navigation bar includes the Codonics logo and four main tabs: Formulary (Build formulary for SLS), Configuration (Build SLS Config File), and Devices (Manage SLS Devices). The Configuration tab is active. On the left, a sidebar contains sub-tabs: Safety (highlighted in orange), Security, System, and Custom Labels. The main content area features a 'Create Package' button and two configuration sections: 'Media' and 'General'. The 'Media' section includes 'Enable Test Prints' (checked), 'Test Print on Every Login' (unchecked), 'Test Print on First Login' (checked), and 'Test Print Every' (24 Hours). The 'General' section includes 'Verify On SLS' (checked), 'Confirm Before Print' (checked), 'Confirm After Print' (checked), 'Speak Drug Name' (checked), and 'Speak Concentration' (checked). The top right corner shows the user role 'Administrator' and a 'Log Out' link.

Safety Settings

The **Safety** tab includes settings that are related to ensuring the accuracy of printed and scanned labels.



The screenshot shows the CODONICS Configuration Manager interface. The top navigation bar includes the CODONICS logo, a 'Formulary' tab (Build formulary for SLS), a 'Configuration' tab (Build SLS Config File), and a 'Devices' tab (Manage SLS Devices). The user is logged in as 'Administrator' and can 'Log Out'. The left sidebar shows a navigation menu with 'Safety' selected, along with 'Security', 'System', and 'Custom Labels'. The main content area features a 'Create Package' button and two sections of settings: 'Media' and 'General'. The 'Media' section includes 'Enable Test Prints' (checked), 'Test Print on Every Login' (unchecked), 'Test Print on First Login' (checked), and 'Test Print Every' (24 Hours). The 'General' section includes 'Verify On SLS' (checked), 'Confirm Before Print' (checked), 'Confirm After Print' (checked), 'Speak Drug Name' (checked), and 'Speak Concentration' (checked).



WARNING It is strongly recommended that you do not change the safety settings from their factory default settings. You should be fully aware of the risks that you are taking when disabling any of the safety features.

Table 6-1. Safety Settings

Setting	Description
Media:	
Enable Test Prints	If selected, enables the test print function.
Test Print on Every Login	If selected, specifies that a test print will be printed at every login or after the period specified in the Test Print Every setting.
Test Print on First Login	If selected, specifies that a test print will be printed at the initial login after the SLS has been restarted or after the period specified in the Test Print Every setting.
Test Print Every	Specifies, in hours, how often a test print will be printed. If a test print has not been printed within the specified amount of time, the SLS will prompt the user to print a test print. If the specified amount of time occurs while no user is logged in, a test print will be required at the next login.
General:	
Verify on SLS	<p>If selected, the first time that a particular container barcode ID is scanned at an SLS, the user will be prompted to verify the drug, even if verification was already performed for the drug using the Administration Tool (for more information, refer to “Drug Verification” on page 5-4).</p> <p><i>NOTE: It is recommended that you select this option even if you are going to be verifying drugs on the Administration Tool, as an additional safety checkpoint. Also, even if this option is not selected, any drugs not verified on the Administration Tool will have to be verified on each SLS to which the formulary is deployed.</i></p>
Confirm Before Print	If selected, requires the user to confirm the label content as displayed on the touch screen before actually printing the label.
Confirm After Print	If selected, requires the user to confirm the label content after it is printed by scanning the label barcode.
Speak Drug Name	If selected, the drug name will be announced if the scanned barcode matches a drug in the formulary.

Table 6-1. Safety Settings (Continued)

Setting	Description
Speak Concentration	If selected, the drug concentration will be announced if the scanned barcode matches a drug in the formulary.

Security Settings

The **Security** tab includes settings for securing user access to the system.

The screenshot shows the CODONICS Configuration Manager interface. The top navigation bar includes the CODONICS logo, 'Formulary' (Build formulary for SLS), 'Configuration' (Build SLS Config File), and 'Devices' (Manage SLS Devices). The user is logged in as 'Administrator' and can 'Log Out'. The left sidebar shows 'Safety', 'Security' (selected), 'System', and 'Custom Labels'. The main content area features a 'Create Package' button and two sections: 'User' and 'Network'. The 'User' section includes 'Maximum Invalid Login Attempts' (3), 'Require PIN' (checked), 'Logoff Timeout' (900 Seconds), and 'Final Timeout Countdown' (30 Seconds). The 'Network' section includes 'Port' (22), 'Read-Write Password' (Edit), 'Read-Only Password' (Edit), and 'Wi-Fi Certificate Folder' (Import).

Table 6-2. Security Settings

Setting	Description
<i>User Settings:</i>	
Maximum Invalid Login Attempts	Not currently implemented.
Require PIN	If selected, the SLS user will be required to enter a personal identification number (PIN) in addition to their login name.
Logoff Timeout	Specifies the period of inactivity, in seconds, after which a user will be automatically logged out of their session.
Final Timeout Countdown	Specifies the length of the countdown, in seconds, after the automatic logoff message is displayed until the automatic logoff will occur.

Table 6-2. Security Settings (Continued)

Setting	Description
Network Settings:	
Port	The port on which the SLS devices listen for SSH (Secure Shell) requests.
Read-Write Password	<p>Specify the password that will be required to have Read-Write access to SLS devices through the Administration Tool Device Manager. The default password is codonics. Passwords are case-sensitive.</p> <p>Once the configuration package with this password has been deployed to the selected SLS devices, Administration Tool users are required to enter this password in the Administration Tool Device Manager to remotely deploy future formulary and configuration packages to these devices. These users will also be able to view status information about the SLS devices.</p> <p>To change the password, click the Edit button. The Edit Read-Write Password dialog box displays.</p> <div data-bbox="777 722 1307 951"></div>
	<p>WARNING Permitting multiple users to have Read-Write access to the Administration Tool Device Manager introduces the risk of deploying formulary or configuration packages with different content by the same names. Therefore, it is strongly recommended that each customer closely control which Administration Tool users receive Device Manager Read-Write privileges.</p>

Table 6-2. Security Settings (Continued)

Setting	Description
Read-Only Password	<p>Specify the password that will be required to have read-only access to SLS devices through the Administration Tool Device Manager. The default password is codonics. Passwords are case-sensitive.</p> <p>Once the configuration package with this password has been deployed to the selected SLS devices, Administration Tool users can enter this password in the Administration Tool Device Manager to view status information about the SLS devices. These users will not be able to remotely install a formulary or configuration update package.</p> <p>To change the password, click the Edit button. The Edit Read-Only Password dialog box displays.</p> <div data-bbox="777 625 1307 851"></div>

Table 6-2. Security Settings (Continued)

Setting	Description
Wi-Fi Certificate Folder	<p>Used to import an archive file that contains the SLS Wi-Fi certificate files into the configuration package.</p> <p>For information about the SLS Wi-Fi certificate files, refer to “Creating and Importing a Wi-Fi Certificate Archive File” on page 6-23.</p> <p>To import the archive file that contains the certificate files, click the Import button. The Import Certificate Archive dialog box displays.</p>



Click the **Browse** button to navigate to and select the archive file, then click the **Import** button to import the certificate files.

System Settings

The **System** tab includes settings related to the name for the syringe button in the SLS user interface, what the system should do if a scanned Container ID is not found, and the syringe label barcode definition to be used.

The screenshot shows the Codonics System Settings interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The left sidebar has 'Safety', 'Security', 'System' (selected), and 'Custom Labels'. The main content area features a 'Create Package' button and three settings:

- Syringe**
 - Button Title: SYRINGE
 - Drug Not Found Mode Switch: Blank
- SLS Label Barcode**
 - Definition: CID EXD EXT

Table 6-3. System Settings

Setting	Description
Syringe:	
Button Title	The title of the button that, when pressed, places the SLS in syringe label print mode.
Drug Not Found Mode Switch	Specifies the default label type that will be used for printing if the scanned container barcode is not found in the formulary.

Table 6-3. System Settings (Continued)

Setting	Description
SLS Label Barcode:	
Definition	<p>Defines the information to be included in the 2D barcode for syringe labels. Available choices are:</p> <p>CID EXD EXT</p> <p>MID EXD EXT</p> <p>CID PXD PXT</p> <p>MID PXD PXT</p> <p>The acronyms that make up each of the definition choices are defined as follows and specify what data is included in the barcode:</p> <ul style="list-style-type: none">• CID: The drug's Container ID. Can be used if the MDD is in either US NDC or Other mode.• MID: The drug's Master ID. Used only if the MDD is in US NDC mode.• EXD: The expiration date.• EXT: The expiration time.• PXD: The preparation date.• PXT: The preparation time. <p>For example, if CID EXD EXT is selected, the drug container barcode will include the Container ID, the expiration date, and the expiration time. This is in addition to the concentration and diluent information, and the preparer's initials.</p>

Custom Labels

In addition to syringe labels, the SLS supports the following default label categories:

- Blank
- Lines
- IV
- Patient

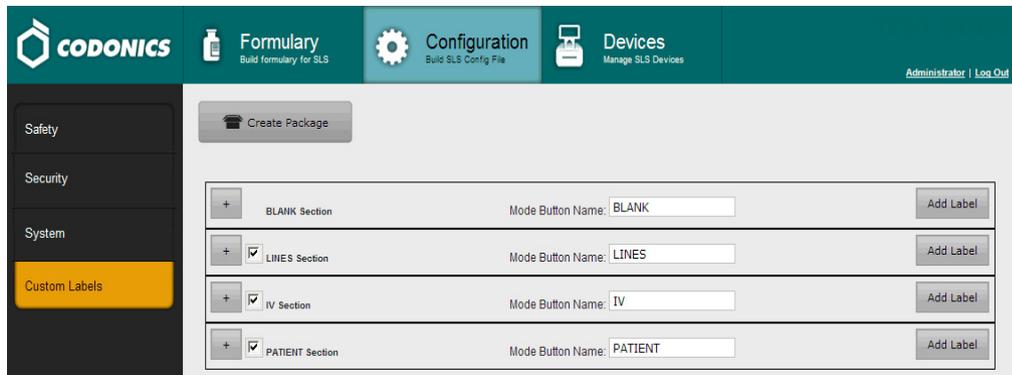
Each of these categories has a button on the user interface that the user presses to select that category. Up to 48 custom labels can be defined for each category.



NOTE: When a Blank or Lines label is printed on an SLS, one copy of the label is printed. When an IV or Patient label is printed, two copies of the label are printed.

The **Custom Labels** tab includes the settings that determine:

- Which of the label categories will have a button displayed in the user interface
- The name of the buttons, if something other than the default name is desired
- Which of the custom labels will be available in each category



For each custom label that is configured for a category, the appropriate SVG template, custom text values, colors, patterns, and other adjustable properties can be configured.

Note that the Blank label category is always included. This is to ensure the **Blank** label button is always displayed and is always the first button after the **Syringe** button. This is done so that if a scanned drug Container ID barcode is not found in the formulary database, the SLS can at least display Blank labels for the user to choose.

Enabling/Disabling a Custom Label Category



To enable or disable the display of a custom label category

Select or clear the category's check box.

Section	Mode Button Name	Action
<input type="checkbox"/> BLANK Section	Mode Button Name: BLANK	Add Label
<input checked="" type="checkbox"/> LINES Section	Mode Button Name: LINES	Add Label
<input checked="" type="checkbox"/> IV Section	Mode Button Name: IV	Add Label
<input checked="" type="checkbox"/> PATIENT Section	Mode Button Name: PATIENT	Add Label

Category check box

Changing the Button Text for a Custom Label Category



To change the name of a custom label category

Edit the entry in the label category's **Mode Button Name** field.



NOTE: If you clear the **Mode Button Name** name field, the text “Custom” is automatically entered in the field to ensure that all categories have a title.



NOTE: If you enter a single space character in the **Mode Button Name** field for the Lines or IV custom label, their title will be displayed as **CUSTOM** in the SLS user interface.



NOTE: If the entry in the **Mode Button Name** field is too long, it will be truncated in the center of the title when it is displayed in the SLS user interface.

Adding a Custom Label



To add a custom label to a category

1. In the **Custom Labels** tab, click the **Add Label** button of the category to which you want to add the custom label.

The screenshot shows the Codonics Configuration Manager interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The left sidebar has 'Safety', 'Security', 'System', and 'Custom Labels' (highlighted in yellow). The main content area shows a 'Create Package' button and a table of custom labels. The table has four rows: 'BLANK Section', 'LINES Section', 'IV Section', and 'PATIENT Section'. Each row has a 'Mode Button Name' field and an 'Add Label' button. An arrow points to the 'Add Label' button for the 'PATIENT Section'.

Section	Mode Button Name	Action
BLANK Section	BLANK	Add Label
LINES Section	LINES	Add Label
IV Section	IV	Add Label
PATIENT Section	PATIENT	Add Label

Add Label button

The **Create Custom Label** dialog box displays.

Create Custom Label

Position:	<input type="text" value="7"/>
SVG Template:	<input type="text" value="Select a template"/>
Title Text:	<input type="text"/>
Copies:	<input type="text" value="1"/>
Pattern:	<input type="text" value="Solid"/>
Color:	<input type="text" value="Select a color"/>
Primary Stripe:	<input type="text" value="Select a color"/>
Secondary Stripe:	<input type="text" value="Select a color"/>
Text Color:	<input type="text" value="#191919"/>
Text Background:	<input type="text" value="Select a color"/>
Expire Hours:	<input type="text" value="0"/>

2. Select the settings in the dialog box to specify the label template to use and the configurable template parameters.

The settings are described in Table 6-4.

Table 6-4. Custom Label Settings

Field	Description
Position	<p>The position of the label within the set of custom labels for this category.</p> <p>For example, 7 would mean that this label would appear as the seventh label from the left in the corresponding SLS custom label screen.</p>
SVG Template	<p>The file name for the label template. Refer to Table 6-5 on page 6-18 for a list of the available templates and which fields and attributes are supported for each template.</p>

Table 6-4. Custom Label Settings

Field	Description
Title Text	Displays the title of the custom label.
Copies	The number of copies of the label that will be printed.
Pattern	The background pattern for the label.
Color	The background color for the label.
Primary Stripe	The primary stripe to use for the label border. This field is enabled based on the selected pattern.
Secondary Stripe	The secondary stripe to use for the label border, filling in the empty spaces of the primary stripe. This field is enabled based on the selected pattern.
Text Color	The color of the label text.
Text Background Color	The background color for the label text.
Expire Hours	The number of hours after which the syringe will have expired. Custom labels have the following default expiration time values: <ul style="list-style-type: none">• Blank labels: 24 hours, except yellow and white which are set to 0 hours• Blank label with editable drug name: 6 hours• Lines labels: 0 hours• IV labels: 48 hours <i>NOTE: The default expire time settings are provided for your convenience. The settings are not industry standards, nor are they Codonics-recommended settings, but they are commonly used in practice. You can change any or all of them through the Administration Tool and apply the changes to the SLS.</i>



CAUTION The use of label colors is intended only as an aid in the identification of drug groups and does not absolve the user from the duty of reading the label and correctly identifying the drug prior to use.

3. When you have completed the fields, click the **Add** button.
The custom label is added to the category.
4. Click the category's expand button to see its list of custom labels.

Expand button

Title	Pattern	Color	Primary Stripe	Secondary Stripe	Text Color	Text Background	SVG Template	Expire Hours	Actions
Text									
	Solid	#FFFD00					patient-template.svg	0	
	Solid	#87D5DF					patient-template.svg	0	
	Solid	#FFFFFF					patient-template.svg	0	
	Solid	#FFFD00					patient-id-template.svg	0	
	Solid	#87D5DF					patient-id-template.svg	0	
	Solid	#FFFFFF					patient-id-template.svg	0	

Custom Label Templates

Table 6-5 lists the custom label templates that are typically used with each custom label category and indicates which custom label fields and attributes are supported for the templates.

Table 6-5. Custom Label Templates

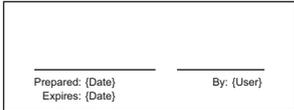
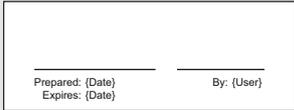
Custom Label Category	Template	Sample	Custom Fields and Attributes Supported						
			Template	Title Text	Color	Pattern	Text Color	Text Background	Expire Hours
Blank	Custom-Label-Template		✓	✓	✓	✓	✓	✓	✓
	Custom-Label-Template-2		✓		✓	✓	✓	✓	✓
Lines	Custom-IV		✓	✓	✓	✓	✓	✓	✓
IV	Custom-Label-Template		✓	✓	✓	✓	✓	✓	✓

Table 6-5. Custom Label Templates (Continued)

Custom Label Category	Template	Sample	Custom Fields and Attributes Supported						
			Template	Title Text	Color	Pattern	Text Color	Text Background	Expire Hours
Patient	Patient	<div style="border: 1px solid black; padding: 5px;"> First Name: _____ Last Name: _____ Prepared: (Date) _____ By: (User) _____ Expires: (Date) _____ </div>	✓		✓	✓	✓	✓	✓
	Patient-ID	<div style="border: 1px solid black; padding: 5px;"> First Name: _____ Last Name: _____ ID: _____ Prepared: (Date) _____ By: (User) _____ Expires: (Date) _____ </div>	✓		✓	✓	✓	✓	✓

Editing a Custom Label



1. Click the category's expand button to list its custom labels.

To edit a custom label

Expand button

The screenshot shows the Codonics Configuration Manager interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The left sidebar has 'Safety', 'Security', 'System', and 'Custom Labels' (highlighted in orange). The main content area shows a 'Create Package' button and a list of sections: BLANK Section, LINES Section, IV Section, and PATIENT Section. The PATIENT Section is expanded, showing a table of custom labels.

Title	Pattern	Color	Primary Stripe	Secondary Stripe	Text Color	Text Background	SVG Template	Expire Hours	Actions
Text	Solid	#FFFD00					patient-template.svg	0	[Edit] [Delete]
	Solid	#87D5DF					patient-template.svg	0	[Edit] [Delete]
	Solid	#FFFFFF					patient-template.svg	0	[Edit] [Delete]
	Solid	#FFFD00					patient-id-template.svg	0	[Edit] [Delete]
	Solid	#87D5DF					patient-id-template.svg	0	[Edit] [Delete]
	Solid	#FFFFFF					patient-id-template.svg	0	[Edit] [Delete]

2. Click the custom label's **Edit** button.

A close-up of a row from the table in the previous screenshot. The row has a yellow background for the color field. The 'Edit' button is highlighted with a black border and a vertical line pointing to it from the label 'Edit button' above.

#FFFD00	Solid		patient-template.svg	0	[Edit] [Delete]
---------	-------	--	----------------------	---	-----------------

The **Edit Custom Label** dialog box displays.

Edit Custom Label	
SVG Template:	patient-template.svg
Title Text:	
Copies:	2
Pattern:	Solid
Color:	#FFD000
Primary Stripe:	Select a color
Secondary Stripe:	Select a color
Text Color:	Select a color
Text Background:	Select a color
Expire Hours:	0
X Cancel	
✓ OK	

3. Modify the fields in the dialog box as needed.
The fields are described in Table 6-4 on page 6-15.
4. When you have completed modifying the fields, click the **OK** button.
The custom label's definition is updated.

Deleting a Custom Label



To delete a custom label

1. Click the category's expand button to list its custom labels.

Expand button

The screenshot shows the Codonics Configuration Manager interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The left sidebar has 'Safety', 'Security', 'System', and 'Custom Labels' (highlighted in orange). The main content area shows a 'Create Package' button and a list of sections: BLANK Section, LINES Section, IV Section, and PATIENT Section. The PATIENT Section is expanded, showing a table of custom labels.

Title	Pattern	Color	Primary Stripe	Secondary Stripe	Text Color	Text Background	SVG Template	Expire Hours	Actions
Text	Solid	#FFFD00					patient-template.svg	0	[Edit] [Delete]
	Solid	#87D5DF					patient-template.svg	0	[Edit] [Delete]
	Solid	#FFFFFF					patient-template.svg	0	[Edit] [Delete]
	Solid	#FFFD00					patient-id-template.svg	0	[Edit] [Delete]
	Solid	#87D5DF					patient-id-template.svg	0	[Edit] [Delete]
	Solid	#FFFFFF					patient-id-template.svg	0	[Edit] [Delete]

2. Click the custom label's **Delete** button.

A close-up of a custom label row from the table above. The label has a yellow background (#FFFD00) and is solid. The 'Delete' button is highlighted with a red box and labeled 'Delete button'.

#FFFD00	Solid		patient-template.svg	0	[Edit]	[Delete]
---------	-------	--	----------------------	---	--------	----------

You are prompted to confirm the deletion.

Creating and Importing a Wi-Fi Certificate Archive

The Wi-Fi network certificate files must be collected into a directory called **certificates** and then archived into a **.zip** file. This archive file is then imported into the configuration package in the Configuration **Security** tab, for deployment to the SLS devices.

Once the configuration package is deployed to an SLS whose MAC address was included in the certificate archive file, any current wireless settings on the SLS will be replaced with the new WPA/WPA2 Enterprise network settings. The network will be set to automatically connect the SLS on startup.

The process is the same for all EAP type WPA/WPA2 Enterprise networks that use passwords and/or certificates, including EAP-TLS and PEAPv0-MSCHAPv2.

Creating the Certificates Directory Structure

The SLS device certificate files must be stored in a specific directory/subdirectory structure.



To create the
certificates
directory
structure

1. Create a **certificates** directory.
2. Create subdirectories for each SLS device. Use the SLS device's Wi-Fi MAC address as the name of the subdirectory, with no colons. For example, if the MAC address is 40:4A:03:44:76:AF, name the subdirectory folder **404A034476AF**.
3. For each SLS device, place its custom configuration files and certificates into its certificates subdirectory.

Certificates Directory/Subdirectory Example

Following is an example of a certificate directory/subdirectory structure and file content. For examples of the **wifi.conf** and **wifi.conf.debug** files, refer to “wifi.conf and wifi.conf.debug File Examples” on page 6-31.

certificates

404A034476AF (folder, named from the MAC address: 40:4A:03:44:76:AF)

wifi.conf (configuration file)

wifi.conf.debug (configuration debug file)

certificate.pfx (the certificates for the device, inside a PKCS#12 container)

f46d04b18eb1 (folder, named from the MAC address: f4:6d:04:b1:8e:b1)

wifi.conf (configuration file)

cacert.pem (public certificate of the Root Certificate Authority)

privatekey.pem (private key for the device)

certificate.pem (public certificate for the device)

08863B26b730 (folder, named from the MAC address: 08:86:3B:26:B7:30)

wifi.conf (configuration file)

server_ca_cert.pem (public certificate of the Root Certificate Authority)

The *wifi.conf* Configuration File

The certificates subdirectory for each SLS device must contain a **wifi.conf** configuration file, which is a text file. The **wifi.conf** file will be parsed when the certificates archive file is imported into a configuration package to determine the certificates to be loaded.

The **wifi.conf** file defines the connection settings used for the WPA/WPA2 Enterprise network. These settings define whether EAP-TLS, PEAPv0-MSCHAPv2, or another EAP is used. Parameters are defined using the format **Param Value**. Table 6-6 on page 6-26 lists the possible parameters.

Only those parameters that are needed are required to be included in the configuration file. For example, the **wpa-private-key-passwd** parameter is required only if a password is needed for the PKCS#12 container or the private key.

An example of a **wifi.conf** file is:

```
wpa-ssid MySSID
wpa-ap-scan 2
wpa-proto RSN
wpa-pairwise CCMP TKIP
wpa-group CCMP TKIP
wpa-key-mgmt WPA-EAP
wpa-eap TLS
wpa-private-key allMyKeys.pfx
```

For additional example **wifi.conf** files for different types of Enterprise networks, refer to “**wifi.conf** and **wifi.conf.debug** File Examples” on page 6-31.

During the import of the archive file, the **wifi.conf** file will be parsed to determine which files to include for the following parameters:

- **wpa-ca-cert**. Root certificate.
- **wpa-client-cert**. Public certificate.

- **wpa-private-key.** Private key. This parameter can be the PKCS#12 container (.pfx, .p12).
- **wpa-ca-cert2.** Root Certificate for inner tunnel.
- **wpa-client-cert2.** Public Certificate for inner tunnel.
- **wpa-private-key2.** Private key. This parameter can be the PKCS#12 container (.pfx, .p12; for inner tunnel).

Table 6-6. wifi.conf Configuration File Parameters

Parameter	Values	Description
wpa-ssid	(Your Network SSID)	SSID of the network to connect to.
wpa-ap-scan	1 2	Scanning mode: 1: Default Scanning 2: Support for Non-broadcasted SSIDs
wpa-proto	WPA RSN	Network Protocols: <ul style="list-style-type: none"> • WPA: WPA Protocol • RSN: WPA2 Protocol <i>See Note 1 following the table.</i>
wpa-pairwise	TKIP CCMP	Accepted pairwise ciphers: <ul style="list-style-type: none"> • TKIP: Temporal Key Integrity Protocol • CCMP: AES in Counter mode with CBC-MAC <i>See Note 2 following the table.</i>

Table 6-6. wifi.conf Configuration File Parameters (Continued)

Parameter	Values	Description
wpa-group	TKIP CCMP	Accepted group ciphers: <ul style="list-style-type: none">• TKIP: Temporal Key Integrity Protocol• CCMP: AES in Counter mode with CBC-MAC <i>See Note 2 following the table.</i>
wpa-key-mgmt	WPA-EAP	WPA/WPA2 using EAP authentication.
wpa-eap	TLS PEAP	Authentication method.
wpa-private-key	(Filename in the device's directory)	Device's private key or PKCS#12 container.
wpa-identity	User Identity (Common Name)	Identity for EAP connections.
wpa-password	Password	Password associated with the identity for EAP (for example, PEAP-MSCHAPv2)
wpa-phase2	auth=MSCHAPV2	Inner authentication.
wpa-ca-cert	(Filename in the device's directory)	Root certificate authority.
wpa-client-cert	(Filename in the device's directory)	Device's public certificate.
wpa-private-key-passwd	(The password)	Device's private key or PKCS#12 container password. <i>See Note 3 following the table.</i>
wpa-ca-cert2	(Filename in the device's directory)	Root certificate authority (Inner authentication).
wpa-client-cert2	(Filename in the device's directory)	Device's public certificate (Inner authentication).

Table 6-6. wifi.conf Configuration File Parameters (Continued)

Parameter	Values	Description
wpa-private-key2	(Filename in the device's directory)	Device's private Key (inner authentication).
wpa-private-key2-passwd	(The password)	Device's private key or PKCS#12 container password (inner authentication).
		<i>See Note 3 following the table.</i>

Note 1: For WPA or WPA/WPA2 Mixed Mode, use WPA and see Note 2. For WPA2 only networks, use RSN.

Note 2: For WPA and WPA/WPA2 Mixed Mode networks, only TKIP should be specified. For WPA2 only networks, use: CCMP TKIP.

Note 3: If your PKCS#12 container does not contain a password, do not include this parameter.

Additional Required Certificate Files

Each subdirectory should have at least one of the following files:

- A PFX/P12 container file with the public certificate, private key, and public Root CAs (extension: .p12 or .pfx)
- A Root CA certificate (for example, cacert.pem, cacert.der)
- A Public certificate (for example, public.pem, public.der, public.cert)
- A Private key (for example, private.pem, private.der)

Required Certificates

Table 6-7 lists the certificates that are required for each network type.

Table 6-7. Network Type — Required Certificates

Network Type	Required Certificates
EAP-TLS	Requires either all three of the following certificates defined separately or contained in one PKCS#12 file. <ul style="list-style-type: none">• Root Certificate Authority• Public Certificate (per device)• Private Key (per device)
PEAPv0-MSCHAPv2	The Root Certificate Authority that issued the server's certificate.

Optional Debug File

An optional **wifi.conf.debug** file can be used to enable wireless debugging to be logged when errors occur.

An example of the **wifi.conf.debug** file for PEAP-MSCHAPv2 networks that do not broadcast an SSID is shown below. For additional example **wifi.conf.debug** files for different types of Enterprise networks, refer to “wifi.conf and wifi.conf.debug File Examples” on page 6-31.

```
ap_scan=2
network={
    ssid="CodonicsEnterprise"
    proto=RSN
    pairwise=CCMP TKIP
    group=CCMP TKIP
    key_mgmt=WPA-EAP
    eap=PEAP
    phase2="auth=MSCHAPV2"
    identity="myIdentity"
    password="myPassword"
    ca_cert="RootCA2003_bin.cer"
}
```

Note the following guidelines for the **wifi.conf.debug** file that are different than for the **wifi.conf** file:

- Settings do not use the **wpa-** prefix.
- Instead of dashes (-), underscores (_) are used.
- Parameters are in the form KEY=VALUE
- Some parameters are required to be in quotation marks.

For more information about wireless debug files, see:

```
http://hostap.epitest.fi/gitweb/gitweb.cgi?p=hostap.git;a=blob_plain;f=
wpa_supplicant/wpa_supplicant.conf
```

wifi.conf and wifi.conf.debug File Examples



NOTE: For networks using WPA/WPA2 Enterprise Mixed Mode, you must use WPA for your configuration settings, not WPA2.

EAP-TLS, WPA Enterprise

wifi.conf

```
wpa-ssid CodonicsEnterprise
wpa-ap-scan 2
wpa-proto WPA
wpa-pairwise TKIP
wpa-group TKIP
wpa-key-mgmt WPA-EAP
wpa-eap TLS
wpa-identity SLS10C
wpa-private-key SLS10C.pfx
wpa-private-key-passwd filePassword
```

wifi.conf.debug

```
ap_scan=2
network={
    ssid="CodonicsEnterprise"
    proto=WPA
    pairwise=TKIP
    group=TKIP
    key_mgmt=WPA-EAP
    eap=TLS
    identity="SLS10C"
    private_key="SLS10C.pfx"
    private_key_passwd="filePassword"
}
```

EAP-TLS, WPA2 Enterprise

wifi.conf

```
wpa-ssid CodonicsEnterprise
wpa-ap-scan 2
wpa-proto RSN
wpa-pairwise CCMP TKIP
wpa-group CCMP TKIP
wpa-key-mgmt WPA-EAP
wpa-eap TLS
wpa-identity SLS10C
wpa-private-key SLS10C.pfx
wpa-private-key-passwd filePassword
```

wifi.conf.debug

```
ap_scan=2
network={
    ssid="CodonicsEnterprise"
    proto=RSN
    pairwise=CCMP TKIP
    group=CCMP TKIP
    key_mgmt=WPA-EAP
    eap=TLS
    identity="SLS10C"
    private_key="SLS10C.pfx"
    private_key_passwd="filePassword"
}
```

PEAPv0-MSCHAPv2, WPA Enterprise

wifi.conf

```
wpa-ssid CodonicsEnterprise
wpa-ap-scan 2
wpa-proto WPA
wpa-pairwise TKIP
wpa-group TKIP
wpa-key-mgmt WPA-EAP
wpa-eap PEAP
wpa-phase2 auth=MSCHAPV2
wpa-identity myIdentity
wpa-password myPassword
wpa-ca-cert RootCA2003_bin.cer
```

wifi.conf.debug

```
ap_scan=2
network={
    ssid="CodonicsEnterprise"
    proto=WPA
    pairwise=TKIP
    group=TKIP
    key_mgmt=WPA-EAP
    eap=PEAP
    phase2="auth=MSCHAPV2"
    identity="myIdentity"
    password="myPassword"
    ca_cert="RootCA2003_bin.cer"
}
```

PEAPv0-MSCHAPv2, WPA2 Enterprise

wifi.conf

```
wpa-ssid CodonicsEnterprise
wpa-ap-scan 2
wpa-proto RSN
wpa-pairwise CCMP TKIP
wpa-group CCMP TKIP
wpa-key-mgmt WPA-EAP
wpa-eap PEAP
wpa-phase2 auth=MSCHAPV2
wpa-identity myIdentity
wpa-password myPassword
wpa-ca-cert RootCA2003_bin.cer
```

wifi.conf.debug

```
ap_scan=2
network={
    ssid="CodonicsEnterprise"
    proto=RSN
    pairwise=CCMP TKIP
    group=CCMP TKIP
    key_mgmt=WPA-EAP
    eap=PEAP
    phase2="auth=MSCHAPV2"
    identity="myIdentity"
    password="myPassword"
    ca_cert="RootCA2003_bin.cer"
}
```

Location of SLS Wi-Fi MAC Address

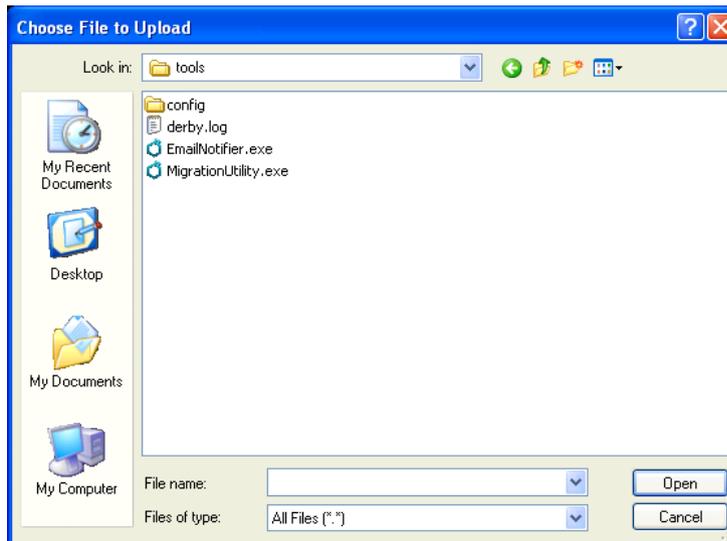
If you need the SLS Wi-Fi MAC address for the Wi-Fi certification files, it is located on the label of the SLS device's Wi-Fi USB adapter.

Currently Not Supported

- The ca_path and ca_path2 (wpa-ca-path and wpa-ca-path2) are not supported.
- The WPA/WPA2 Enterprise Mixed Mode is supported only when using WPA configuration settings.

Creating the Archive File and Importing It into the Configuration Package

Once all the SLS sub-directories have been created and the proper files stored in them, archive the **certificates** directory, creating a **.zip** file. Then go to the Configuration **Security** tab and click the **Wi-Fi Certificate Folder** setting's **Import** button to browse to and import the certificate archive file.



The Administrator Tool will extract the contents of the certificate archive file into the **AdminTool-Data/certificates** directory, verify the general structure of the directory/subdirectories, and encrypt the files. The encrypted contents will be included in the configuration package when it is created.

Creating a Configuration Update Package

To deploy the configuration to an SLS, you must create a configuration update package. This package can then be remotely installed on SLSs in your hospital that are on the same network as the PC running the Administration Tool. The package can also be copied to a USB flash drive for local installation on SLSs.



To create a configuration update package

1. With the **Configuration** tab displayed, click the **Create Package** button.

Create Package button

The screenshot shows the Codonics Configuration Manager interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The 'Configuration' tab is selected. A 'Create Package' button is visible in the main content area. Below it, there are two sections: 'Media' and 'General'. The 'Media' section has 'Enable Test Prints' checked, 'Test Print on Every Login' unchecked, 'Test Print on First Login' checked, and 'Test Print Every' set to 24 hours. The 'General' section has 'Verify On SLS', 'Confirm Before Print', 'Confirm After Print', 'Speak Drug Name', and 'Speak Concentration' all checked.

The **Liability Agreement** dialog box displays.

Liability Agreement

You agree to the terms and conditions outlined in the Terms and Conditions of use Agreement (Agreement) with respect to the Codonics SLS Application(s). You are responsible for the correctness and content of the SLS formulas. Any changes to the SLS Application(s) by the user whether intended or unintended are your responsibility. Codonics is not responsible for unintended or incorrect data being entered or used. Codonics is not responsible for a user changing or modifying the SLS formulas content. This Agreement supersedes all prior or contemporaneous agreements, recommendations, warranties and understandings with respect to the application, its content, or services provided by Codonics and the subject matter of this Agreement. This Agreement may be amended by Codonics at any time and frequency without specific notice to you.

I agree with the above statement.

2. Review the agreement.
3. If you agree with the content, select the **I Agree** check box and then click the **Create Package** button.

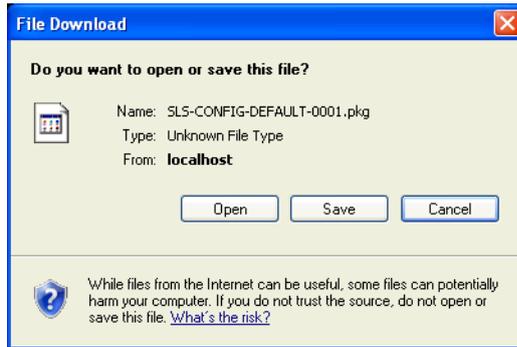
The progress of the configuration update package creation is displayed. When the configuration update package has been created, the **Download** button is enabled.

Building Package

Package created.

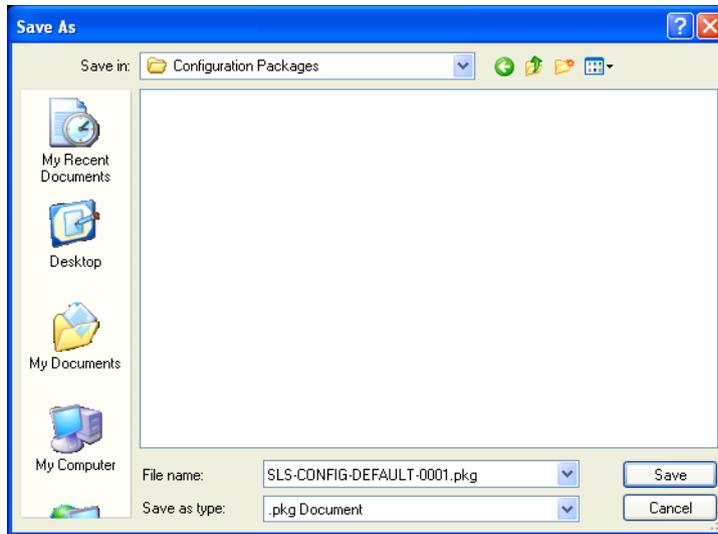
4. To proceed with saving the package file, click the **Download** button.

A **File Download** dialog box is displayed.



5. Click the **Save** button.

You are prompted to specify a destination folder for the configuration update package file.



6. Navigate to the destination folder (for example, on the USB flash drive that will be used to deploy the configuration update package to the SLSs), optionally change the default name for the package, and click the **Save** button.

Once the configuration update package has been created, it can be remotely installed on SLSs that are on the same network as the PC running the Administration Tool. For more information, refer to “Installing Packages on SLS Devices” on page 7-19.

You can also copy the configuration update package to a USB flash drive and then install it on SLSs from the USB flash drive. For information, refer to Chapter 5 of the Safe Label System User’s Manual.



WARNING Having multiple Administration Tools running or permitting multiple users to have Read-Write access to the Administration Tool Device Manager introduces the risk of deploying formulary or configuration packages with different content by the same names. Therefore, it is strongly recommended that each SLS customer create and set up a process and audit plan to check that the latest, approved versions of the formulary and configuration are correctly deployed to each SLS (for example, only create and deploy packages from one Administration Tool). It is also strongly recommended that each customer closely control which Administration Tool users receive Device Manager Read-Only and Read-Write privileges, as users with Read-Write privileges can deploy formulary and configuration packages to SLS devices.

7

Managing SLS Devices

Overview

The the Administration Tool Device Manager provides a centralized method for deploying updates to SLS devices and for monitoring their status. It allows you to perform much of the SLS device management right from the Administration Tool.

When the Administration Tool Device Manager Is Used

The Administration Tool Device Manager can be used for the following situations:

- Ensuring that all SLS devices are operational and that there are no critical updates to be performed.
- Performing an in-depth check on SLS device status.
- Downloading logs from individual SLSs for troubleshooting.
- Updating the formulary on SLSs.
- Updating SLS configurations.
- When an SLS device is replaced, retired, or moved.

- To detect when an SLS device requires servicing, such as replacing ink, loading new media, or correcting hardware malfunctions that prevent the SLS device from being used to scan and print drug labels or perform other operations.

Tasks Performed with the Administration Tool Device Manager

Using the Administration Tool Device Manager, you can perform the following tasks:

- Install a formulary or configuration package on selected SLS devices
- View a list of the current managed SLS devices
- Change the list of managed SLS devices
- View or modify the network access information for SLS devices



NOTE: *If the Administration Tool Device Manager is being used to monitor the status of SLSs, make sure that the date/time entered on the SLS devices is the same as that on the PC on which the Administration Tool is running. If an SLS device's date/time is more than 30 days different than the Administration Tool's date/time, its events will not be reported to Device Manager. If an SLS device's date is within 30 days but not the same, event reporting will not be optimal.*

The Devices Tab

The Devices Manager functions are located on the **Devices** tab.

Toolbar

Dashboard showing device and installation status summary counts of SLS devices

SLS Device	Device Status	Install Status	User	Formulary	Configuration	Software	IP Address	Actions
<input type="checkbox"/> OR1	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.11	
<input type="checkbox"/> OR2	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.74	
<input type="checkbox"/> OR3	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.139.175	
<input type="checkbox"/> OR4	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.33	
<input type="checkbox"/> OR5	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.223	
<input type="checkbox"/> OR6	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.193	
<input type="checkbox"/> OR7	Ready	OK: SLS-FORMULARY-ADULT020612-005		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.205	
<input type="checkbox"/> OR8	Ready	OK: SLS-FORMULARY-ADULT020612-005		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.190	
<input type="checkbox"/> OR9	Ready	OK: SLS-FORMULARY-ADULT020612-005		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.181	
<input type="checkbox"/> OR10	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.138.214	
<input type="checkbox"/> Peds 1	Ready	OK: SLS-FORMULARY-PEDS020612-006		PEDS020612-6	PEDS020612-13	1.3.0	10.1.136.188	
<input type="checkbox"/> Peds 2	Ready	OK: SLS-FORMULARY-PEDS020612-006		PEDS020612-6	PEDS020612-13	1.3.0	10.1.136.182	
<input type="checkbox"/> Peds 3	Ready	OK: SLS-FORMULARY-PEDS020612-006		PEDS020612-6	PEDS020612-13	1.3.0	10.1.136.137	

SLS device list



NOTE: If you have read-only access to the Administration Tool, you will see only the **Devices** tab. If you have full access to the Administration Tool, you will see the **Formulary**, **Configuration**, and **Devices** tabs.

The **Devices** tab includes the following main components:

- The SLS device list includes an entry for each of the current managed SLS devices, with information about each of them.
- The left pane includes a dashboard that allows you to see at a quick glance the overall status of your managed SLS devices.
- The toolbar above the SLS device list includes buttons that allow you to change the list of managed devices, change network access information for the devices, and install a formulary or configuration package on selected devices.

The Devices Tab Access and Passwords

There are two types of access to the Administration Tool Device Manager:

- **Read-Write.** Allows the user to remotely deploy formulary and configuration packages to SLS devices. Also allows the user to view status information about the SLS devices and download SLS device logs.
- **Read-Only.** Allows the user to view status information about the SLS devices and download SLS device logs.

The first time that you go to the **Devices** tab during an Administration Tool session, you are prompted to select which access level to use and the password for that access level.



Enter Network Password

Read-Write Read-Only

Password:

Select the **Read-Write** or **Read-Only** access option, enter the password for that access level (passwords are case-sensitive), and click the **OK** button.



NOTE: The passwords are set on the Configuration **Security** tab. By default, the passwords for both access levels is **codonics**. If this password is not changed, then you can leave the **Password** field in the **Enter Network Password** dialog box empty after selecting your access level, since the password **codonics** will be assumed by default. For information about setting these passwords, refer to “Security Settings” on page 6-4.

You can also change your access level during a session by clicking the **Enter Network Password** button, which will display the **Enter Network Password** dialog box.

Enter Network Password button

SLS Device	Device Status	Install Status	User	Formulary	Configuration	Software	IP Address	Actions
<input type="checkbox"/> OR1	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.11	
<input type="checkbox"/> OR2	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.74	
<input type="checkbox"/> OR3	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.139.175	
<input type="checkbox"/> OR4	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.33	
<input type="checkbox"/> OR5	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.223	
<input type="checkbox"/> OR6	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.193	

If you enter an incorrect password, the SLS devices will indicate a status of “Offline: Can’t Authenticate.”

<input type="checkbox"/> OR4	Offline: Can't Authenticate
------------------------------	--------------------------------

Configuring the List of Managed SLS Devices

The list of managed SLS devices in the **Devices** tab is loaded from an SLS Master Device List file. You can modify the list of devices in the file, or create multiple files for different groups of SLS devices. You can then load one of these files to change the list of managed SLS devices in the **Devices** tab.

Creating or Modifying an SLS Master Device List File

The SLS Master Device List file is a text file that includes the IP address and host name for each SLS device to be included. You can create or modify the file using an ASCII or UTF-8 editor, such as Notepad. A sample Master Device List file, **ENSampleMDLFile.txt**, is included in the Administration Tool **tools/config** directory.

Each entry should be on a separate line and in the following format:

```
ipAddress[:portNumber], hostName
```

where:

- **ipAddress** is the device's IP address.
- **portNumber** is the port number used for network communication. By default, port number 22 is used. If port 22 is correct, the port number does not need to be included in the Master Device List.
- **hostName** is the host alias name

For example:

```
10.1.137.11, OR1
10.1.137.74, OR2
10.1.139.175, OR3
10.1.137.33, OR4
10.1.136.223, OR5
10.1.136.193, OR6
```

An example entry with a port number specified is:

```
10.1.136.223:10022, OR5
```



NOTE: The port number specified in the Master Device List file must match the port number specified in the configuration package currently installed on the SLS. For information about setting the port number for a configuration package, refer to “Security Settings” on page 6-4.

The hostname entry can contain any character except for a comma(,), including the space character, and can be up to 32 characters in length. Each hostname must be unique.

Opening an SLS Device List

You change the list of managed SLS devices by opening a different SLS Master Device List file.



To open an SLS Master Device List

1. Click the **Open Device List** button in the toolbar.

Open Device List button

The screenshot shows the Codonics SLS Management interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The 'Devices' section is active, showing a toolbar with 'Open Device List', 'Enter Network Password', and 'Install Package'. Below the toolbar is a table of SLS devices with columns for SLS Device, Device Status, Install Status, User, Formulary, Configuration, Software, IP Address, and Actions. The table lists six devices (OR1-OR6) all in a 'Ready' status.

SLS Device	Device Status	Install Status	User	Formulary	Configuration	Software	IP Address	Actions
OR1	Ready	OK; SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.11	[Info] [Refresh]
OR2	Ready	OK; SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.74	[Info] [Refresh]
OR3	Ready	OK; SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.139.175	[Info] [Refresh]
OR4	Ready	OK; SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.33	[Info] [Refresh]
OR5	Ready	OK; SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.223	[Info] [Refresh]
OR6	Ready	OK; SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.193	[Info] [Refresh]

The **Open Device List** dialog box displays.

The 'Open Device List' dialog box features a 'File Name:' text input field with a 'Browse' button to its right. At the bottom of the dialog, there are 'Cancel' and 'Open' buttons.

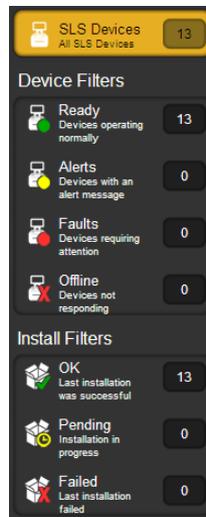
2. Click the **Browse** button to navigate to and select the SLS Master Device List file.
3. Click the **Open** button.

The Administration Tool Device Manager checks to make sure the file is valid. If it is, the Administration Tool Device Manager updates the list of managed SLS devices in the **Devices** tab based on the contents of this file. This list is retained the next time that the Administration Tool starts.

Viewing SLS Device Information

Viewing General Device and Installation Status

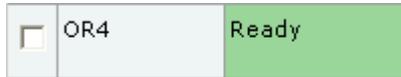
The left pane of the **Devices** tab lists status boxes that allow you to see at a quick glance the overall status and the installation status of your managed SLS devices. Each status box indicates the number of devices with that status.



Device Statuses

The device statuses shown in the left pane are described below. Examples of the more specific device status information shown in the **Device Status** column are also provided.

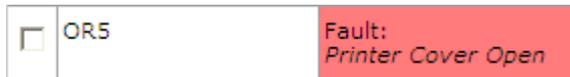
- **Ready.** The device is running in normal operation.



- **Alert.** Alert conditions. The device can still process jobs but requires user attention (for example, low ink).



- **Fault.** Critical or fault condition. The device might not be able to process jobs. The device requires immediate user attention (for example, out of ink).



- **Offline.** The Administration Tool Device Manager is unable to communicate with the SLS device.



Possible reasons are:

- **No Connection.** There is no network connection between the Administration Tool Device Manager and the SLS device. Either the SLS device is powered off, the network is down, or the SLS IP address in the Master Device List is incorrect.

- **SLS Not Responding.** The SLS software is not running (for example, a package is being installed on the device).
- **Can't Authenticate.** The Administration Tool user has entered the wrong Read-Write or Read-Only password in the Administration Tool Device Manager.
- **Unknown Error.** An error has occurred that cannot be identified.

Install Statuses

The device install statuses shown in the left pane are:

- **OK.** The last package installation was successful.
- **Pending.** The installation of a package is in progress.
- **Failed.** The last installation of a package failed.

SLS devices can also report more specific installation statuses in the **Installation Status** column of the device list. For more information, refer to “Installation Status” on page 7-23.

Summary Device Information in the SLS Device List

The SLS device list includes summary information about each of the managed SLS devices in the list:

- **SLS Device.** The SLS device name.
- **Device Status.** The SLS device status. For an explanation of the device statuses, refer to “Viewing General Device and Installation Status” on page 7-9.
- **Install Status.** The SLS installation status. For an explanation of the installation statuses, refer to “Installation Status” on page 7-23.

- **User.** The currently logged in user. This field is blank if no user is logged in to the SLS. Otherwise, the user's initials are displayed.
- **Formulary.** The formulary package and version.
- **Configuration.** The configuration package and version.
- **Software.** The SLS software version.
- **IP Address.** The SLS IP address.

Each SLS device entry also includes action buttons:



Display system information for this device. For more information, refer to “Viewing Detailed Information About an SLS Device” on page 7-15.



Download logs for this device. For more information, refer to “Downloading SLS Device Logs” on page 7-17.

Filtering the SLS Device List by Status

You can filter the SLS device list by clicking a **Device** or **Install** status filter in the left pane.

For example, clicking the **SLS Devices** filter causes all managed SLS devices to be listed. But clicking the **Offline** filter causes only those SLS devices that are in the Offline state to be listed.

SLS Devices filter

The screenshot shows the Codonics SLS Administration Tool interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The left sidebar shows 'Device Filters' with 'SLS Devices' selected. The main area displays a table of SLS devices.

SLS Device	Device Status	Install Status	User	Formulary	Configuration	Software	IP Address	Actions
<input type="checkbox"/> OR1	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.11	[i] [m] [u]
<input type="checkbox"/> OR2	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.74	[i] [m] [u]
<input type="checkbox"/> OR3	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.139.175	[i] [m] [u]
<input type="checkbox"/> OR4	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.33	[i] [m] [u]
<input type="checkbox"/> OR5	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.223	[i] [m] [u]
<input type="checkbox"/> OR6	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.193	[i] [m] [u]

Offline filter

Only one status filter at a time can be applied.

Sorting the SLS Device List

You can sort the SLS device list on any of the column headings in the SLS device list by clicking the heading. The list is sorted in ascending order by that column. Click the column heading again to toggle the sort order to descending.

Click a column heading to sort the list by that column

SLS Device	Device Status	Install Status	User	Formulary	Configuration	Software	IP Address	Actions
<input type="checkbox"/> OR1	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.11	
<input type="checkbox"/> OR2	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.74	
<input type="checkbox"/> OR3	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.139.175	
<input type="checkbox"/> OR4	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.33	
<input type="checkbox"/> OR5	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.223	
<input type="checkbox"/> OR6	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.193	

SLS Device List Sort Behavior

- If you click the **Device Status** column heading, the sort order of the device list is based on the device status at the time you click the heading. However, the sort does not automatically update when the status of a device changes. You have to click the column heading again to refresh the sort order.
- The Administration Tool Device Manager does not sort within a type of Status. For example, if the device list is sorted by Device Status, then it is correctly sorted by Ready, Warning, Fault, and Offline, but not by specific statuses such as No Connection and Can't Authenticate.

Viewing Detailed Information About an SLS Device



To view detailed information about an SLS device

Click the Information button in the **Actions** column of the SLS device.

1.3.0	10.1.138.214	 
1.3.0	10.1.136.188	 
1.3.0	10.1.136.182	 
1.3.0	10.1.136.137	 

Information button

The SLS device information dialog box displays.

System Information: OR3						
Serial Number:	140C00169C	Ink Levels:				
Software Version:	1.3.0	Cyan:	96%			
Printer Firmware:	VER:220 07/26/11V2.05 03/10/2011 D022_	Magenta:	97%			
Formulary Version:	ADULT020612-5	Yellow:	96%			
Configuration Version:	ADULT020612-4	Network Configuration:				
License Code:	060-00230-100	Ethernet IP:	10.1.139.175			
Current User		Ethernet MAC:	00:60:e0:4b:25:4c			
Name:		Wi-Fi IP:				
Initials:		Wi-Fi MAC:				
Login Time:		Wi-Fi Strength:				
Previous Login:						
Status Messages						
Date/Time ↑	Message					
02/07/2012 12:19	Ready.					
Events						
Event ID ↑	Date/Time	Description	Details	User Name	User Initials	Event Code
2	02/03/2012 12:20	The SLS has started.				51
3	02/05/2012 06:42	Update transferring.	PKG = SLS-FORMULARY-RC9104D-002			53
✓ OK						



NOTE: Status information and events cannot be displayed for a device that is Offline.

The system information includes:

- Serial number.
- Current software version.
- Printer firmware.
- Current formulary version.
- Current configuration version.
- License code.
- Information about the current user: name, initials, login time, and the previous login.
- Ink levels (percent remaining).
- Network configuration information: for Ethernet, IP and MAC addresses; for WiFi, IP and MAC addresses, and signal strength.
- List of status messages, including a timestamp of when the status was posted.
- List of events that have occurred (for example, “The SLS has started” or “Drug verified on SLS”).

The Status Messages and Events lists can be sorted by clicking any of the column headings. Clicking a heading again toggles the sort between ascending and descending order.

Downloading SLS Device Logs

You can download an SLS device's log file to a directory available to the PC on which the Administration Tool is running.



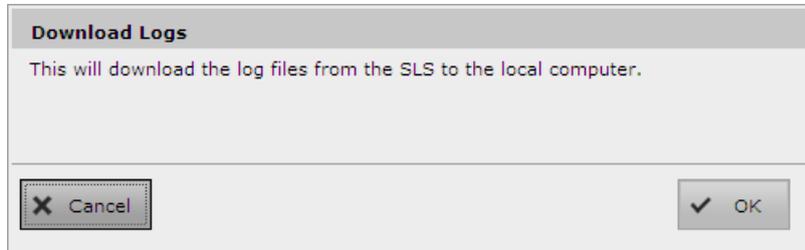
To download an SLS device's log files

1. Click the Log File button in the **Actions** column of the SLS device.

1.3.0	10.1.138.214	 
1.3.0	10.1.136.188	 
1.3.0	10.1.136.182	 
1.3.0	10.1.136.137	 

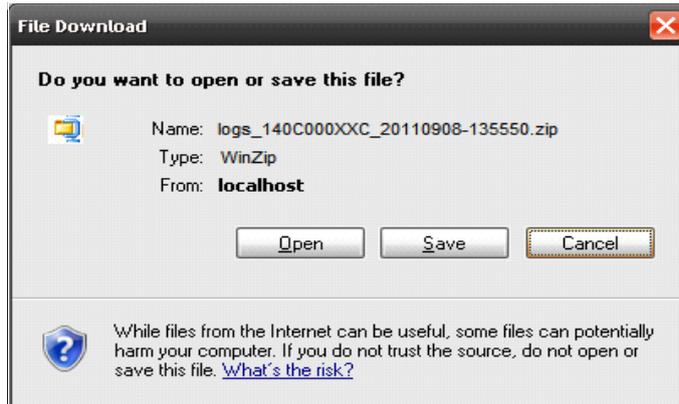
Log File button

The **Downloading Logs** dialog box displays.



2. Click the **OK** button.

You are prompted to open or save the archive file that contains the log files.



Installing Packages on SLS Devices



To install packages on SLS devices

1. If you currently do not have Read-Write access in Administration Tool Device Manager, change your access level to it by clicking the **Enter Network Password** button.

Enter Network Password button

SLS Device	Device Status	Install Status	User	Formulary	Configuration	Software	IP Address	Actions
<input type="checkbox"/> OR1	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.11	
<input type="checkbox"/> OR2	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.74	
<input type="checkbox"/> OR3	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.139.175	
<input type="checkbox"/> OR4	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.33	
<input type="checkbox"/> OR5	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.223	
<input type="checkbox"/> OR6	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.193	

The **Enter Network Password** dialog box displays.

Enter Network Password

Read-Write Read-Only

Password:

2. Select the **Read-Write** option, and then click the **OK** button.



NOTE: The default Read-Write password is **codonics**. If this is still the password, then you can leave the **Password** field in the **Enter Network Password** dialog box empty after selecting your access level, since the password **codonics** will be assumed by default.

3. Select the SLS devices on which to install the package by selecting their check boxes.

SLS device selection check boxes

<input checked="" type="checkbox"/>	SLS Device	Device Status	Install Status	User	Formulary	Configuration	Software	IP Address	Actions
<input checked="" type="checkbox"/>	OR1	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.11	[i] [m]
<input checked="" type="checkbox"/>	OR2	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.137.74	[i] [m]
<input checked="" type="checkbox"/>	OR3	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.139.175	[i] [m]
<input checked="" type="checkbox"/>	OR4	Ready	OK		Factory Defaults	Factory Defaults	1.3.0	10.1.137.33	[i] [m]
<input checked="" type="checkbox"/>	OR5	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.223	[i] [m]
<input checked="" type="checkbox"/>	OR6	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.193	[i] [m]
<input checked="" type="checkbox"/>	OR7	Ready	OK: SLS-FORMULARY-ADULT020612-005		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.205	[i] [m]
<input checked="" type="checkbox"/>	OR8	Ready	OK: SLS-FORMULARY-ADULT020612-005		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.190	[i] [m]
<input checked="" type="checkbox"/>	OR9	Ready	OK: SLS-FORMULARY-ADULT020612-005		ADULT020612-5	ADULT020612-4	1.3.0	10.1.136.181	[i] [m]
<input checked="" type="checkbox"/>	OR10	Ready	OK: SLS-CONFIG-ADULT020612-004		ADULT020612-5	ADULT020612-4	1.3.0	10.1.138.214	[i] [m]
<input type="checkbox"/>	Peds 1	Ready	OK: SLS-FORMULARY-PEDS020612-006		PEDS020612-6	PEDS020612-13	1.3.0	10.1.136.188	[i] [m]
<input type="checkbox"/>	Peds 2	Ready	OK: SLS-FORMULARY-PEDS020612-006		PEDS020612-6	PEDS020612-13	1.3.0	10.1.136.182	[i] [m]
<input type="checkbox"/>	Peds 3	Ready	OK: SLS-FORMULARY-PEDS020612-006		PEDS020612-6	PEDS020612-13	1.3.0	10.1.136.137	[i] [m]



TIP: Multiple SLS selections

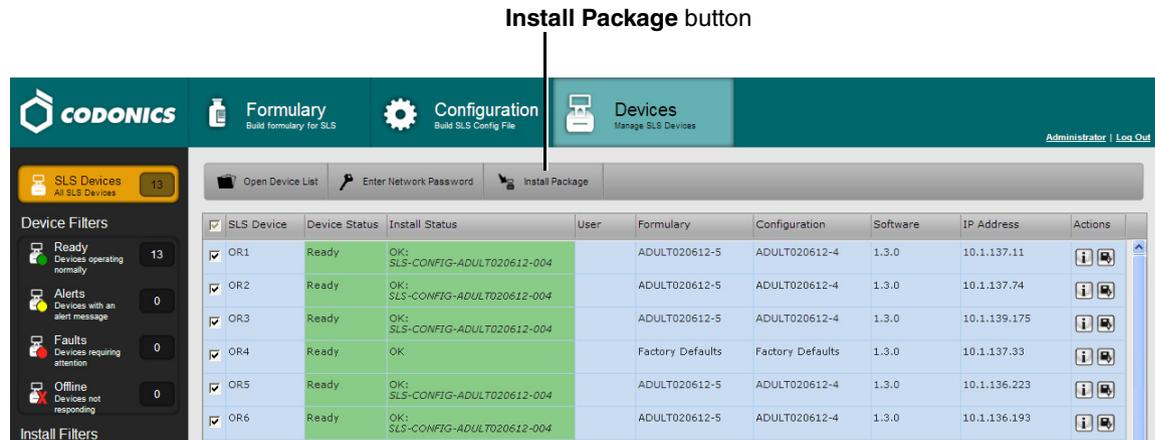
To select a range of SLS records, select the first entry and then Shift-click the last entry in the range. If you want to select all of the SLS records, or clear them all to reselect them, select or clear the check box in the column header row (shown below).

The screenshot shows the Codonics Formulary interface. On the left, there are navigation panels for 'SLS Devices' (13), 'Device Filters' (Ready: 13, Alerts: 0), and 'Open Device List'. The main table displays SLS devices with columns for 'SLS Device' and 'Device'. The header row has a check box, and two rows below it show 'OR1' and 'OR2' both with check boxes and 'Ready' status.

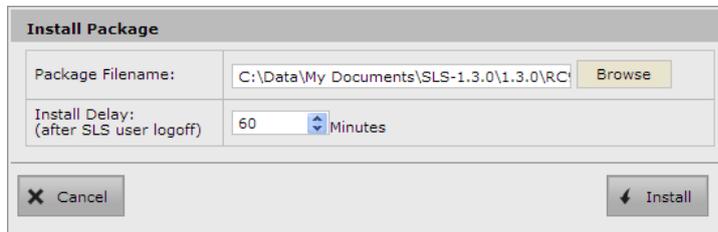
<input checked="" type="checkbox"/>	SLS Device	Device
<input checked="" type="checkbox"/>	OR1	Ready
<input checked="" type="checkbox"/>	OR2	Ready

— Sets or clears all drug record check boxes

4. Click the **Install Package** button in the toolbar.



The **Install Package** dialog box displays.



5. Click the **Browse** button to navigate to and select the package file.
6. Enter the number of minutes to delay the package installation after the current SLS user has logged out.

The default is 60 minutes. To have the package installed with no delay, set the **Install Delay** setting to 0. If a user is not logged in to the SLS, the package will begin to install immediately.

7. Click the **Install** button.

The package is sent to the SLS devices and installed automatically.

Installation Status

- **Transferring** (includes the name of the package). A package is being sent to the SLS.
- **Waiting** (includes name of the package). The SLS has a package that it needs to install but the device is in a state that prevents it from being installed. For example, a user is currently logged into the SLS, which prevents the device from installing the package until the user logs out.
- **Installing** (includes the name of the package). The SLS is installing a package. This state is reported whether the source of the installation was Administration Tool Device Manager or a USB flash drive.
- **Completed** (includes the name of the package). The SLS successfully installed the package.
- **Failed** (includes the name of the package). The SLS failed to install the package.



NOTE: The package will not be installed if an SLS device already has a status of *Transferring*, *Waiting*, or *Installing*, or if the device is offline.



NOTE: If an SLS user postpones the package installation by pressing the **Delay** button in the package Update prompt, either a user must log in to and log out of the SLS device or it must be restarted for the Update prompt to be displayed again. Otherwise, the package installation will not occur.

Setting Up and Running the EmailNotifier

The EmailNotifier application can be used to email Device Event Reports to predefined users. The Device Event Reports include event information about each of the SLS devices in a specified SLS Master Device List.



NOTE: The EmailNotifier feature key must be installed on an SLS for that device's information to be included in the emailed Device Event Report.



NOTE: Multiple EmailNotifiers can be running on the same network, each with its own unique set of SLS devices to monitor. For example, an organization that has multiple geographic locations and can run an EmailNotifier at each location to monitor the SLSs separately by location.

EmailNotifier Configuration

The EmailNotifier configuration file controls the behavior of the EmailNotifier. A sample file is shown in “Example EmailNotifier Configuration File” on page 7-25.

The configuration file can be edited with a text editor, and you can use the file name of your choosing.

The following topics show an example of the EmailNotifier configuration file and describe the parameters that are specified in it.

Example EmailNotifier Configuration File

An example EmailNotifier configuration file is shown below.

```
# SLS EmailNotifier Configuration File

#
# Mail Server Configuration
#
smtp.server = 192.168.10.1
smtp.port = 25
smtp.username = guest
smtp.password = mypass
smtp.emailFrom = SLSevents@hospital.org
smtp.useSSLTransport = false

#
# Location of the file which contains locale specific message strings
#
# If the specified file exists in the current working directory
# (or is a full pathname) it is used. Otherwise the file is assumed
# to be in the directory specified by the EN's -datadir argument.
#
# If this property is not present, the file "messages.properties"
# in the datadir is used.
#
system.messages.filename = messages.properties

#
# Location of the file which contains email formatting configuration
information
#
# If the specified file exists in the current working directory
# (or is a full pathname) it is used. Otherwise the file is assumed
# to be in the directory specified by the EN's -datadir argument.
#
```

```

# If this property is not present, the file "emailFormat.properties"
# in the datadir is used.
#
system.emailFormat.filename = emailFormat.properties

#
# Master Device List information
#
# If the specified file exists in the current working directory
# (or is a full pathname) it is used. Otherwise the file is assumed
# to be in the directory specified by the EN's -datadir argument.
#
system.mdl.filename = ENSampleMDLFile.txt
system.mdl.username = net-admin
system.mdl.password = codonics

# MailGroup for Pharmacy Events only - sent every minute during
# normal working hours
mailgroup.pharmacyEvents.subject = SLS Pharmacy Events
mailgroup.pharmacyEvents.emailTo = user1@hospital.org,
user2@hospital.org
mailgroup.pharmacyEvents.startTime = 9:00
mailgroup.pharmacyEvents.endTime = 17:00
mailgroup.pharmacyEvents.intervalMinutes = 1
mailgroup.pharmacyEvents.events = DRUG_NOT_FOUND, DRUG_NOT_APPROVED,
DRUG_VERIFIED, DRUG_FAILED_VERIFICATION

# MailGroup for All Events - sent every hour during normal working hours
mailgroup.allEvents.subject = SLS Events
mailgroup.allEvents.emailTo = user1@hospital.org, user2@hospital.org,
user3@hospital.org
mailgroup.allEvents.startTime = 9:00
mailgroup.allEvents.endTime = 17:00
mailgroup.allEvents.intervalMinutes = 60
mailgroup.allEvents.events = DRUG_NOT_FOUND, DRUG_NOT_APPROVED,
DRUG_VERIFIED, DRUG_FAILED_VERIFICATION, POSTPRINT_CONFIRM_FAILED,
APP_CLOSING, APP_RUNNING, APP_SYS_OUT_SERVICE, PRINTER_OUT_OF_INK,
PRINTER_INK_LOW, PRINTER_PAPER_OUT, UPDATE_TRANSFERRING, UPDATE_QUEUED,
UPDATE_STARTED, UPDATE_COMPLETE, UPDATE_FAIL

```

Mail Server Settings

The following parameters in the [SMTP] section of the EmailNotifier configuration file are used to specify how the EmailNotifier will communicate with a standard SMTP server:

- Mail server name or IP address
- Port (defaults to port 25)
- SMTP username and password (if required to send emails via the site's SMTP server)
- “From” email address (example: SLSevents@hospital.org)
- Whether to use SSL (Secure Sockets Layer)

SLS Master Device List

The SLS devices whose events will be tracked are specified in an SLS Master Device List. The location of the SLS Master Device List to be used by the EmailNotifier is specified as a parameter in the [MDL] section of the EmailNotifier configuration file.

For more information about the SLS Master Device List file, refer to “Creating or Modifying an SLS Master Device List File” on page 7-6.



NOTE: For better security, remove the line “system.mdl.password = codonics” or just the password in the [MDL] section of the EmailNotifier configuration file. If the password is not included, the user will be prompted for the password when starting the EmailNotifier and should enter the Read-Write password set for the corresponding configuration package deployed to the SLS devices. For more information about this password, refer to “Security Settings” on page 6-4. For information about starting the EmailNotifier, refer to “Starting the EmailNotifier” on page 7-31.

Email Notification Groups

The EmailNotifier uses notification groups to allow you to control which email recipients receive Device Event Reports and the frequency with which the reports are sent. Each notification group is specified in a [MailGroup] section of the EmailNotifier configuration file.

The notification group parameters are described in Table 7-1.

Table 7-1. Notification Group Parameters

Email Subject (also functions as a Group Name)	Each email sent to this group will contain this string as the first portion of the email subject line. This allows a value that can then be used to filter or search for particular emails based on this subject text to be specified. If this parameter is blank or missing, a factory default entry will be used.
One or more email addresses	Multiple email addresses can be specified, separated by commas. NOTE: <i>It is recommended that the site's IT staff set up a mail group on their own server for each notification group. That way, when personnel change, the IT staff can simply update their own mail groups and leave the EmailNotifier configuration unchanged.</i>

Table 7-1. Notification Group Parameters (Continued)

Start and Stop Timeframe	<p>Values are 24 hour times in the format [h]h:mm (for example, 8:00 – 17:00)</p> <p>To support time frames across two days, the start time can be later than the end time. For example, 23:00–07:00 would enable email notifications from 11 pm to 7 am.</p> <p>Emails will be delivered only during this time frame (for example, during working or operating hours).</p> <p>At the start of the time frame, all events accumulated since the end of the previous time frame will be delivered.</p> <p>Setting the same start and stop time causes the EmailNotifier to always deliver emails at the defined interval (see the Interval of notifications parameter).</p>
Interval of notifications	<p>Send emails at this interval, specified in minutes (for example, 2 hours = 120).</p> <p>If no new events have been generated since the previous notification trigger, then no emails are sent.</p>
Type of event messages included	<p>The events to be included in the report are specified as a comma-separated list of event types.</p> <p>The event types are defined in Table 7-2 on page 7-30.</p> <p>An email notification will be sent to the specified recipients only if events of the types specified in this parameter have been received since the last notification.</p>

Table 7-2. Event Types Reported

DRUG_NOT_FOUND	The drug was not found.
DRUG_NOT_APPROVED	The drug is obsolete (that is, it is not approved). Do not use the drug.
DRUG_VERIFIED	The drug was verified on the SLS.
DRUG_FAILED_VERIFICATION	The drug failed verification.
DRUG_SYRINGE_LABEL_ POSTPRINT_CONFIRM_SCAN_ FAILED_LABEL_TYPE	Label confirmation error: Barcode type is incorrect.
DRUG_SYRINGE_LABEL_ POSTPRINT_CONFIRM_SCAN_ FAILED	Label confirmation error: Barcode content is incorrect.
DRUG_SYRINGE_LABEL_ POSTPRINT_CONFIRM_SCAN_ REALLY_FAILED	Label confirmation error: The scan failed, and there was no re-scan.
DRUG_SYRINGE_LABEL_ POSTPRINT_CONFIRM_FAILED	Label confirmation error: The user was unable to scan the label.
DRUG_SYRINGE_LABEL_ POSTPRINT_CONFIRM_VISUAL_ PRINTING_FAILED	Label confirmation error: The user indicated a visual print failure.
DRUG_SYRINGE_LABEL_ POSTPRINT_CONFIRM_VISUAL_ CONTENTS_FAILED	Label confirmation error: The user indicated a visual content failure.
APP_CLOSING	The SLS is shutting down.
APP_RUNNING	The SLS is starting up.
APP_SYS_OUT_SERVICE	The SLS is out of service.

Table 7-2. Event Types Reported (Continued)

APP_SYS_OUT_SERVICE_ALLOW_LOGIN	The SLS is out of service, but a login is allowed.
PRINTER_INVALID_INK	A valid ink cartridge is not installed.
PRINTER_OUT_OF_INK	The ink cartridge is out of ink.
PRINTER_INK_LOW	The ink cartridge is low on ink.
PRINTER_PAPER_OUT	There is no media loaded.
UPDATE_TRANSFERRING	Update package installation: The package is being transferred to an SLS.
UPDATE_QUEUED	Update package installation: The package is queued for installation.
UPDATE_STARTED	Update package installation: The package update has been started.
UPDATE_COMPLETE	Update package installation: The package update is completed.
UPDATE_FAIL	Update package installation: The package update has failed.

Starting the EmailNotifier



To start the EmailNotifier

1. If not already installed, install an EmailNotifier feature key on each SLS device whose status is to be included in emailed Device Event Reports from the EmailNotifier.
2. Open a Command Prompt window by pressing the Win+R keys.
3. In the **Run** window, enter `cmd` and click the **OK** button.
The Command Prompt window displays.
4. Navigate to the Administration Tool **tools** directory. For example:

```
cd C:\Program Files\Codonics\SLSAdminTool\v1.3.0\tools
```

5. Run the following command to start the EmailNotifier:

```
EmailNotifier.exe -datadir "<tools dir>\config" -config <config file name>
```

For example, if the EmailNotifier configuration file is called **myENConfigFile.txt**, you would enter the following command:

```
EmailNotifier.exe  
-datadir C:\ProgramFiles\Codonics\SLSAdminTool\v1.3.0\tools\config  
-config myENConfigFile.txt
```

If the Read-Write access password that is set for the configuration package deployed to the SLS devices was not included in the EmailNotifier configuration file, you are prompted for it.

6. Enter the Read-Write password.

The EmailNotifier will start running, checking SLS for events, and emailing Device Event Reports to individuals and groups based on your configuration(s).



NOTE: If the Master Device List has been updated with new SLS devices, the EmailNotifier must be restarted to include the new devices in the Device Event Reports.

Requirements for the EmailNotifier to Continue Sending Reports

For the EmailNotifier to continue to send Device Event Reports, the following conditions are required:

- The PC on which the EmailNotifier is running.
- The Command Prompt window in which the EmailNotifier is running is open.
- The EmailNotifier application is running.

Additional Notes About Running the EmailNotifier

- If you add an EmailNotifier feature key to an SLS unit after the EmailNotifier has been started, you will need to restart the EmailNotifier for that SLS's events to be included in reports.
- If you make changes to the EmailNotifier configuration file after the EmailNotifier has been started, you will need to restart the EmailNotifier for those changes to take effect.

Stopping the EmailNotifier



To stop the
EmailNotifier

Exit the Command Prompt window or shut down the PC from which the EmailNotifier is running.

EmailNotifier Processing

This section describes how the EmailNotifier starts up, collects events, and sends emails.

Collecting Events

The EmailNotifier collects events from each of the SLS devices specified in the SLS Master Device List for the past 30 days that the device was running and processes them as specified in the EmailNotifier configuration file.

If there is previous history of emailed events, then only events newer than those last processed are collected.

The basic event collection process is as follows:

1. Periodically poll each device in the MDL and collect its status and event list.
2. Group events into their respective notification groups (events can pertain to multiple groups).

3. Repeat (and email Device Event Reports as indicated in the next section).

The frequency of polling is determined by the frequency parameter with the most frequent setting among all configured notification groups.

Emailing Device Event Reports

Once the events have been collected, the EmailNotifier emails a Device Event Report to each email recipient specified in the EmailNotifier configuration file.

Each notification group receives a single Device Event Report email at a time, in which all the events since the previous email notification are included. If there are no new events for a given notification group, then no email is sent to that group.

Email Format

The emails are in HTML format.

Sample Device Event Report

A sample Device Event Report is shown below.

From: rg@codonics.com [mailto:rg@codonics.com]
Sent: Wednesday, January 25, 2012 5:00 PM
To: rg@codonics.com
Subject: SLS Events Devices: 4; Events: 328; Offline: 0; Alerts: 2; Faults: 2; Failed Installs: 0;

Devices	4
Events	328
Offline	0
Faults	2
Alerts	2
Failed Installs	0

CODONICS SLS 500i™ SLS Events

E1	01/25/2012 16:59	Alert	Install: OK	SNETFORMULARY-1	Factory Defaults	1.3.0-RC8	10.1.136.199
Events							
	Timestamp	Event	Details	User	EID	EC	
	02/20/2012 02:02	Update transferring.	PKG = SLS-FORMULARY-SNETFORMULARY-001	N/A	1514	53	
	02/20/2012 01:35	The SLS has started.		N/A	1513	51	
	02/20/2012 01:34	Update complete!	PKG = SLS-FORMULARY-SNETFORMULARY-001	N/A	1511	56	
	02/20/2012 01:33	The SLS is shutting down.		N/A	1509	52	
	02/20/2012 01:32	Update failed to install completely.	PKG = SLS-APP-PROFILE-1115	N/A	1508	82	
	02/20/2012 01:18	The SLS is shutting down.		Admin	1506	52	
	02/20/2012 01:17	Update queued.	PKG = SLS-APP-PROFILE-1115	N/A	1502	54	
	02/20/2012 01:17	Update transferring.	PKG = SLS-APP-PROFILE-1115	N/A	1501	53	
	02/20/2012 01:17	Printer out of labels.		N/A	1500	6	

Email Subject

The subject of the email includes the following:

- **Subject Header.** Specified by the Subject parameter for that group in the EmailNotifier configuration file. If no Subject parameter is specified, a default subject header is used.
- **Summary Info.** A set of counts for each of the following:
 - **Devices.** Number of devices represented in the email.
 - **Events.** Number of events included in the email.
 - **Offline.** Number of devices currently offline.
 - **Alerts.** Number of devices currently in an Alert state.
 - **Faults.** Number of devices currently in a Fault state.
 - **Failed Installs.** Number of devices whose last install failed.

Email Body

The body of the email includes the following components:

- **Summary Information Table.** Summarizes the same information found in the subject (counts of the various objects/states).
- **Device/Event Table.** A list of summaries and events per SLS device. The SLS devices are sorted in the same order in which they are listed in the SLS Master Device List. Events are sorted newest to oldest.



NOTE: The Device Event Report includes all SLS devices, even those with no events since the last email. Look through the entire email to see which units have had events since the last Report.

Type of Events/Messages Included in the Device Event Report

The events that can be included in the Device Event Report are listed in Table 7-3.

Table 7-3. Events Reported in the Device Event Report

3	Out of Ink: No Cartridge	A valid ink cartridge is not installed.
4	Out of Ink: Empty Cartridge	The ink cartridge is out of ink.
5	Low Ink	The ink cartridge is low on ink.
6	Out of Labels	There is no media loaded.
20	Drug Verification Failed	The drug failed verification.
22	Drug Obsolete (Not Approved)	The drug is obsolete (that is, it is not approved). Do not use the drug.
23	Drug Not Found	The drug was not found.
30	Label Confirmation Error: Barcode Type Incorrect	Label confirmation error: Barcode type is incorrect.
31	Label Confirmation Error: Barcode Content Incorrect	Label confirmation error: Barcode content is incorrect.
32	Label Confirmation Error: Scan Failed, no re-scan	Label confirmation error: The scan failed, and there was no re-scan.
33	Label Confirmation Error: User Unable to Scan	Label confirmation error: The user was unable to scan the label.
35	Label Confirmation Error: Visual Content Failure	Label confirmation error: The user indicated a visual content failure.

Table 7-3. Events Reported in the Device Event Report (Continued)

36	Label Confirmation Error: Visual Print Failure	Label confirmation error: The user indicated a visual print failure.
40	SLS Out Of Service	The SLS is out of service.
41	SLS Out Of Service: Login Allowed	The SLS is out of service, but a login is allowed.
50	Drug Verified on SLS	The drug was verified on the SLS.
51	SLS Startup	The SLS is starting up.
52	SLS Shutdown	The SLS is shutting down.
53	Update Package Installation: Transferring	Update package installation: The package is being transferred to an SLS.
54	Update Package Installation: Queued	Update package installation: The package is queued for installation.
55	Update Package Installation: Started	Update package installation: The package update has been started.
56	Update Package Installation: Completed	Update package installation: The package update is completed.
82	Update Package Installation: Failed	Update package installation: The package update has failed.

8

Localization

The Configure Localization function in the Administration Tool allows the Administration Tool and the SLSs to be localized to support a locale's language, as well as the barcode symbology and encoding used there.

Complete information about localization is provided in the SLS Localization Reference Guide.

Configuring a Locale



1. Click the **Configure Locale** button at the bottom left corner of the **Formulary** tab.

To configure a locale

The screenshot shows the CODONICS Formulary interface. The top navigation bar includes 'Formulary', 'Configuration', and 'Devices'. The main content area displays a table of drugs with columns for Drug Name, Master ID, Container ID, Tallman, Concentration, Route, Verification, Status, and Actions. The 'Configure Locale' button is located at the bottom left of the interface, below the 'Locale: en-US-1' text.

Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status	Actions
Atropine	00517040125	0517040125		0.4 mg/mL		Not Verified	ACTIVE	[Icons]
Atropine		1001925039		0.4 mg/mL		Not Verified	ACTIVE	[Icons]
Bupivacaine-Epineph	00409904201	0409904201	Bupivacaine-EP	0.25 % 1:200		Not Verified	ACTIVE	[Icons]
Bupivacaine-Epineph	00409904501	0409904501	Bupivacaine-EP	1 % 1:200,00	Injectable	Not Verified	ACTIVE	[Icons]
Cefazolin		6050507495	ceFAZolin	1 g		Verified X	ACTIVE	[Icons]
Cefazolin		0781945170	ceFAZolin	1 g		Not Verified	ACTIVE	[Icons]
Cisatracurium		0074437805		2 mg/mL		Verified X	ACTIVE	[Icons]
Clindamycin		0409405001		150 mg/mL		Verified X	ACTIVE	[Icons]
Dexamethasone	00517490125	0517490125		4 mg/mL		Not Verified	ACTIVE	[Icons]
Dexamethasone	63323016505	6332316505		4 mg/mL		Not Verified	ACTIVE	[Icons]
Dexmedetomidine		0409163802		100 mcg/mL	Injectable	Verified X	ACTIVE	[Icons]
Diphenhydramine		0641037621	diphenhydrAMI	50 mg/mL		Not Verified	ACTIVE	[Icons]
Ephedrine		1747851500	ePHEDrine	50 mg/mL		Verified X	ACTIVE	[Icons]

Configure Locale button

The **Configure Localization** dialog box displays.

Configure Localization

Localization Pack
Active Localization Pack: en-US-1
+ Add New Localization Pack...

General
Date Display Format: MM/dd/yyyy HH:mm
Database Mode: Other

Barcode Settings
ID Length: 13

Enabled	Symbology	Prefix Start	Prefix	ID Start
<input type="checkbox"/>	UPC-A, UPC-E, UPC-E1, EAN-8, EAN-13	1		1
<input type="checkbox"/>	Data Matrix	1		1
<input checked="" type="checkbox"/>	Code 128, ISBT 128	1	01049	6

X Cancel ✓ Save

2. The locale directory that you created for your localization pack will be listed in the **Active Localization Pack** list. Select it in the list.
3. In the **Date Display Format** list, select the date/time format used for the locale.
4. In the **Database Mode** list, select **Other** (this is the selection for all locales outside the USA).

When you select **Other** in the **Database Mode** list, the settings in the **Barcode Settings** pane are enabled.

5. In the **Barcode Settings** pane, specify the settings for the one or more barcode symbologies that are used in the locale.

Specific standards about the drug barcode that is used in a locale should be obtained from the locale's Ministry of Health and/or the drug barcode provider for the locale.

The barcode settings are described in the following table.

Table 8-1. Barcode Settings

Setting	Description
ID Length	Enter the number of digits in drug container IDs for the locale. The ID length must be the same for all enabled symbologies.
Enabled Symbology	Select the Enabled check box for each symbology that is used in the locale. Multiple symbologies can be selected.
Prefix Start	For each enabled symbology, enter the number that represents the position in the barcode at which the barcode prefix begins.
Prefix	For each enabled symbology, enter the barcode prefix for the locale. The prefix typically identifies the package as a drug. <i>NOTE: If the symbology includes a prefix, make sure that it is entered here.</i>
ID Start	For each enabled symbology, enter the number that represents the position in the barcode at which the Container ID begins.

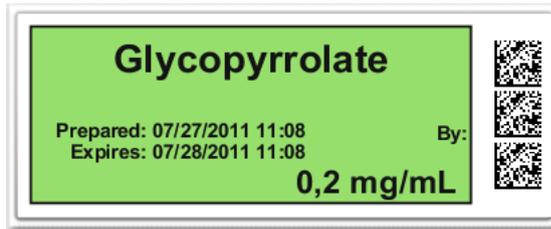
6. To save the locale settings, click the **Save** button.

Value Separators on Syringe Labels

When a formulary package is set to the United States locale, the SLS prints a comma for thousands separators for concentration values 1,000 and greater.



When a formulary package is set to a European locale, the SLS prints a comma to represent a decimal and a period or a space, depending on country, to represent the thousands separator.



For all other locales, the use of thousand separators and decimals is determined by setting your Administration Tool to the proper locale.

Installing a Validated Localization Pack

Validated localization packs are provided by Codonics or a Codonics reseller.



1. Click the **Configure Locale** button at the bottom left corner of the **Formulary** tab.

To install a validated localization pack

<input type="checkbox"/>	Drug Name	Master ID	Container ID	Tallman	Concentration	Route	Verification	Status	Actions
<input type="checkbox"/>	Atropine	00517040125	0517040125		0.4 mg/mL		Not Verified	ACTIVE	
<input type="checkbox"/>	Atropine		1001925039		0.4 mg/mL		Not Verified	ACTIVE	
<input type="checkbox"/>	Bupivacaine-Epineph	00409904201	0409904201	Bupivacaine-EF	0.25 % 1:200		Not Verified	ACTIVE	
<input type="checkbox"/>	Bupivacaine-Epineph	00409904501	0409904501	Bupivacaine-EP	1 % 1:200,00	Injectable	Not Verified	ACTIVE	
<input type="checkbox"/>	Cefazolin		6050507495	ceFAZolin	1 g		Verified X	ACTIVE	
<input type="checkbox"/>	Cefazolin		0781945170	ceFAZolin	1 g		Not Verified	ACTIVE	
<input type="checkbox"/>	Cisatracurium		0074437805		2 mg/mL		Verified X	ACTIVE	
<input type="checkbox"/>	Clindamycin		0409405001		150 mg/mL		Verified X	ACTIVE	
<input type="checkbox"/>	Dexamethasone	00517490125	0517490125		4 mg/mL		Not Verified	ACTIVE	
<input type="checkbox"/>	Dexamethasone	63323016505	6332316505		4 mg/mL		Not Verified	ACTIVE	
<input type="checkbox"/>	Dexmedetomidine		0409163802		100 mcg/mL	Injectable	Verified X	ACTIVE	
<input type="checkbox"/>	Diphenhydramine		0641037621	diphenhydrAMI	50 mg/mL		Not Verified	ACTIVE	
<input type="checkbox"/>	Ephedrine		1747851500	ePHEDrine	50 mg/mL		Verified X	ACTIVE	

Configure Locale button

The **Configure Localization** dialog box displays.

Configure Localization

Localization Pack
 Active Localization Pack: en-US-1 ▼
 + Add New Localization Pack...

General
 Date Display Format: MM/dd/yyyy HH:mm ▼
 Database Mode: Other ▼

Barcode Settings
 ID Length: 13

Enabled	Symbology	Prefix Start	Prefix	ID Start
<input type="checkbox"/>	UPC-A, UPC-E, UPC-E1, EAN-8, EAN-13	1		1
<input type="checkbox"/>	Data Matrix	1		1
<input checked="" type="checkbox"/>	Code 128, ISBT 128	1	01049	6

Cancel Save

2. Make sure the correct locale directory is selected in the **Active Localization Pack** list.
3. Click the **Add a New Localization Pack** button.
 The **Choose File to Upload** dialog box displays.
4. Navigate to the localization pack Zip file, select it, and click the **Open** button.
 The system installs the localization pack in the locale directory specified in the **Active Localization Pack** list. The Administration Tool and formulary update packages that are created will be localized to the locale.



Troubleshooting

The following table lists common problems, their possible causes, and how to solve them.

Table 9-1. Troubleshooting

Problem	Possible Causes	Solutions
<i>Import Problems:</i>		
Drug records from a CSV file cannot be imported.	The format of the fields in the file is incorrect.	Correct the formatting of the fields in the file. For information about the correct field formats, refer to Table 4-1 on page 4-16.
	There are one or more blank lines in the CSV file.	Make sure that there are no blank lines in the CSV file.
Container IDs are not being imported during an import from a CSV file.	The formatting of the CSV file is not correct.	If importing with the MDD in Other mode, make sure that there is a blank first column in the CSV file.
The MDD database is not working properly after an import.	The imported data had improper formatting or other data issues.	Always back up the databases before importing data from external sources (refer to “Backing Up the Databases and Related Files” on page 3-25). Restore the backed up databases to correct the problem, and fix the data source formatting or other issues before importing the data again.

Table 9-1. Troubleshooting

Problem	Possible Causes	Solutions
<i>Drug Record Problems:</i>		
A drug in the formulary cannot be edited.	The formulary has been promoted to Test/Review or Approved status.	Demote the formulary to Under Development.
A drug was accidentally deleted from the MDD.		Manually add the drug record to the MDD or restore the MDD from a backed-up copy.
<i>Barcode Scan Problems:</i>		
Barcode scans are not being recognized by the Administration Tool.	The barcode reader is not configured correctly.	Make sure that the barcode reader is configured to support the enabled symbology as defined in the Administration Tool. For more information about the barcode symbology settings in the Administration Tool, refer to “Configuring a Locale” on page 8-2. For information about setting up the barcode reader, refer to “Barcode Scanners” on page 10-1.
	The correct barcode configuration is not enabled.	Enable the appropriate barcode symbology. For more information about enabling barcode symbology, refer to “Barcode Scanners” on page 10-1.

Table 9-1. Troubleshooting

Problem	Possible Causes	Solutions
A drug container failed verification when the barcode was scanned.	The user indicated that the drug in the MDD that matched the Container ID in the scanned drug container barcode is not the same drug as that in the drug container. The drug record is assigned a verification status of Failed; if the drug is in the formulary, a formulary update package cannot be created.	Make sure the barcode on the drug container is of good quality. If the barcode quality is good, then it is likely that the drug information in the MDD is not correct and needs to be corrected. It is also possible that the drug whose barcode was scanned needs to be added to the MDD, in which case there would be two drugs in the MDD with the same Container ID.
During Verification or Learning when in Other mode, there was no match. However, you know that the drug is in the MDD.	The barcode symbology that is being used has not been defined or is incorrect.	In the Barcode Settings of the Configure Localization dialog box, specify the appropriate barcode symbology that is being used at your locale. For more information, refer to “Configuring a Locale” on page 8-2.

Table 9-1. Troubleshooting

Problem	Possible Causes	Solutions
When a barcode is scanned, the Administration Tool is reporting an invalid barcode format error.	The barcode reader is not configured correctly.	Make sure that the barcode reader is configured to support the symbology as defined in the Administration Tool. For more information about the barcode symbology settings in the Administration Tool, refer to “Configuring a Locale” on page 8-2. For information about setting up the barcode reader, refer to “Barcode Scanners” on page 10-1.
	The barcode is not compatible with the enabled barcode symbology settings in the Administration Tool.	Make sure that the barcode setting for the barcode symbology that is being scanned is correct. For more information about setting barcode symbology, refer to “Configuring a Locale” on page 8-2.
<i>Network/SLS Device Status Problems:</i>		
The PC on which the Administration Tool is running will not connect to the network.	There are general network connectivity issues at the access point or the PC.	Verify that other devices connected to the network via the same access point are active on the network.
	The PC network settings are not configured properly.	Verify that the PC IP address and the other network settings are correct.
	There is a hardware connectivity issue at the PC.	Verify that the PC network hardware is properly connected.
The SLS device listing in the Administration Tool Device Manager does not include one or more SLS devices that are expected to be in the list.	The Master Device List needs to be updated to include all expected SLS devices.	Update the Master Device List. Refer to “Creating or Modifying an SLS Master Device List File” on page 7-6.
	The incorrect Master Device List is loaded.	Open the correct Master Device List.

Table 9-1. Troubleshooting

Problem	Possible Causes	Solutions
In the Administration Tool Device Manager, an SLS device's status is incorrect.	The status information in the Administration Tool Device Manager is not being updated.	Verify the correct status information at the SLS.
	The SLS or the PC on which the Administration Tool is running is not connected to the network.	Verify that the SLS and the PC on which the Administration Tool is running are connected to the same network.
	More than one SLS is configured with the same IP address.	Verify that there are not duplicate IP addresses on the network.
In the Administration Tool Device Manager, an SLS device has a status of Offline: No Connection.	The SLS is not powered on.	Verify that the SLS is powered on.
	The SLS or the PC on which the Administration Tool is running is not connected to the network.	Verify that the SLS and the PC on which the Administration Tool is running are connected to the same network.
	Either the port number in the configuration package that was last installed on the SLS is wrong, or the port number in the Master Device List is wrong.	Verify that the correct polling port number is set in the configuration package (refer to "Security Settings" on page 6-4) and in the Master Device List (refer to "Creating or Modifying an SLS Master Device List File" on page 7-6).
In the Administration Tool Device Manager, an SLS device has a status of Offline: Not responding.	The SLS software is not running.	Verify that the SLS software is running. Reboot the SLS.
In the Administration Tool Device Manager, an SLS device has a status of Offline: Not secure.	The Administration Tool and SLS network access passwords do not match.	Verify that the network passwords for the Administration Tool and the SLS are correct (refer to "Security Settings" on page 6-4). Verify that the correct configuration package is loaded on the SLS.

Table 9-1. Troubleshooting

Problem	Possible Causes	Solutions
From the Administration Tool Device Manager, an SLS log cannot be downloaded.	The SLS is offline. The SLS software is corrupt.	Verify that the SLS is running. Attempt to view the SLS status locally on the SLS. Reboot the SLS.
<i>Package Installation Problems:</i>		
In the Administration Tool Device Manager, an SLS device has a package installation status of Transferring.	The package is already being transferred from an Administration Tool Device Manager on another Administration Tool.	Verify that the package is not already being sent from an Administration Tool Device Manager on another Administration Tool if the transferring status was displayed before the transfer was started.
	There is a communication lag in the network.	From a Command Prompt window, use the ping command with another device on the network to determine the network response time. If it is slow, contact your network administrator.
	The SLS software is corrupt.	Reboot the SLS. If needed, reinstall the SLS software.
In the Administration Tool Device Manager, an SLS device has a package installation status of Waiting.	A user is logged in to the SLS or the install countdown (default is 60 minutes) is running.	The package installation will begin once the user logs out, at which time the install countdown will begin.

Table 9-1. Troubleshooting

Problem	Possible Causes	Solutions
In the Administration Tool Device Manager, an SLS device has a package installation status of Failed.	The package version level does not match version level on the SLS.	Make sure that the package is made with the same software version level that is on the SLS.
	The SLS or the PC on which the Administration Tool is running lost network connectivity during the package transfer.	Verify the SLS and PC network connectivity.
	The SLS software is corrupt.	Attempt to send package again. Reboot the SLS and the PC on which the Administration Tool is running. Reinstall the SLS software. If this problem persists, try installing the package manually from a USB flash drive.

Table 9-1. Troubleshooting

Problem	Possible Causes	Solutions
An SLS status message is “Transfer Failed,” indicating a network issue.	The network settings are not configured properly.	Check the SLS IP address and the other network settings.
	If using Ethernet, the network cable is not connected.	Verify that the network cable is connected to the Ethernet port.
	If using Wi-Fi, the Wi-Fi adapter is not inserted.	Verify that the Wi-Fi adapter is inserted in the USB port located at the bottom front right corner of the SLS.
	If using Wi-Fi and the network connectivity is intermittent or weak, the distance between the SLS and the Wi-Fi router is too far, or there are objects between them that are interfering with the signal.	Add a Wi-Fi repeater to the network that is closer to the SLS.
	The SmartDrive has been removed.	Verify that the SmartDrive is connected.
When a USB drive with a formulary or configuration install package on it is inserted into USB port 1 on the side of an SLS touch screen, the USB drive flashes but there is no indication in the user interface that a package is ready to be installed.	The USB drive is formatted to use NTFS as its file system.	The USB drive must be formatted to use FAT32 as its file system to install SLS formulary or configuration packages.

Table 9-1. Troubleshooting

Problem	Possible Causes	Solutions
<i>EmailNotifier Problems:</i>		
Users are not receiving emails from the EmailNotifier for any SLS devices.	The site's email server is down.	Verify that the site's email server is running properly.
	The EmailNotifier is not running.	Confirm that the PC on which the EmailNotifier is supposed to be running is connected to the network, has an active login session, and has the EmailNotifier application running.
	The EmailNotifier is not using the correct Master Device List.	Verify that the Master Device List that the EmailNotifier is using has valid and correct SLS IP addresses listed.
Users are receiving emails from the EmailNotifier for some but not all SLS devices.	The SLS devices for which emails are not being sent have network connection problems.	Verify that the SLSs in question are connected to the network.
	The SLS devices for which emails are not being sent are not included in the Master Device List being used by the EmailNotifier.	Verify that the Master Device List that the EmailNotifier is using includes the IP addresses for the SLSs in question.

10

Accessories

Barcode Scanners

While managing the Master Drug Database (MDD) and formulary using the Administration Tool, you can use a barcode scanner for the Learning function, and you will need to use a barcode scanner for the Drug Verification function.

The Administration Tool supports the following barcode scanners:

- Code Reader 1000™
- Symbol™ DS9808
- Xenon™ 1900/1902

The Symbol barcode scanner (available in Codonics Part Number AT-ACC-KIT) is not configured as shipped. You must perform the procedure in “Configuring the Symbol 9808 Barcode Scanner” to configure it.

If you are using another type of barcode scanner other than the types listed above, refer to “Parameters to Enable for Other Scanner Types” for a list of the parameters that must be enabled to properly configure the scanner for use with SLS.

Configuring the Symbol 9808 Barcode Scanner

Scan the 2D barcode below to configure the Symbol 9808 barcode scanner for any barcodes supported in the Administration Tool:



Barcode for configuring the Symbol 9808 barcode scanner



CAUTION Do not scan the barcode above on an actual SLS. This barcode is only for a Symbol 9808 barcode scanner being used with the Administration Tool.

After successfully scanning this barcode, you will hear an audible beep, followed by an audible sound that indicates that the scanner is restarting.

Parameters and Modes to Enable for Other Scanner Types

If you are not using a Symbol 9808 scanner, the parameters listed in Table 10-1 on page 10-3 must be enabled to properly configure the scanner for use with the Administration Tool. Refer to your scanner user manual for information about how to configure your scanner to enable these parameters.

In addition, the following should be enabled:

- The appropriate symbologies for the label barcodes that are being used
- AIM mode

- Wedge mode

To check whether the scanner is configured for an appropriate symbology, Wedge mode, and AIM mode, open Notepad on the PC and scan a drug label barcode.

- If nothing happens — that is, there is no beep and no text is entered in the Notepad file — then the barcode’s symbology is not enabled.
- If there is a beep but no text is entered in the Notepad file, then Wedge mode is not enabled.
- If there is a beep and text is entered in the Notepad file, but the text is not a closing square bracket “]” followed by an alphanumeric code and then the drug code, then AIM mode is not enabled.

Table 10-1. Scanner Settings Required for Use with Administration Tool

UPC-A	Enabled
UPC-E	Enabled
UPC-E1	Enabled
EAN-8/JAN 8	Enabled
EAN-13/JAN 13	Enabled
Transmit UPC-A Check Digit	Enabled
Transmit UPC-E Check Digit	Enabled
Transmit UPC-E1 Check Digit	Enabled
Code 128	Enabled
GS1-128 (formerly UCC/EAN-128)	Enabled

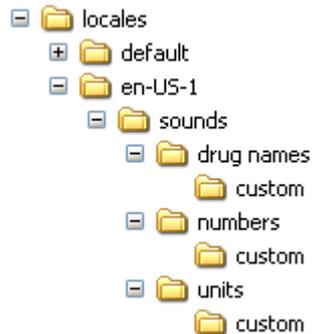
Table 10-1. Scanner Settings Required for Use with Administration Tool (Continued)

ISBT 128	Enabled
Check ISBT Table	Enabled
Code 39	Enabled
Convert Code 39 to Code 32 (Italian Pharmacy Code)	Enabled
Code 32 Prefix	Enabled
Interleaved 2 of 5 (ITF)	Enabled
GS1 DataBar-14	Enabled
GS1 DataBar Limited	Enabled
GS1 DataBar Expanded	Enabled
Data Matrix	Enabled
Inverse 1D	Inverse Autodetect
Data Matrix Inverse	Inverse Autodetect
Transmit Code ID	AIM Code ID
Presentation Performance Mode	Traditional

Audio Recording Software and a Microphone

While managing the Master Drug Database (MDD) and formulary using the Administration Tool, you might want to record sound files of drug name announcements and add these to the formulary database. The sound files must be in WAV format.

To record the sound files, you will need an audio recording application and a USB microphone (Codonics Part Number AT-ACC-KIT). To include the sound files that you create as choices in the **Audio** list in the **Edit Formulary Drug(s)** dialog box, copy the sound files into the appropriate sounds **custom** directory in your **locales** directory within the Administration Tool's data directory. For example, the **custom** sound folders for the USA locale are shown below:



Full instructions for recording audio are included in Codonics Part Number AT-ACC-KIT.

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