INSTALLATION AND OPERATION MANUAL

OLL1000

Off Line Loader, Version 1.0.0

MOTOROLA

W A R N I N G

The OLL1000 is capable of broadcasting messages that clear channel maps, configurations, and potentially flashed objects on all connected set-tops. To prevent risk of unintended configuration changes to operational set-tops connected to your network with resulting subscriber impact, observe the following precautions.

- ***Do not connect the OM1000/2000 to a live cable plant/ production system***

  -> *Connect the OLL1000, OM1000/2000 and set-tops only to a closed network, isolated from the live cable plant/ production system.*

  -> *Physically inspect and confirm that the OM output is not connected to the production system.*

- ***Motorola recommends that you connect the OLL1000 server to only one Out Of Band Modulator (OM1000 or OM2000) within a closed-circuit warehouse setting.***

  -> *The warehouse network topology calls for a simple 1:1 Ethernet connection between the OLL1000 server and an OM1000/2000.*

Motorola is not responsible for any damages/losses if the above precautions are not implemented.

Part Number 559856-001-A
November 18, 2008

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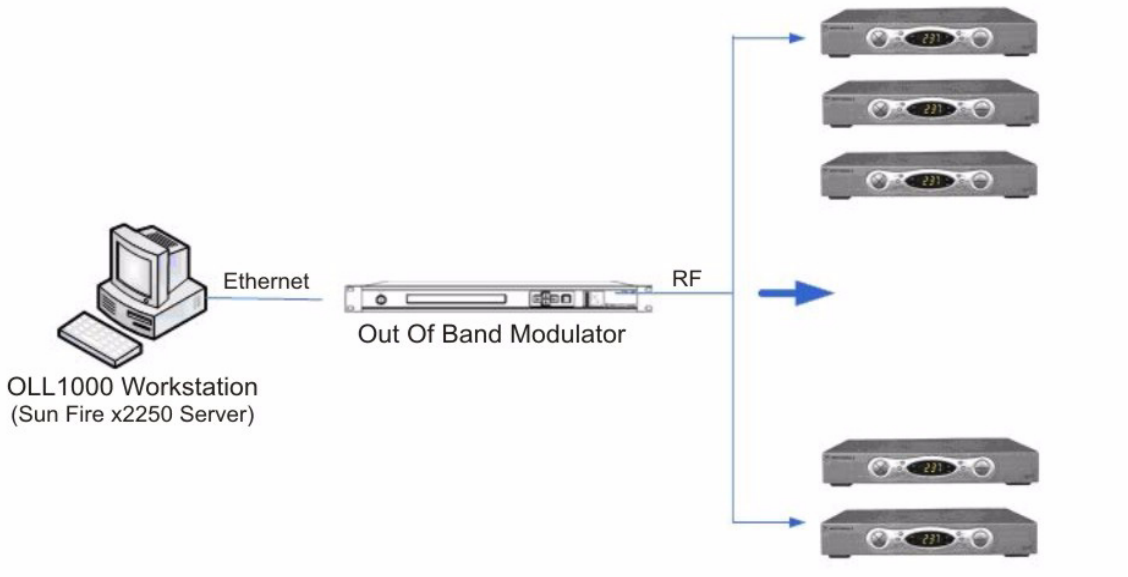
Chapter 1
Introducing the OLL1000

This book describes installation and operation of the Motorola OLL1000 OffLine Loader system. The OLL1000 is a software solution that enables system operators to rapidly load new firmware to pre-configure MediaCipher-based digital subscriber terminals in bulk with numerous code objects, in an off-line and off-network warehouse environment.

By broadcasting the packaged carousel code objects over the Out Of Band (OOB) channel, the OLL1000 can quickly clear stale code from existing inventory or customer return set-tops and reload a new complement of applications and features, thus saving time and expense in set-top deployment and installation.

OLL1000 Concept of Operation

The OffLine Loader uses a Linux-based server / workstation and a Motorola Out of Band Modulator (OM1000 or OM2000) to prepare and download selective code suites to a population of connected set-top boxes as shown in the diagram below.



Hardware/Software Required

As shown in the illustration above, installation and operation of the OLL1000 requires the following components:

- OLL1000 DVD containing:
  - → OLL1000 application software
  - → Java JRE
  - → Operating system (SUSE Linux Enterprise Server SLES10, Service Pack 2)
- Sun Microsystems Sun Fire X2250 Server (includes monitor, keyboard and USB mouse).

Also required (not supplied):

- Out Of Band Modulator (OM), Motorola OM1000 or OM2000
- 10/100BASE-T Ethernet Switch
- Ethernet cabling to connect OLL1000 Server to the OM
- Closed-circuit distribution system to provide AC power and the Out Of Band signalling channel to your target population of set-top units.

The Code Objects and Download Control files for loading into your set-tops are provided by Motorola, either on CD or downloaded from Motorola's Digital Configuration Management site.

OLL1000 Software Overview

The OLL1000 consists of software based on Motorola's Carousel Server technology, including a graphical user interface. The OLL1000 comes equipped with a pre-configured standardized OOB transport stream (including PID0, PID1, PMT, Network and EMM) with built-in support for up to 20 background services.

The application includes a pre-built template of 20 code objects and two code download command files, all of which are easily provisioned with the new code required to update your set-tops. The modified files are then packaged and staged using automated tools.

Each of the 20 pre-configured code objects is presented as a carousel which, when started, will continuously and repeatedly spin out its data at a configurable rate until all of the targeted set-tops have received the new code and the operator stops the process.

By adjusting the bit rates of individual carousels to match the size of their code objects (faster rates for large objects; slower rates for small ones), it is possible to optimize the time required to perform a download. Cycle times of 10 minutes or less may be achievable.

The OLL1000 can support both RF and Ethernet return set-tops.

Customer Release Update (Release Notes)

For complete information about new features and late-breaking operational or other issues, consult the Customer Release Update (CRU) corresponding to the installed version of your OLL1000 software. Electronic copies of all CRUs are available from Motorola's Technical Response Center or via Motorola Online as noted below.

Motorola Technical Response Center

If you need assistance with the OLL1000, contact the Motorola Technical Response Center (TRC):

Toll-free: 1 888 944 HELP (1 888 944 4357)

Direct: 1 847 725 4011

Motorola Online: http://businessonline.motorola.com

The TRC is on call 24 hours a day, seven days a week. In addition, Motorola Online offers a searchable solutions database, technical documentation, and low-priority issue creation and tracking. Other toll-free numbers may also be available when calling from outside the United States; for details, please refer to our web page.

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Chapter 2
Installation Procedures

This chapter describes how to install, start, and complete initial configuration of the OLL1000 Off Line Loader software.

Installing the OLL1000

Full installation of the OLL1000 consists of the following:

- Installation of the OLL1000 software
- Configuring the server Hosts file with the related addresses
- Configuring the server Network Card
- Configuring the Out Of Band Modulator

Software Installation

With the Sun Fire server running, perform the following steps to install the OLL1000 software:

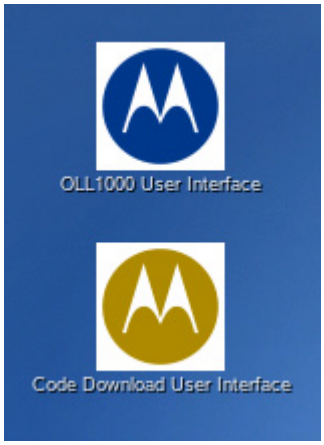
1. Insert the OLL1000 Version 1.0.0 DVD into the server DVD drive, and cycle the server power off then on.
2. When the SUSE Linux screen appears, use the down-arrow key to select *Installation*.
3. Press **`Return.`**
4. Installation of the software onto the server proceeds automatically, and takes approximately 30 minutes to complete. **Do not eject the DVD.**
5. When the required time has elapsed and the server has finished installing the software, the pop-up window will reappear with the option *Boot from Hard Disk* highlighted. Do not take any action.
6. After a short interval, the Sun Fire server will automatically reboot from its hard disk, and the DVD will eject. Remove the DVD and replace it in its protective sleeve.

7. The system will automatically reboot one more time. From start to finish, the process requires the server to boot up a total of three times.
8. When the last reboot is complete, the login window appears. Enter the user name and password:

   `Username:` **`oll1000`**

   `Password:` **`Lodruser`**

   Once you are logged in, two Motorola icons will appear on the server desktop, a blue OLL *User Interface* icon, and a gold *Code Download User Interface*.



This completes installation of the OLL1000 software.

Configuring the Hosts File

Take the following steps to configure the server *Hosts* file:

1. Open a terminal session by right-clicking in any open place on the desktop.
2. When the command line appears, type: **`su`**
3. At the password prompt, enter the default admin password: **`Lodradmn`**
4. The *hosts* file resides in the *etc* directory. Use any supported text editor to edit the */etc/hosts* file as follows:

   → Enter the IP address of the OLL1000.

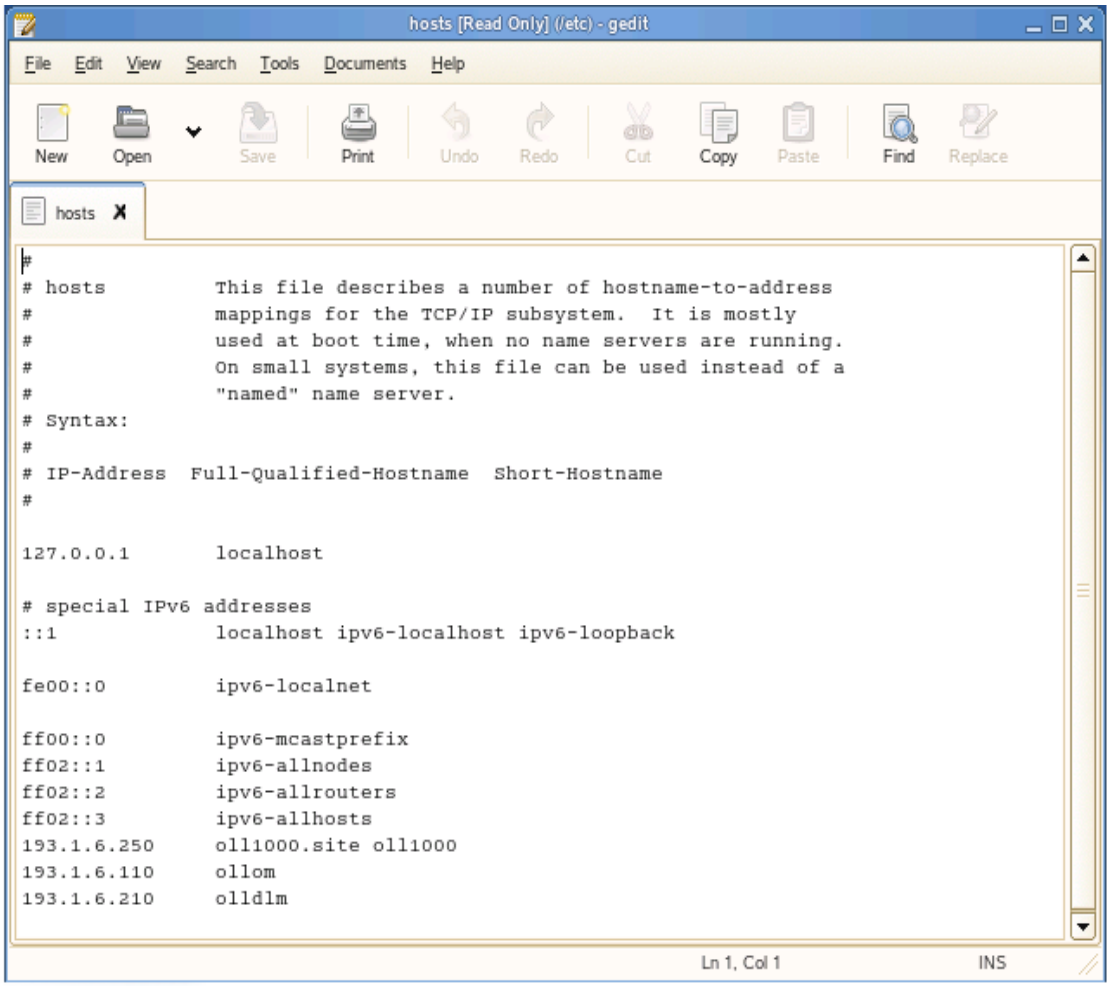
   → Enter the IP address of the OM.

   → Save the file.

   → Exit the text editor.

   For a page view of the contents of the *hosts* file, use the server's computer file system to navigate to the */etc* directory and then double-click on the *hosts* file to open it. The items you have just

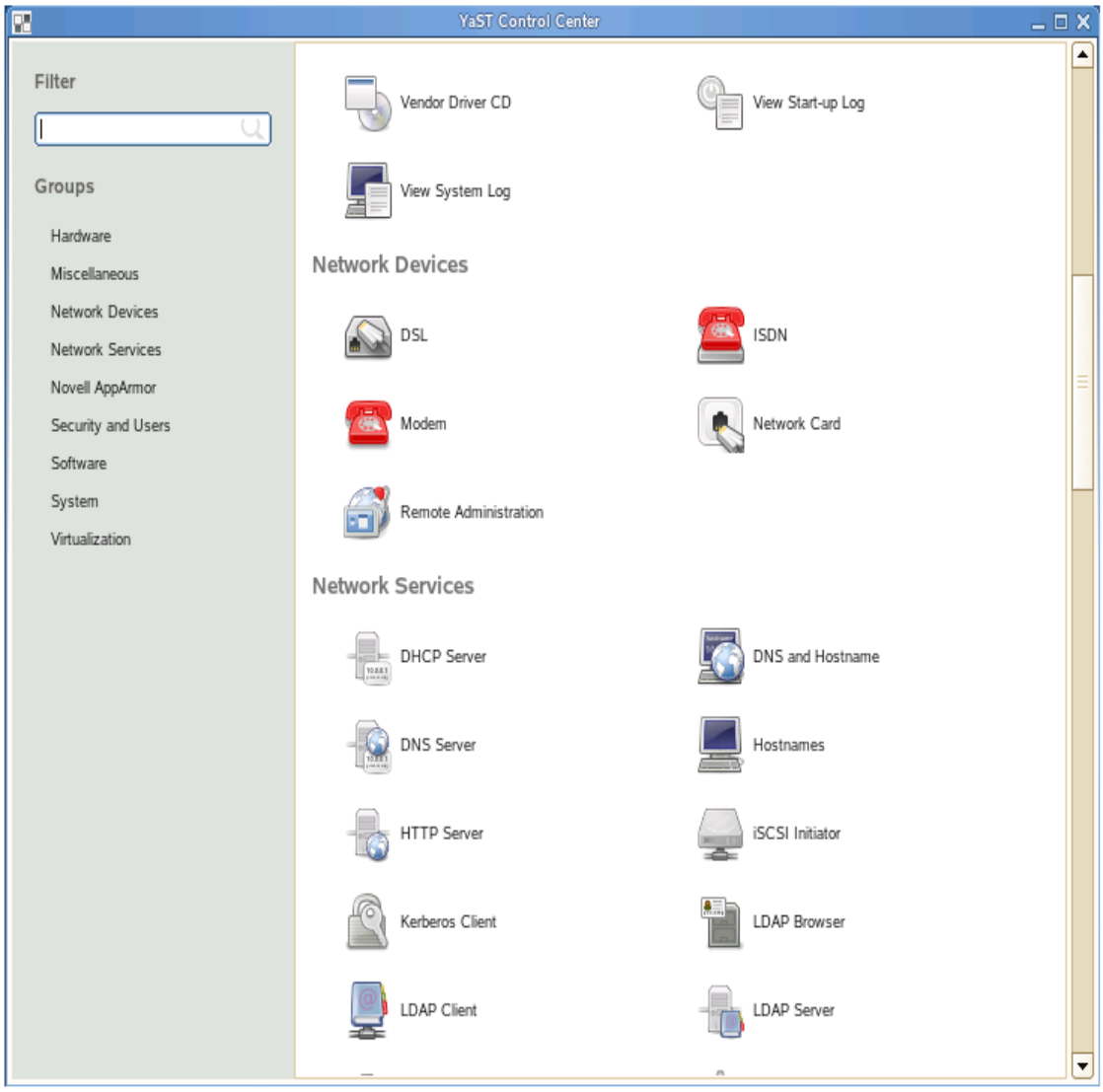
configured will appear at the end of the file as shown in the example below.



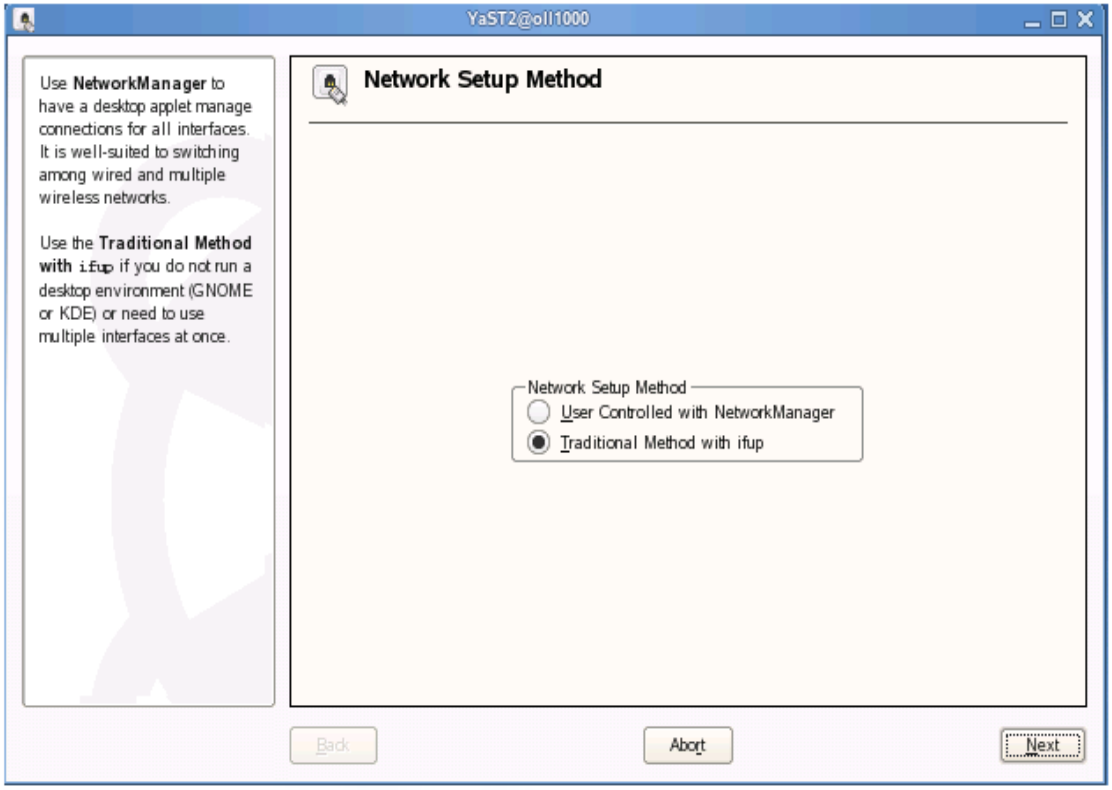
Configuring the Network Card

Take the following steps to configure the server network card:

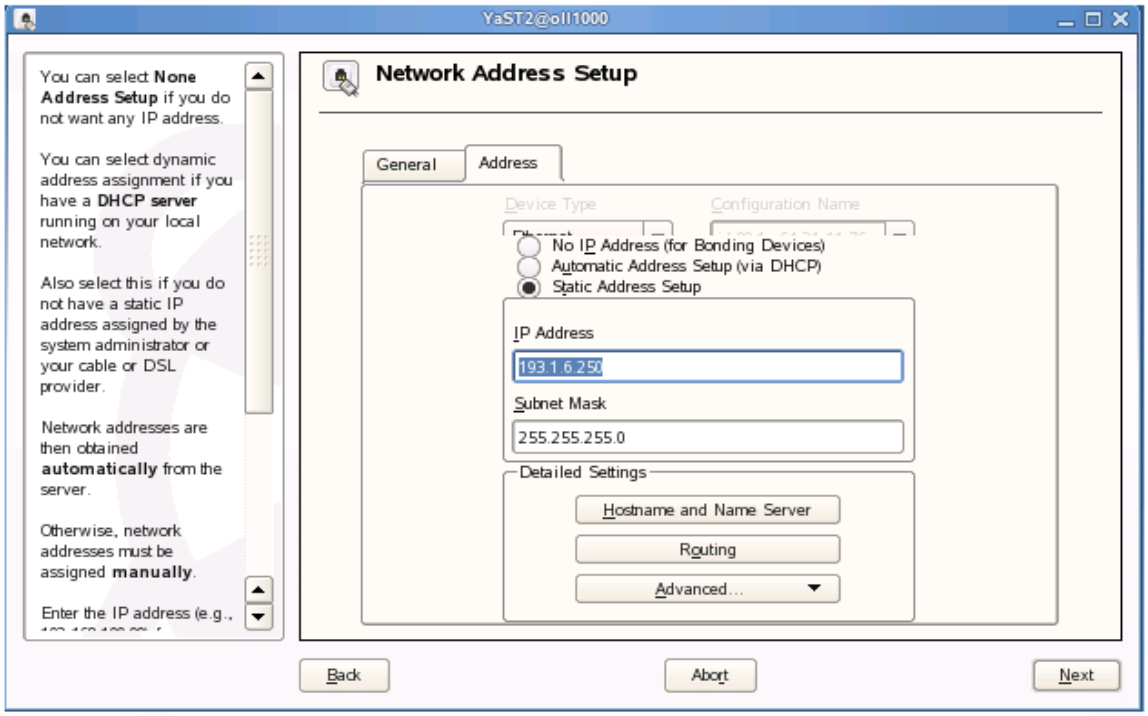
1. In the lower left-hand corner of the server desktop, click on the *Computer* tab.
2. In the *Computer* window suite, click on the *Applications* tab to activate that window.
3. From the *Applications* window, click on *YaST*.
4. At the password prompt, enter the default Admin password: **`Lodradmn`**. The *YaST Control Center* window will open.
5. Scroll down through the *YaST Control Center* options until the *Network Card* option is visible as shown in the example below. Click on it.



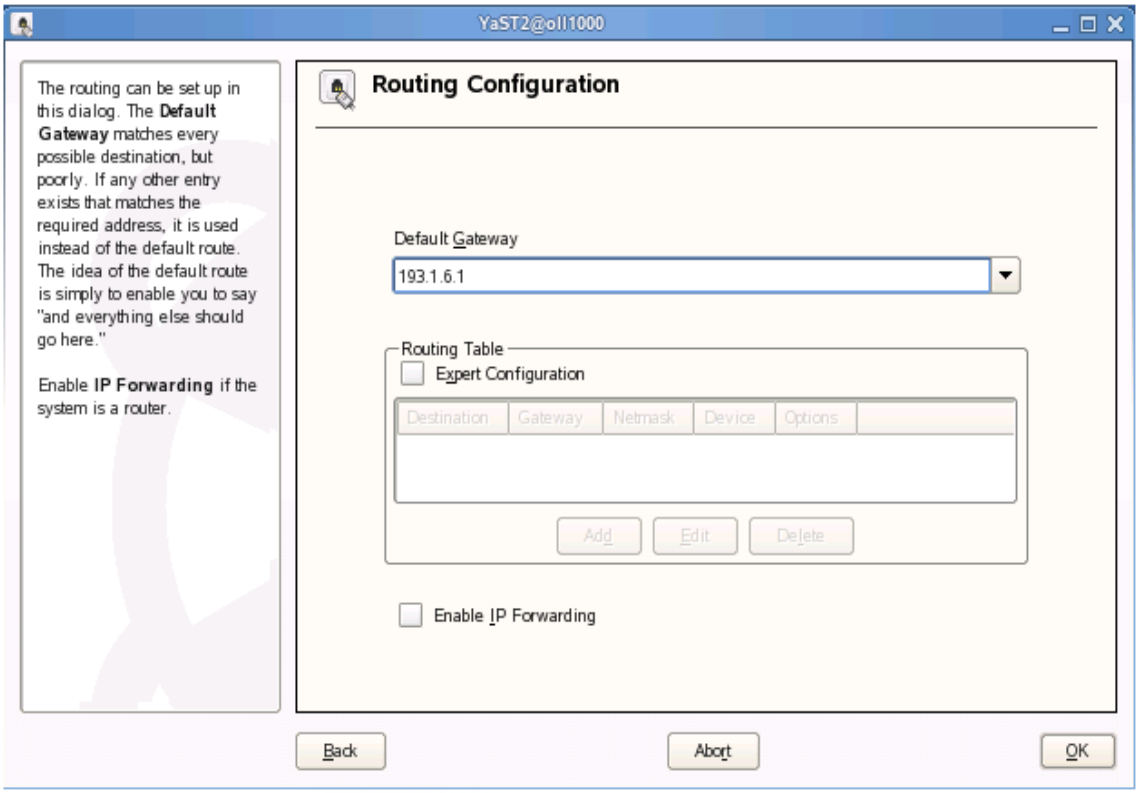
6. The *Network Setup Method* window appears as shown below. Ensure that the *Traditional Method* option is selected, then click on the *Next* button at the base of the window.



7. When the *Network Address Setup* window appears, ensure that the *Address* tab is selected, then enter the IP address of the OLL1000 in the corresponding field.



8. In the *Detailed Settings* panel, click on the *Routing* button. The *Routing Configuration* window will appear.

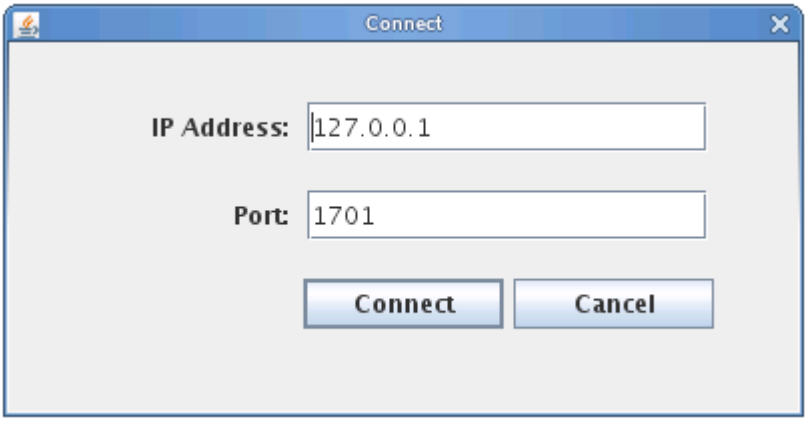


9. Enter the IP address of your default gateway, then click *OK*.
10. From the *Network Address Setup* dialog, save your settings, by clicking *Next*, then click *Finish*.
11. Close the *YaST Control Center* window.

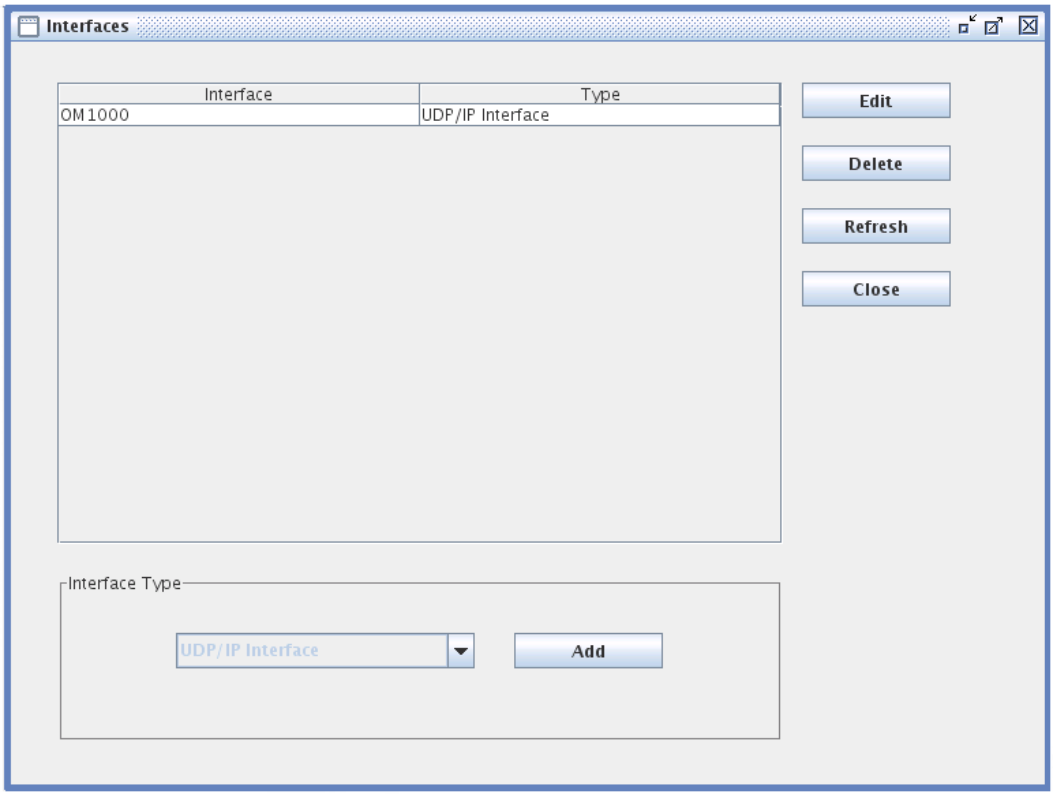
Relating the OLL1000 to the OM Configuration

The following procedure assumes that the OLL1000 and the OM have been configured and added to the network. Ensure that the UDP port number of the OM output has been set to 7357.

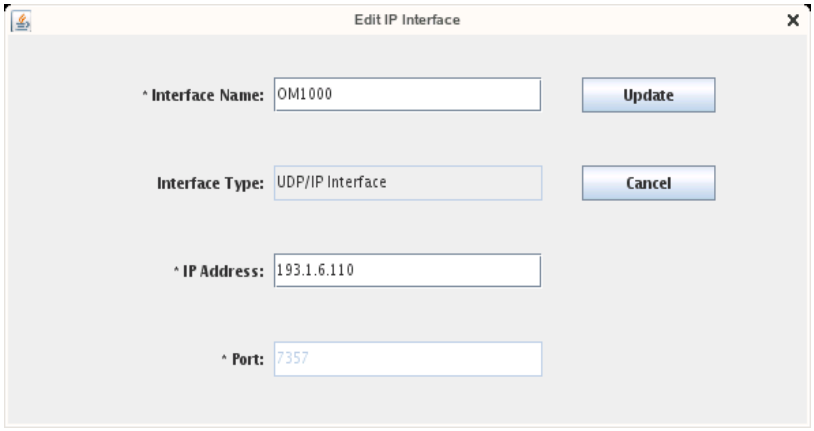
1. From the Server desktop, double-click on the blue Motorola logo *OLL1000 User Interface* icon.
2. The *Connect* pop-up appears with a local IP address and a default port number. Click *Connect*.



3. At the password prompt, enter: **`ippv4000`** then click *Login* or press *Return*. The *User Interface* window will appear.
4. On the *User Interface* menu bar, click on *Configure*. From the *Configure* pull-down, select *Interfaces*. The *Interfaces* window will appear.



5. Click on *OM1000 (OM1000* refers to the installed OM, whether OM1000 or OM2000) to select it, then click *Edit*.
6. The *Edit IP Interface* for the device dialog appears. Enter the IP address of the OM.



7. Click *Update*.
8. Click *Close*.

This completes the installation. If no further activities are planned at this time, you may click on the *Computer* button at the base of the desktop, and then select *Logout*.

Chapter 3
Operating Procedures

This chapter presents procedures for carrying out the various tasks involved in configuring the OLL1000, loading code objects to a population of set-top units, and preparing the the set-tops with their newly loaded code objects for distribution to their new subscriber users. The following procedures are included:

- Creating and configuring a package of multiple code objects
- Preparing and staging a package of code objects
- Performing a "Cold Initialization" of connected set-tops when necessary to remove previous versions of code
- Using the carousels to download code objects to the connected set-top units
- Simple initialization if needed to reset the connected set-tops for deployment
- Configuration options, including:
  - → Adjusting carousel bit rates
  - → Configuration of set-top reportback path and encryption algorithm
  - → Adding/Replacing an Out Of Band Modulator (OM)

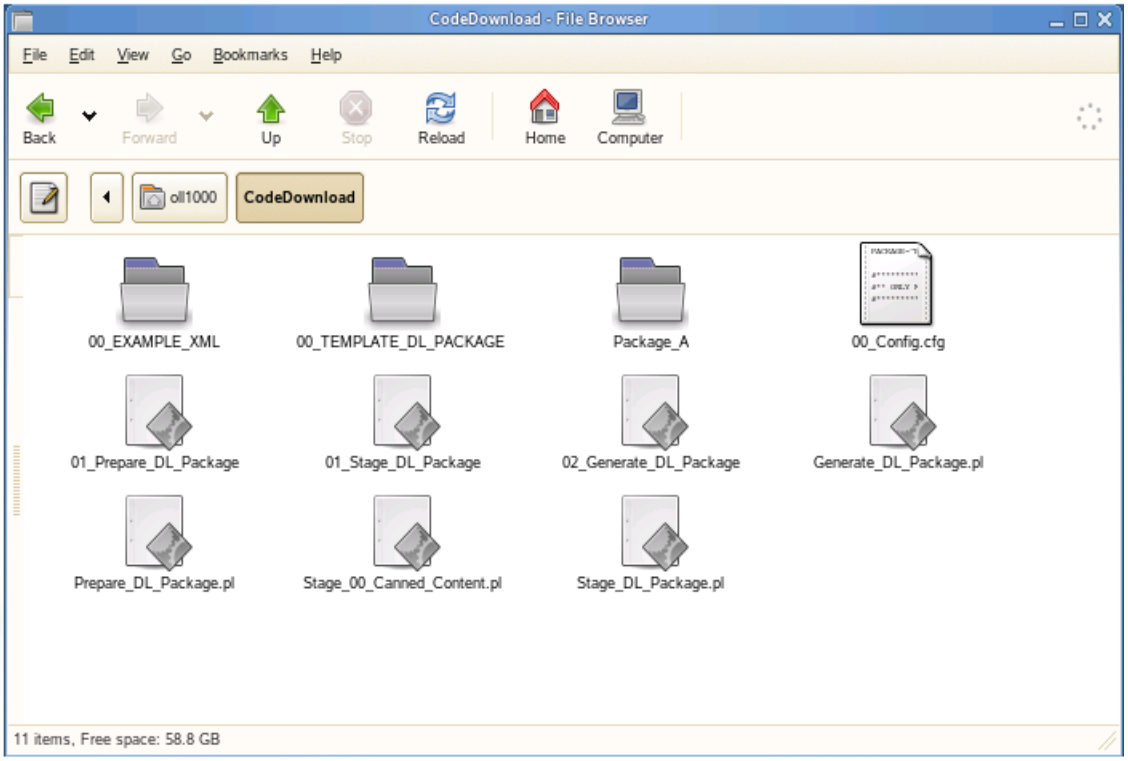
Create a Package of Code Objects

Creating a New Package from the Template

The first step in full installation of the OLL1000 consists of creating a new code-object package. Proceed as follows:

1. From the desktop, double-click on the *OLL1000's Home* icon.
2. Double-click on the *CodeDownload* folder.
3. Right-click on the *00_Template_DL_Package* folder. This is the template containing the blank code object folders.
4. Select *copy*.

5. Move the cursor to a white space within the *CodeDownload* folder, then right-click and select *paste*. This will create a copy of the template folder.
6. Right-click on the newly created copy and select *rename*.
7. Type the new name for your package. We use *Package_A* in the examples shown in this chapter, but the package name can be any string of your choosing.



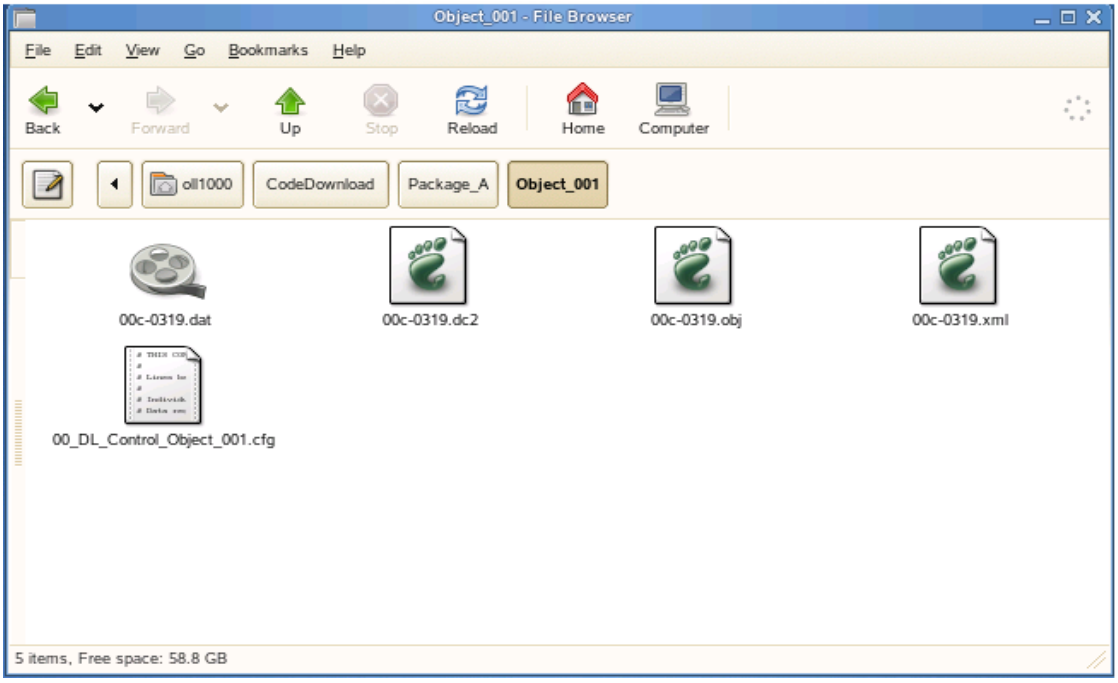
Configuring the New Package with Code Objects

At this point, you have successfully created a new package directory containing 20 code object folders which as yet have no active code files. The active code objects are obtained from Motorola, either on a DVD or via a downloaded image from the Motorola Digital Configuration Management group. Each object folder in your package can support one code object.

To configure the package (our *Package_A* example), perform the following steps:

1. In the *CodeDownload* window, double-click on the *Package_A* folder to open it.
2. The *Package_A* window will display with 20 Object folders, two DownloadControl folders, and a Config file.
3. In sequence, open each of the Object folders, and add the corresponding files for each code object to be downloaded.

If the files to be loaded into the Object folder relate to a Core type set-top, you would add the object's *.obj* and *.dat* files as shown in the *Object_001* window below.

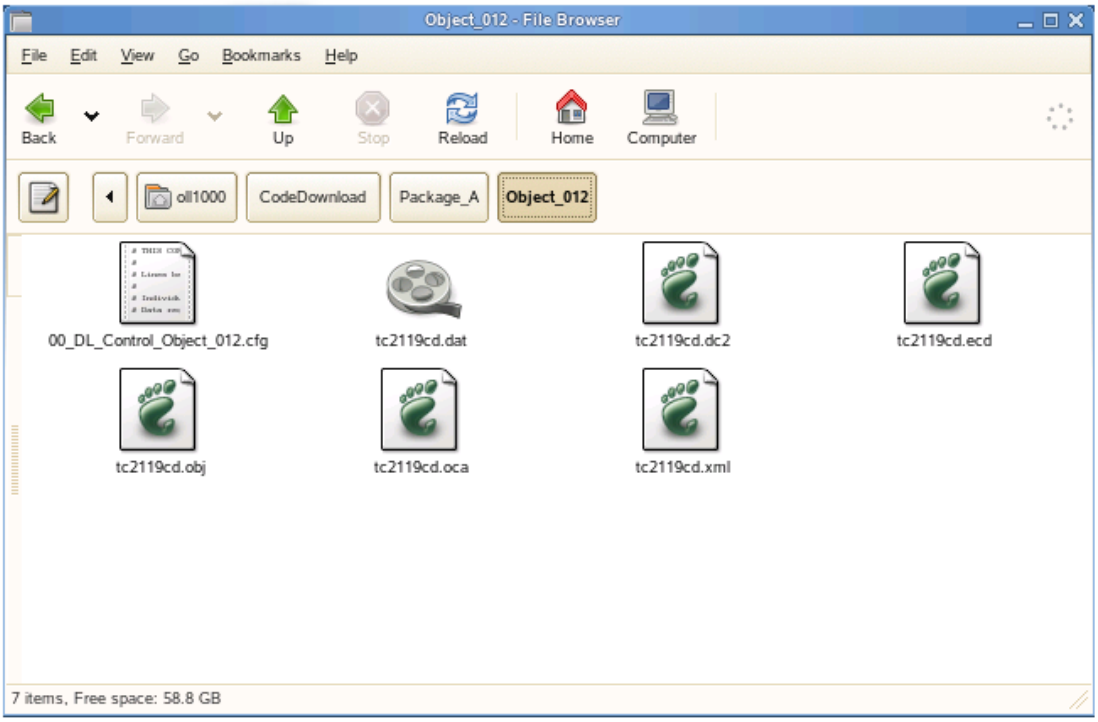


If the files to be loaded relate to an ASTB type set-top, you would add the *.obj* and *.dat* files, plus the *.oca* and *.ecd* files.

You are not required to load the object folders in any fixed order; just be sure that you load all of the files for each code object into one and only one of the object folders.

N O T E S

- *If you will be downloading fewer than 20 code objects, the carousels without any code objects will not consume any bandwidth, so increasing the download rate of carousels with large code objects may shorten the aggregate time required to complete the download process. See "Changing Bit Rates" on page 30.*
- *In the example windows shown above and below, ignore any files not specifically mentioned in this procedure.*



Appendix A of this document is a working example of a complete package of 20 typical code objects and properties that may be used to populate a code download package.

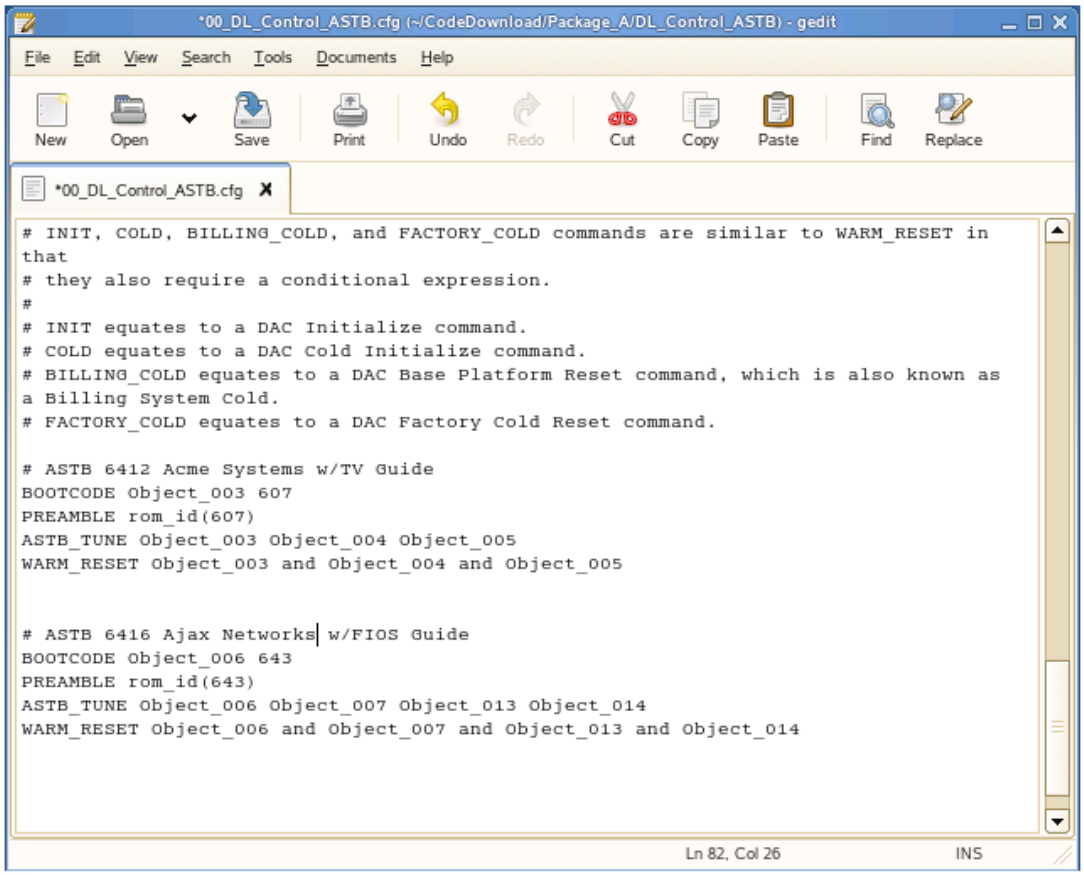
N O T E

In this release of the OLL1000, a maximum of 20 objects can be downloaded in a single package. Although the software will not prevent you from configuring more than 20 carousels, exceeding the 20-object maximum may violate set-top bandwidth and rate limits, and could result in data loss.

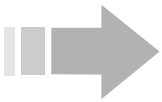
Edit the Download Control and Config Files

Once the object folders have been populated with their object files, the next step in the process is to edit the download control files.

1. From the *Package_A* window, double-click on the *DL_Control_ASTB* folder to open it.
2. From the *DL_Control_ASTB* window, double-click on the *00_DL_Control_ASTB.cfg* file to open it in edit mode.
3. Scroll to the end of the file, and edit it by adding the download control commands pertaining to the Advanced set-top Boxes that will receive code objects from this package. The screen capture below is an example. A hash mark (#) at the beginning of a line indicates a comment.



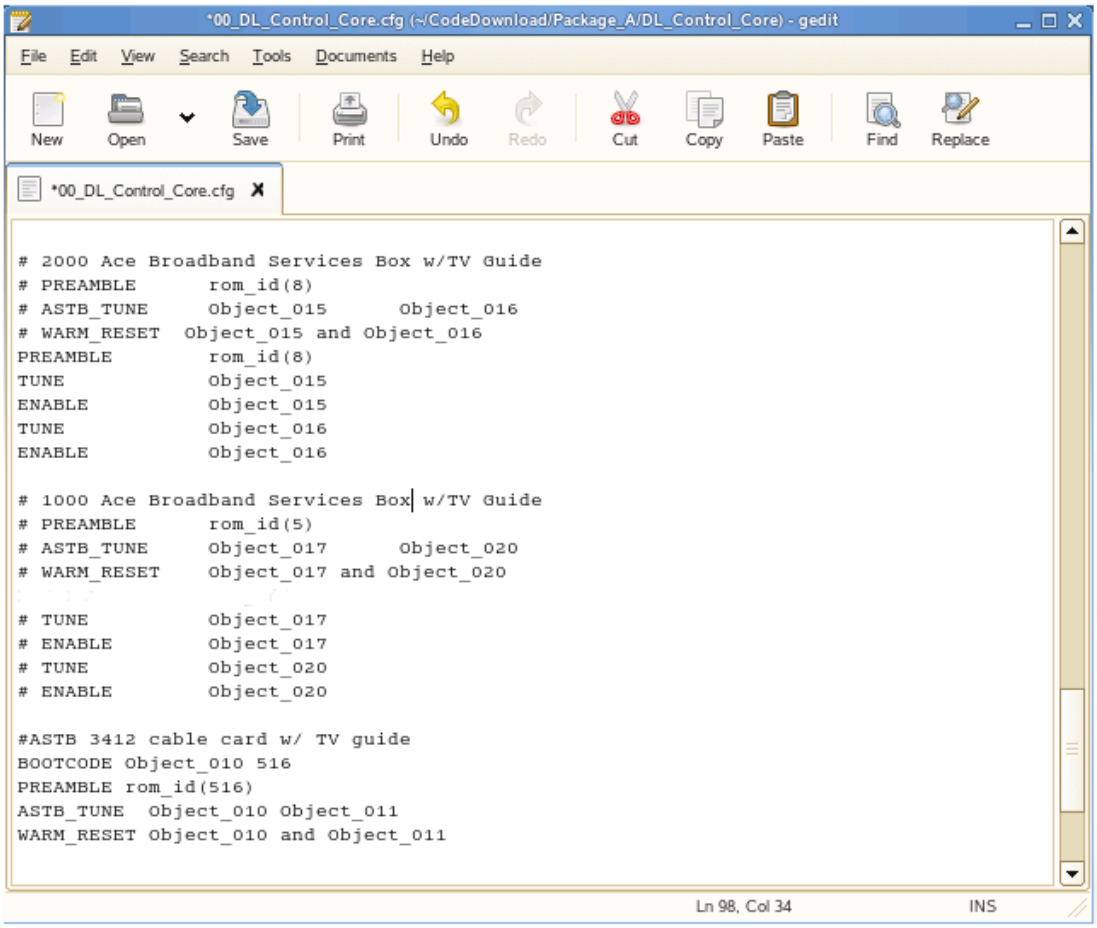
4. If not already included in the file, we recommend that you add the WARM_RESET command (as shown in the examples) as the last item in each block of Download Control commands. Commanding a warm reset as the last command in the download will cause one or more display elements on the set-top to blink, indicating that the download has completed successfully.



N O T E

Using the WARM_RESET technique to indicate that the download has completed works as described for set-tops, but not for M-Cards. The M-Card has no way of indicating it has received and incorporated the complete code download. If you will be loading code onto a large number of M-Card units, it may be necessary to pull some samples from the lot and test them individually to ensure that all necessary objects were received.

5. Save and close the *00_DL_Control_ASTB.cfg* file.
6. From the *Package_A* window, double-click on the *DL_Control_Core* folder to open it.
7. From the *DL_Control_Core* window, double-click on the *00_DL_Control_Core.cfg* file to open it in edit mode.
8. Scroll to the end of the file, and edit it by adding the download control commands pertaining to the Core type set-top boxes that will receive code objects from this package.
9. In this same file, add the download control commands pertaining to Cable Cards, whether for Core or ASTB-capable boxes.
10. The screen capture below is an example of an edited *00_DL_Control_Core.cfg* file.
11. If not already included in the file, we recommend that you add the *WARM_RESET* command (as shown in the examples) as the last item in each block of Download Control commands. Commanding a warm reset as the last command in the download will cause one or more display elements on the set-top to blink, thus providing a visual indication that the download has completed successfully. Note the limitations on this technique as related to M-Cards, as described in the *Note* above.



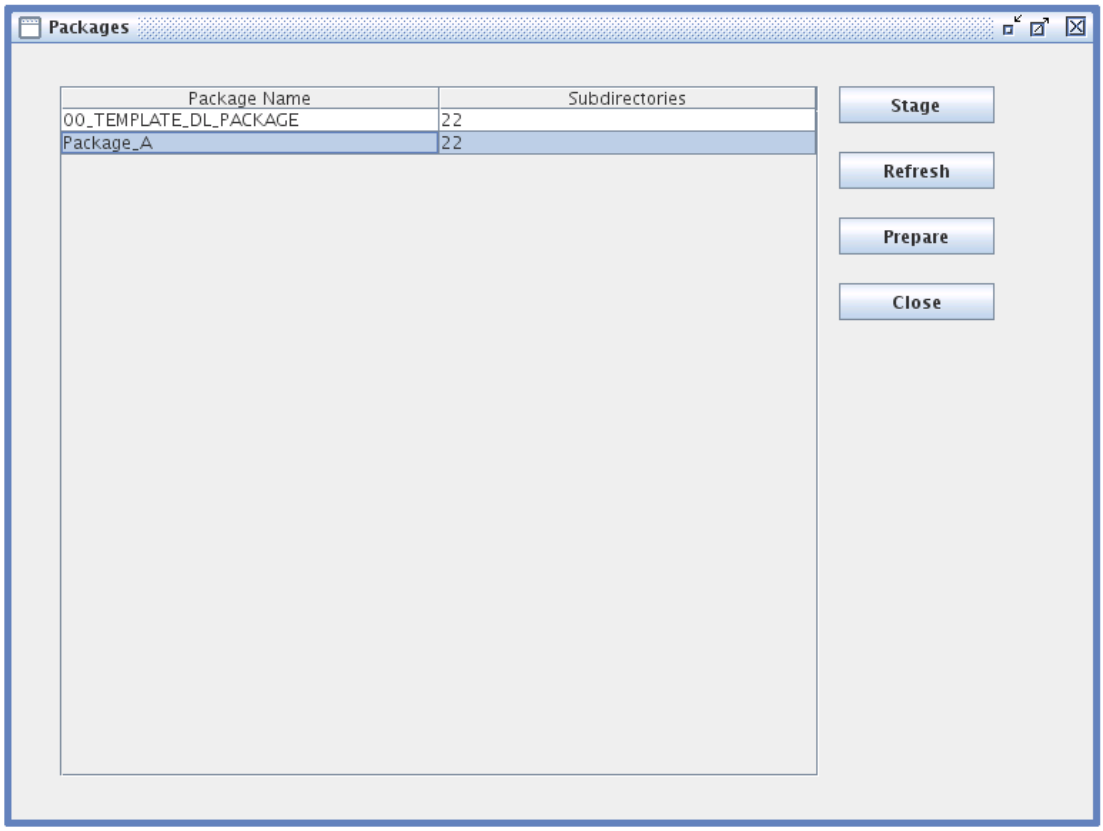
12. Save and close the *00_DL_Control_Core.cfg* file.

Appendix B of this document lists several examples of the kinds of Download Control commands that may be used to relate the code objects in a package to their target Core or ASTB set-top units.

Prepare and Stage the Package

With the code objects loaded in their respective folders, and the Download Control config files updated, you are now ready to prepare and stage the package for downloading.

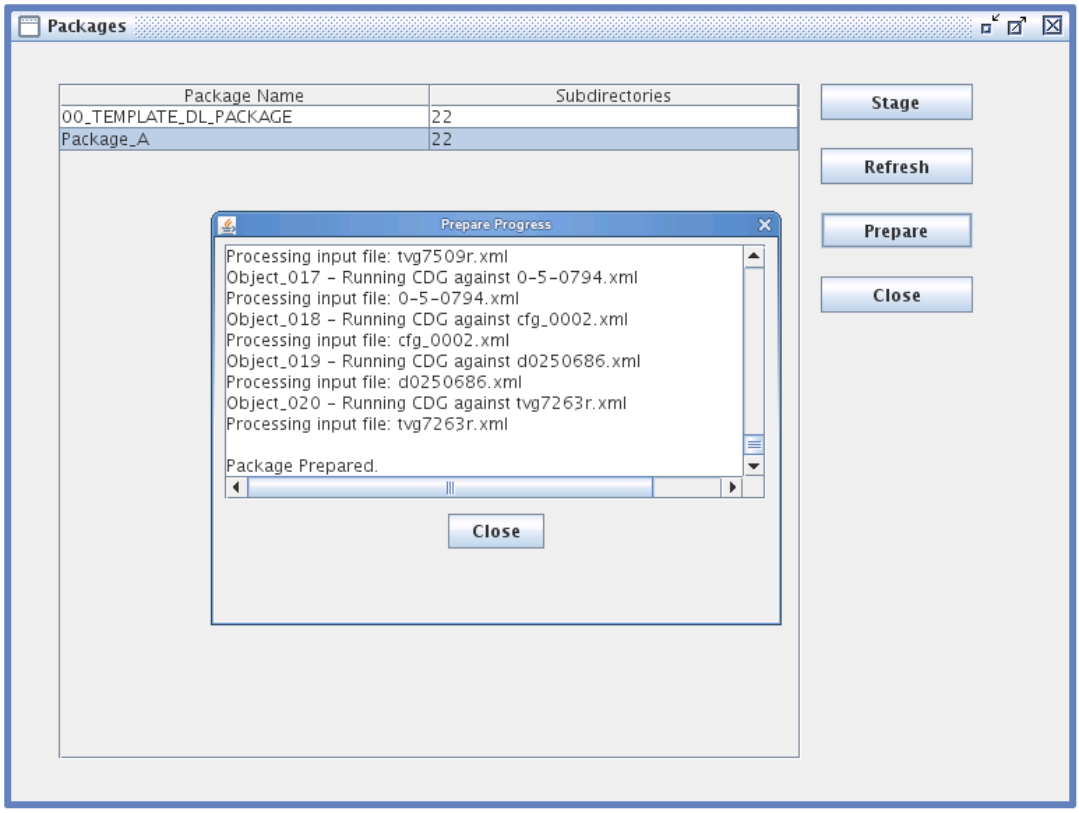
1. Close the file system windows. From the main menu, pull down *File* and select *Close*.
2. From the desktop, double-click on the gold Motorola icon (Code Download User Interface).
3. Click on the newly created package to select it (*Package_A* in the example below).



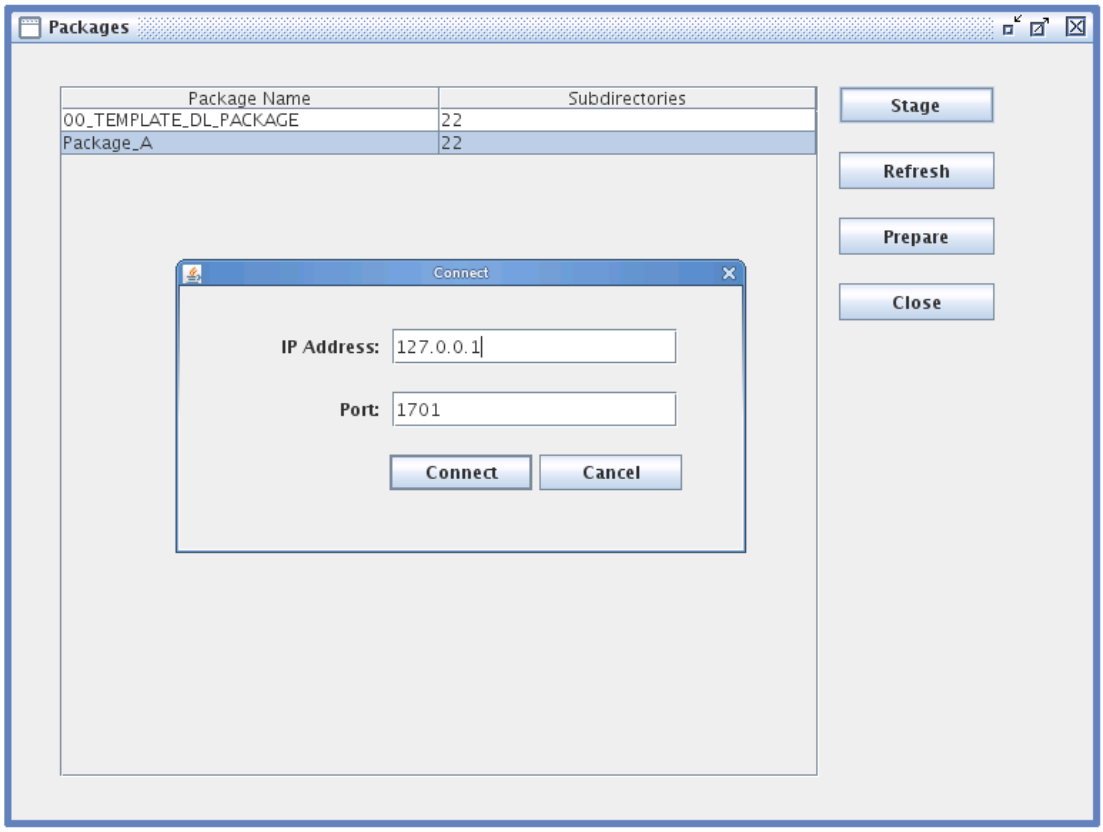
4. Click on *Prepare*. The *Prepare Progress* window will pop up and will very quickly list all of the files as they are prepared. When the operation completes, the *Prepare Progress* window will display *Package Prepared*.

N O T E

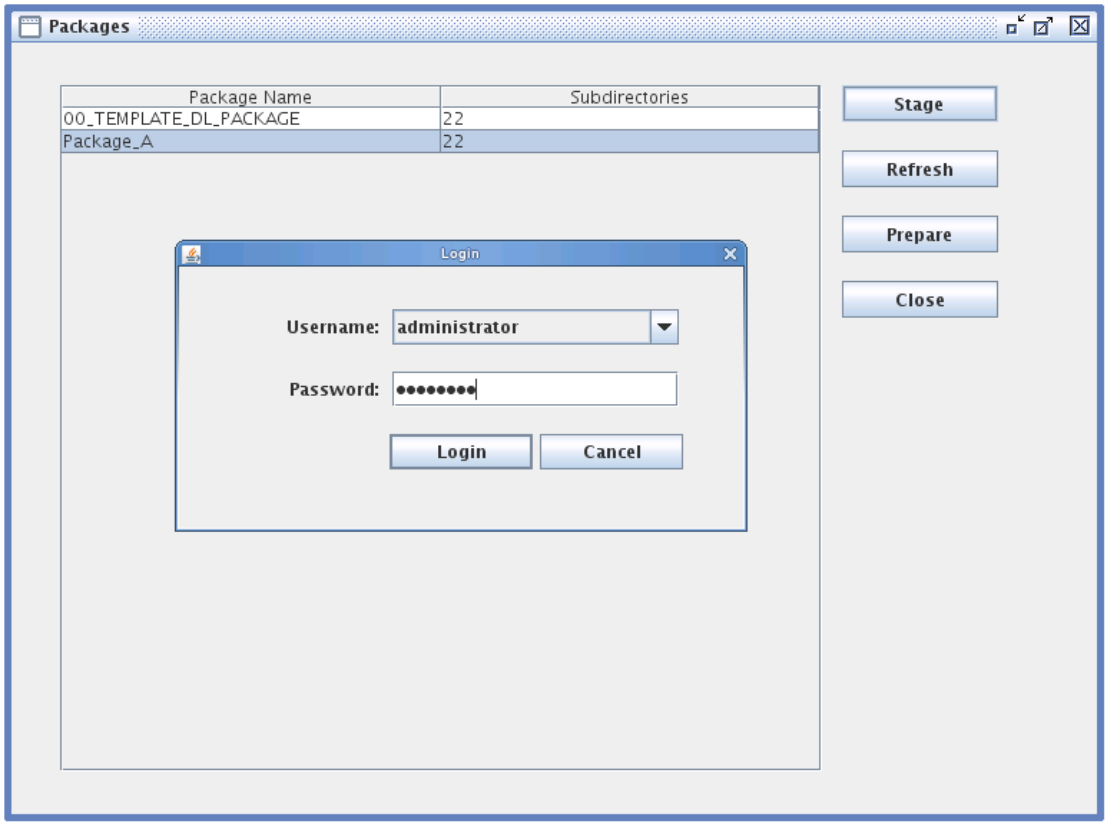
When the Prepare operation completes, scroll through the output of the Prepare Progress dialog as a confirmation that the process completed normally. Any problems with the download files or the files in the object folders will usually be apparent here.



5. In the *Packages* window, click *Close*.
6. Ensure the package name is still highlighted, then click on the *Stage* button. A *Connect* dialog box with a local IP address and default port number will appear.



7. Click on *Connect*. The *Login* dialog box appears.

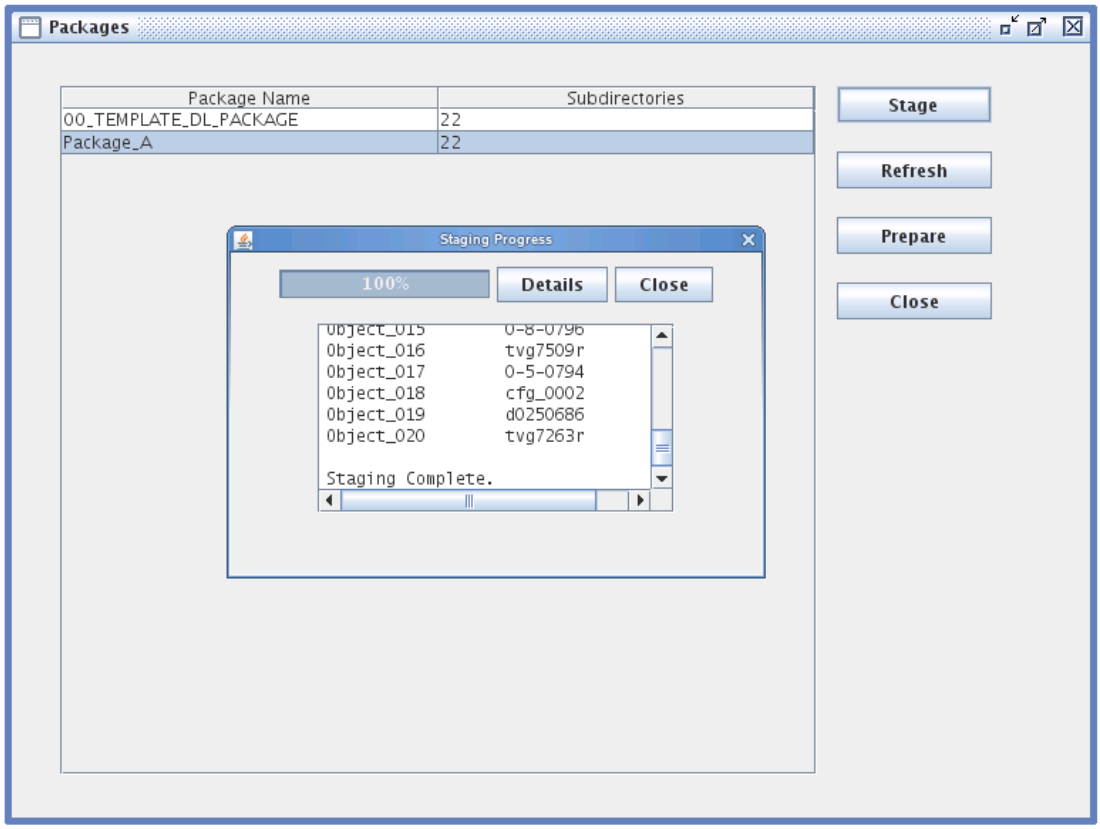


8. Log in using the default admin credentials:

   Username: **administrator**
   Password: **ippv4000**

9. Click *Login*.

10. Click *Stage*. The *Staging Progress* window will pop up and will very quickly list all of the objects as they are staged. When the operation completes, the progress bar will show 100% and the *Staging Progress* dialog will display *Staging Complete.*



11. In the *Staging Progress* dialog, click *Close.*
12. From the main menu bar, pull down *System*, and select *Exit.*

Cold Initialization and Code Object Download

This section describes the procedures for:

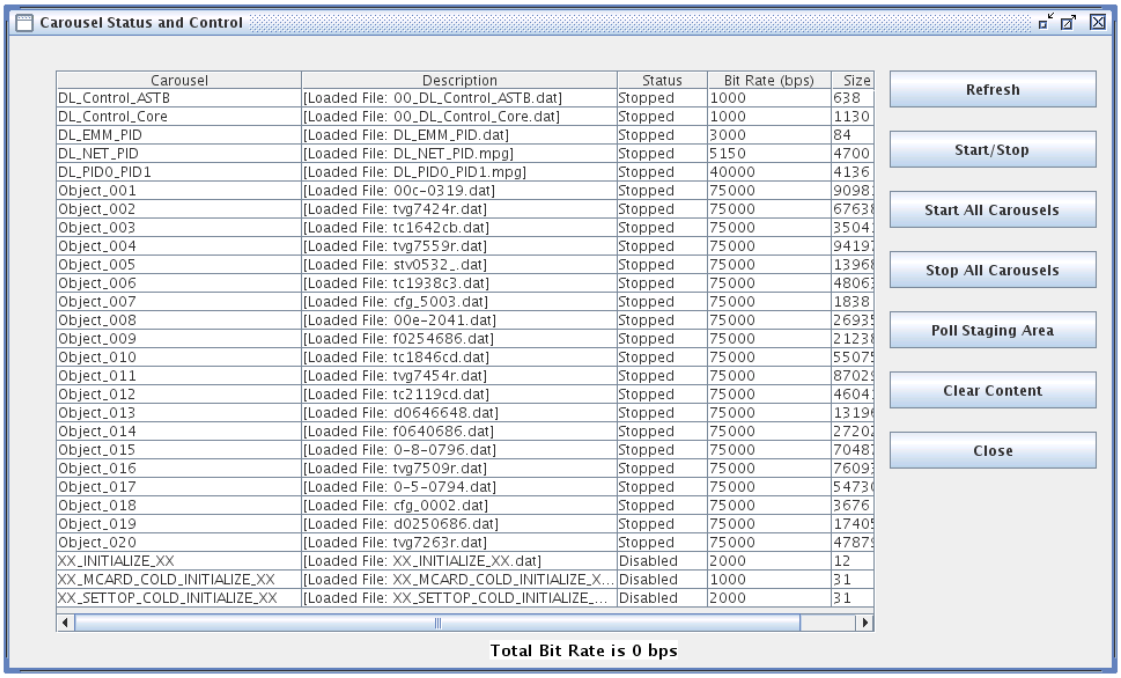
- Performing a “Cold Initialization” of connected set-tops to remove previous versions of code
- Using the configured carousels to download the code objects
- Performing a simple initialization, if needed, to clear the connected set-top units of any residual settings from previous uses

Carousel Status and Control Window

1. From the desktop, double-click on the blue Motorola icon (*OLL1000 User Interface*).
2. When the *Connect* dialog appears, click on *Connect*. The *Login* dialog will appear.
3. Log in using the default admin credentials:

   Username: **administrator**
   Password: **ippv4000**

4. Click *Login*. The *Carousel Status and Control* window will appear as shown below.



It is from this window that you will control the broadcast download of commands and code objects to the connected population of set-top units. The buttons on the right-hand side of the window control the following functions:

Refresh: Refreshes the window to update real-time status of the listed carousels.

Start/Stop: Toggle button to start or stop a selected carousel.

Start All Carousels: When activated, starts all Object carousels. Does not start the Initialize functions (the last three rows in the window).

Stop All Carousels: Interrupts broadcast download and returns all carousels to idle/stopped mode.

Poll Staging Areas: Not supported in this release.

Clear Contents: Removes code objects from a selected carousel.

Close: Closes the *Carousel Status and Control* window.

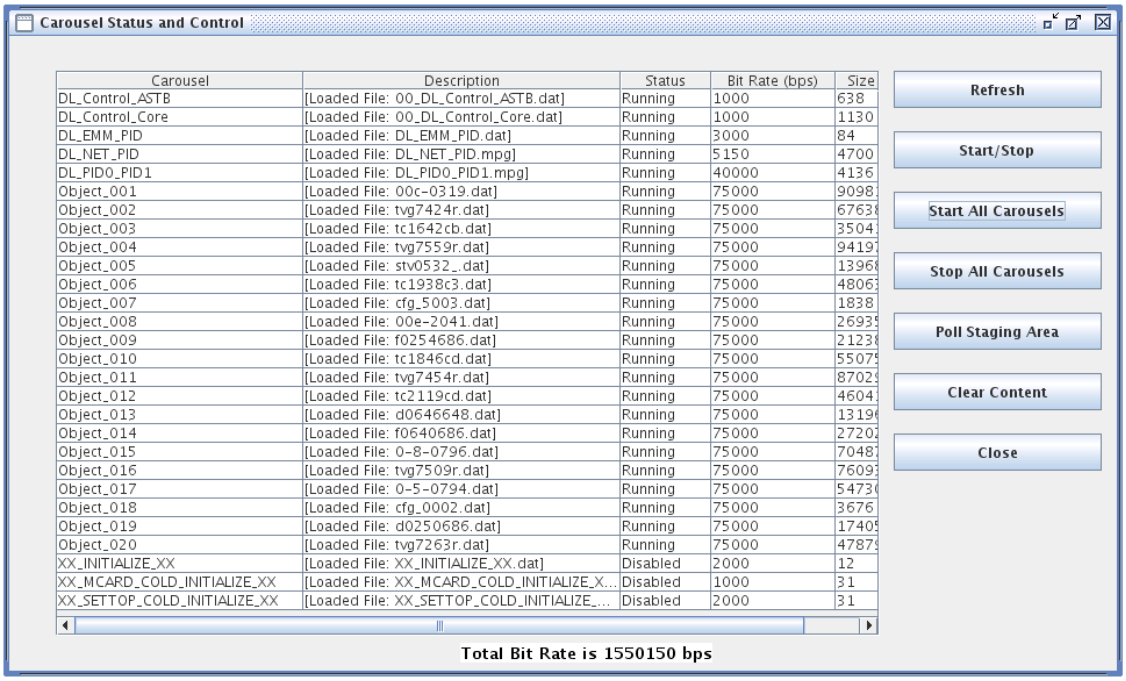
Cold Initializing Set-tops

If you will be loading code to set-top units that have outdated or otherwise incorrect code installed, you will need to do a "Cold Intialization" before downloading the new code objects. Cold initialization causes the user-processor to terminate, and erases currently installed code objects. It will also clear all DRAM data and any items stored in non-volatile memory. If it is not necessary to cold initialize the connected set-tops, then skip this section and proceed to "Downloading Code Objects" on page 27.

Regardless of whether or not you intend to cold initialize the connected set-tops, you must first start the carousels so that the PID0 and PID1 information are transmitted to all of the connected units. Without first receiving PID0 and PID1, the set-tops cannot accept a code init, so starting the carousels establishes the communication link between the OLL1000 and the connected population of set-tops.[1]

1. From the *Carousel Status and Control* window, click on *Start All Carousels*.
2. A dialog will appear asking you to confirm: *Are you sure you want to start all Carousels?* Click on *Yes*.
3. After some seconds (may take a minute or two), the status column for the *Download Control* rows and all of the object rows will change to *Running*. The *Initialize* (bottom three) rows will display *Disabled*.

1. Note that the *XX_MCARD_COLD_INITIALIZE_XX* option is not supported in this release and should not be used. The *Set-top Cold Initialize* sequence will also cold initialize any connected M-Cards.



4. With all carousels running, click on the *DL_Control_ASTB* carousel to select it.
5. Click *Start/Stop* to stop the selected carousel.
6. Click on the *DL_Control_Core* carousel to select it.
7. Click *Start/Stop* to stop the selected carousel.
8. Click on *XX_SETTOP_COLD_INITIALIZE_XX* to select it. Note that its status shows *Disabled*.
9. Click *Start/Stop* to start the cold initialize sequence. All set-tops will clear and then reset.
10. Click on *XX_SETTOP_COLD_INITIALIZE_XX* to select it.
11. Click *Start/Stop* to stop the process. Observe that the row status reverts to *Disabled*.

Downloading Code Objects

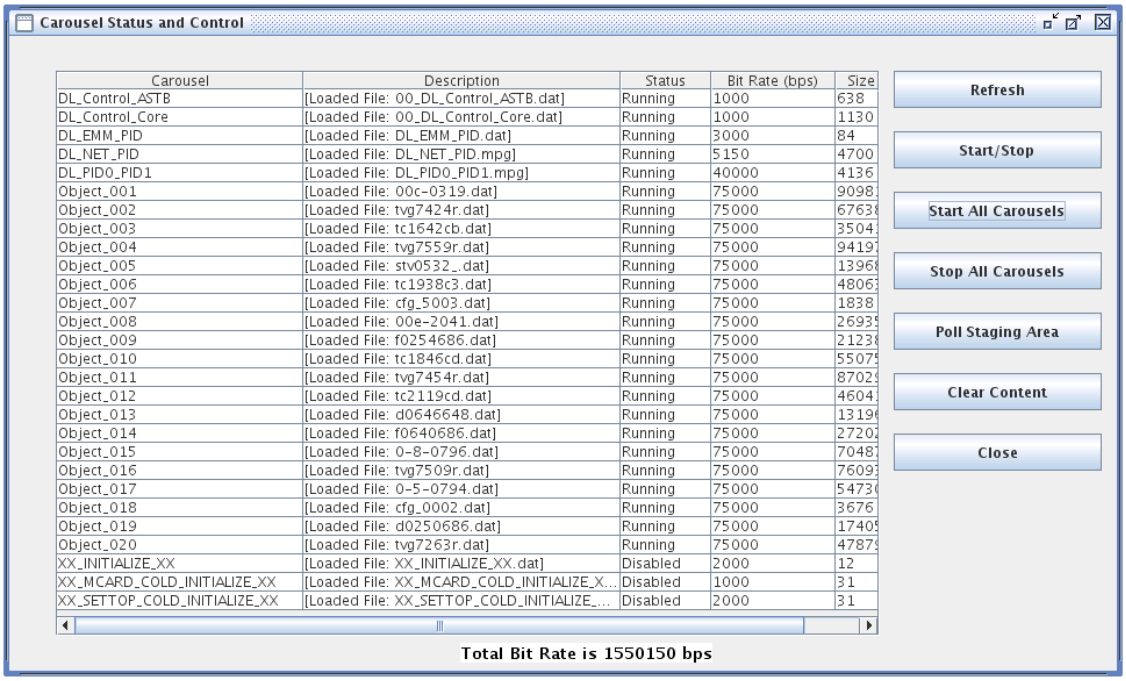
If you have already cold initialized this lot of set-tops, or if cold initialization is not needed, perform the procedures in this section to download code objects from your configured package of carousels.

1. From the *Carousel Status and Control* window, click on *Start All Carousels*

   Note that if you have just cold initialized the set-tops, then the object carousels are already running. In that case you need only click to select the *DL_CONTROL_ASTB* and *DL_CONTROL_CORE* rows sequentially, and click *Start/Stop* to start each when its row is selected.

2. A dialog will appear asking you to confirm: *Are you sure you want to start all Carousels?* Click *Yes*.

3. After some seconds (could take as long as a minute or two), the *Status* column for the download control rows and all of the object rows will change to *Running*. The initialize (bottom three) rows will display *Disabled*.



The running carousels will broadcast their downloads to the Out Of Band Modulator, where they will be raised to RF and broadcast to the connected population of set-top units. As each of the set-tops receive and accept their new code, and *provided* your Download Control Files include the Warm Reset command as discussed previously, they will go into a warm reset mode, and one or more display components will blink to indicate that the download is complete.

The amount of time it takes to complete the download of all code items depends on the size of the code objects, the bit rate at which they are transmitted over the Out Of Band channel, and the number of “spins” each carousel must make before its code object has been received free of errors. Typical downloads require about 10 minutes, but a full package of very large code objects might take as long as 30 minutes to complete.

4. When you are confident that the download is complete (typically when all of the target set-tops are in warm reset mode as noted above), click *Stop All Carousels*, and when asked to confirm, click *Yes*.

Initializing Set-tops (Simple Initialization)

If Cold Initialization was not required for this batch of set-tops, but some or all of them have been previously deployed for use, then it is recommended that you perform the following procedure after the new code has been successfully downloaded. Simple initialization will wipe any residual settings that may have been implemented in previous deployments. The process will clear all DRAM data and non-volatile memory, but it will *not* affect download code objects or view history stack. If you have previously cold initialized this batch of set-tops, then you can omit this procedure.

1. Click on the *DL_CONTROL_ASTB* carousel to select it.
2. If this carousel is running, click on *Start/Stop* to stop it.
3. Click on *DL_CONTROL _CORE* carousel to select it.
4. If this carousel is running, click *Start/Stop* to stop it.
5. Allow all connected Set-top units to power up if previously in Warm Reset loop.
6. Click on the *DL_EMM_PID* carousel to select it.
7. If this carousel is running, click *Start/Stop* to stop it.
8. Click on the *DL_NET_PID* carousel to select it.
9. If this carousel is running, click *Start/Stop* to stop it.
10. Click on the *DL_PID0_PID1* carousel to select it.
11. If this carousel is running, click *Start/Stop* to stop it.
12. Click on *XX_INITIALIZE_XX* (third row from the bottom in the *Carousel Status and Control* window) to select it.
13. Click *Start/Stop* to start this row.
14. Wait for the initialization sequence to complete. When all connected set-tops have reset, then click *Start/Stop* to stop.

This completes the code download and initialization process. Disconnect and remove all set-tops, and connect the next lot of set-tops for download.

Configuration Options

This section contains setup options and adjustments you may need to implement on the OLL1000 for your particular system, or to enhance operational efficiency.

Changing Bit Rates

As mentioned previously, the size of the code objects and the bit-rate at which the code is downloaded will affect how long the code download takes. In general, the greater the size of the code object, the faster its bit rate should be.

Although the default bit rate for each carousel is 75 kbps, you can set the bit rate of any individual carousel to as much as 200 kbps. However, the aggregate bit rate for all carousels is 1.8 Mbps. Thus, to optimize efficiency and operational speed, rates of individual carousels should be balanced based on the size of the data object; large objects should be assigned a faster bit rate, smaller objects can be set to a lower rate (1 kbps minimum).

N O T E

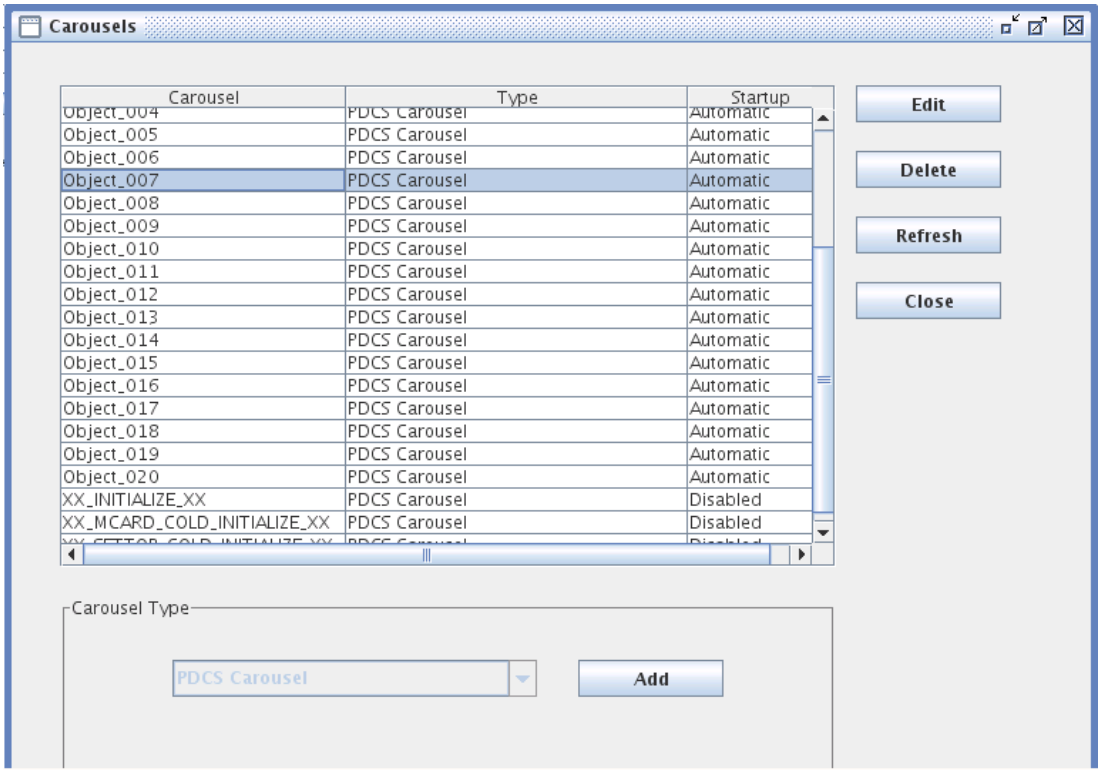
In configuring bit rates, note that M-Cards and some set-top models (e.g. older DCT variants such as the DCT2000) cannot handle download rates greater than the default rate of 75 kbps. Attempting to configure too high of a rate could result in packet loss in those devices.

To set individual object bit rates, proceed as follows:

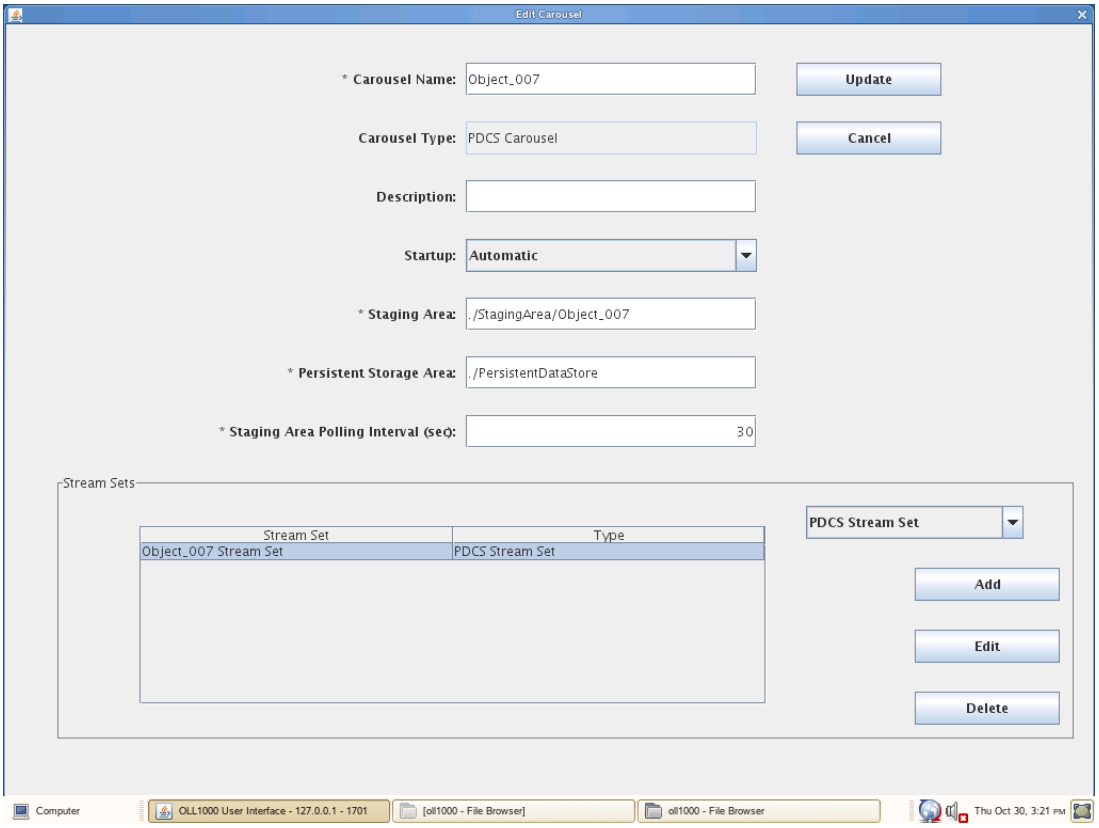
1. From the desktop, double-click on the blue Motorola icon (*OLL1000 User Interface*).
2. When the *Connect* dialog appears, click *Connect*. The *Login* dialog will appear.
3. Log in using the default admin credentials:

   ```
   Username:  administrator
   Password:  ippv4000
   ```

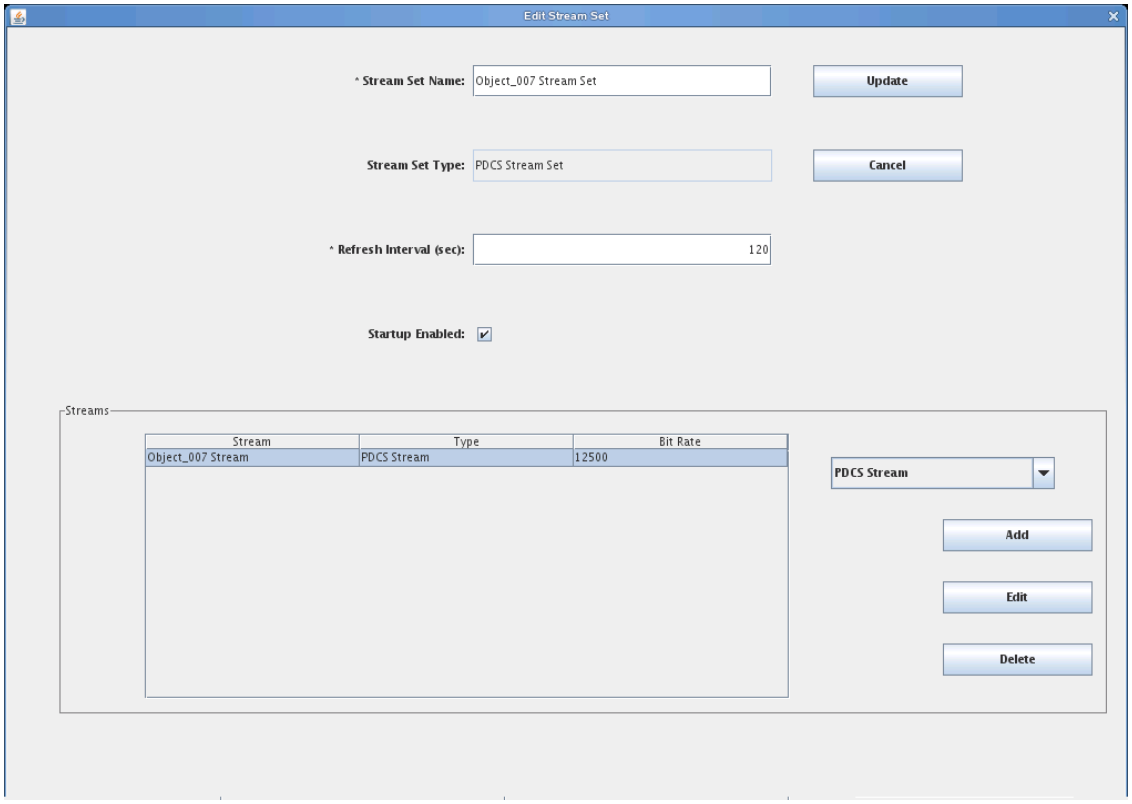
4. Click *Login*. The *Carousel Status and Control* window will appear.
5. Click on the object whose bit rate you wish to change.
6. If that carousel is running, click *Start/Stop* to stop it.
7. From the main menu bar, pull down *Configure* and select *Carousels*.



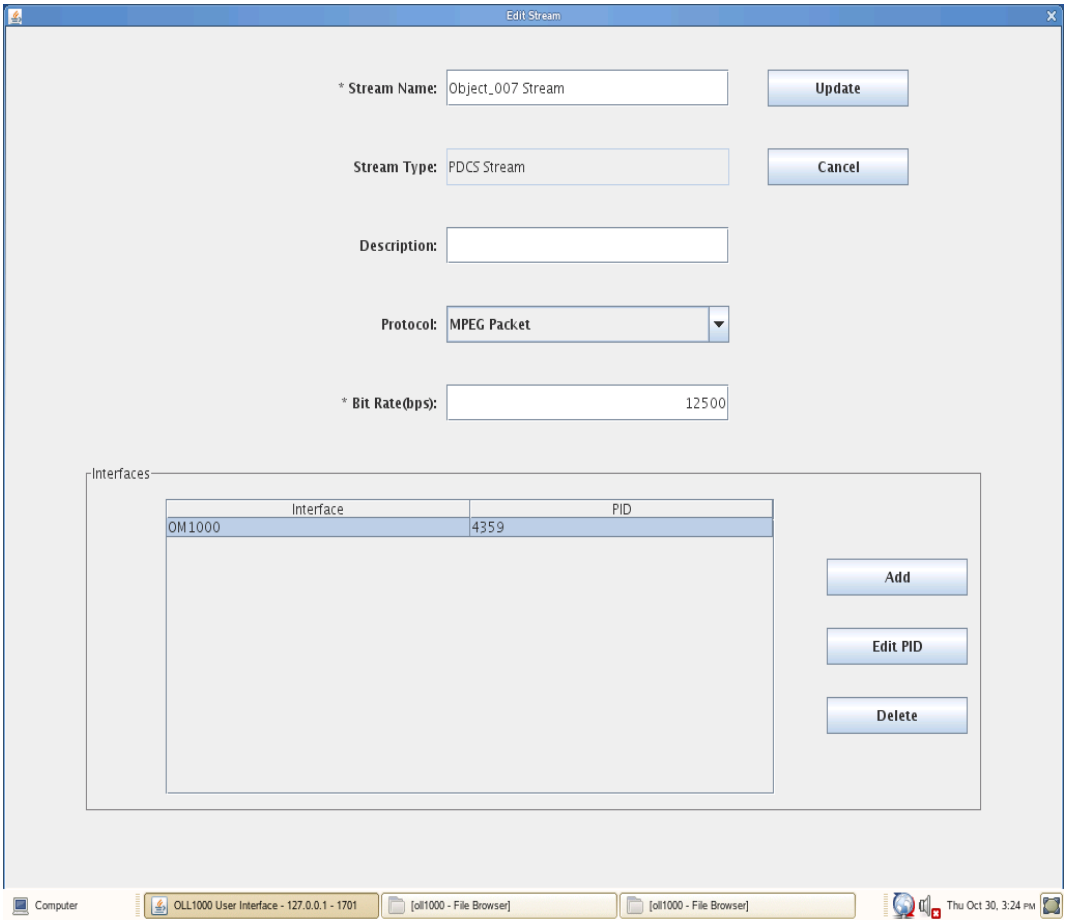
8. When the *Carousels* window appears, click to highlight the object you wish to change, and then click *Edit*. The *Edit Carousel* window will open.



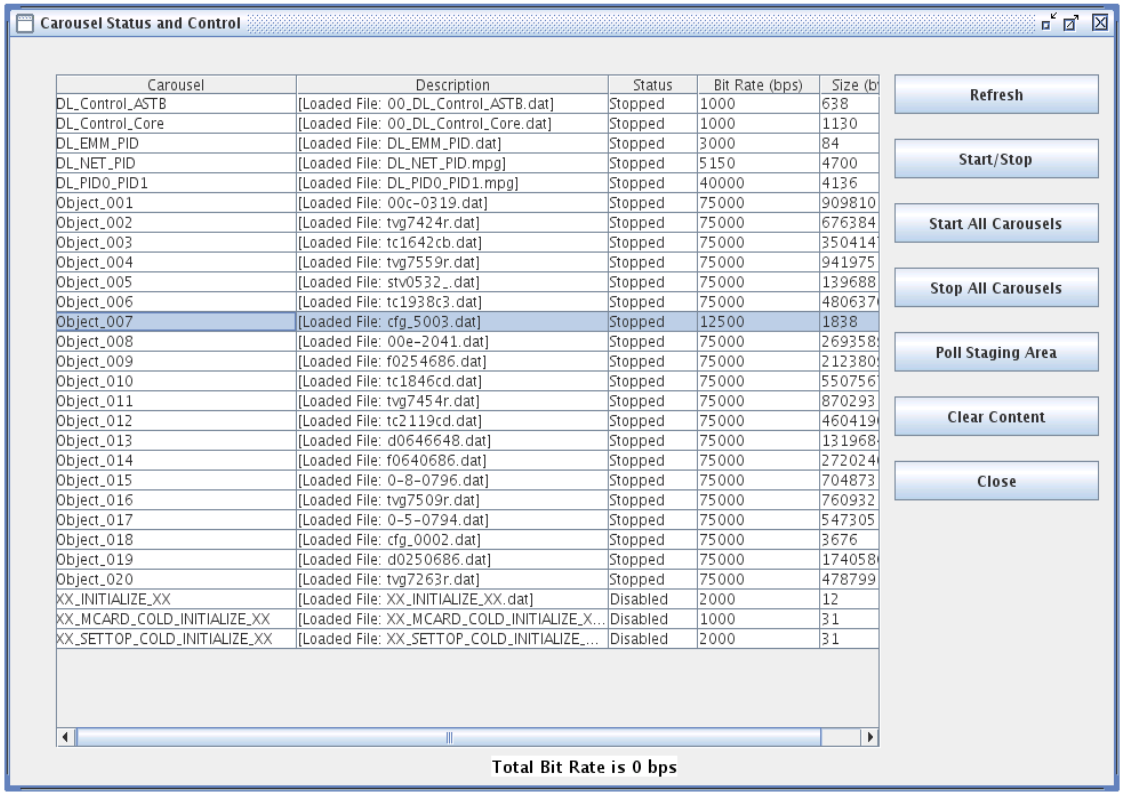
9. In the *Stream Sets* panel in the bottom half of the window, click *Edit*. The *Edit Stream Set* window will open.



10. In the *Streams* panel in the bottom half of the *Edit Stream Set* window, click on *Edit*. The *Edit Stream* window will open.



11. In the *Bit Rate (bps)* field of the *Edit Stream* window, enter the desired bit rate, then click *Update*. The *Edit Stream* window will close.
12. From the *Edit Stream Set* window, click *Update* again to return to the *Edit Carousel* window.
13. From the *Edit Carousel* window, click *Update* again to return to the *Carousels* window.
14. From the *Carousels* window, click *Close.*
15. From the *Carousel Status and Control* window, click *Refresh*. The row for the selected carousel will display the newly configured bit rate.



16. Click on the row with the new bit rate to select it.
17. Click *Start/Stop* to restart that carousel.

Set-top Return Path Configuration

The DCT Configuration option allows you to configure the system to match the ReportBack path (RF or Ethernet) used by the DCTs (set-tops) in your system. If your system uses Ethernet for report-back, you also have the option of selecting the encryption algorithm used. To set the DCT Configuration, proceed as follows:

1. From the desktop, double-click on the blue Motorola icon (*OLL1000 User Interface*).
2. When the *Connect* dialog appears, click on *Connect*. The *Login* dialog will appear.
3. Log in using the default admin credentials:

   `Username:` **`administrator`**
   `Password:` **`ippv4000`**

4. Click *Login*. The *Carousel Status and Control* window will appear.
5. Click on *Stop All Carousels* to ensure that none are running, and confirm your command at the prompt.
6. From the main menu in the upper left-hand corner, pull down *Configure* and select *DCT Configuration*.
7. Click on the arrow pull-down to select either:

   → `RF`

   → `Ethernet Conforming CSA`

   → `Ethernet DES`

   → `Ethernet Not Specified` (if this option selected, set-tops will revert to their previous DCT configuration setting)

8. Click on your selection.
9. Click *Update*.
10. Click *Start All Carousels* to restart, and confirm your command at the prompt.
11. After a short pause, the file name of the selected configuration will appear in the *Description* column of the *DL_EMM_PID* row. If the changed configuration doesn't appear after a few seconds, click *Refresh* to update the screen.

Replacing an Out Of Band Modulator (OM)

Should you need to replace the OM in your OLL system, perform the steps below.

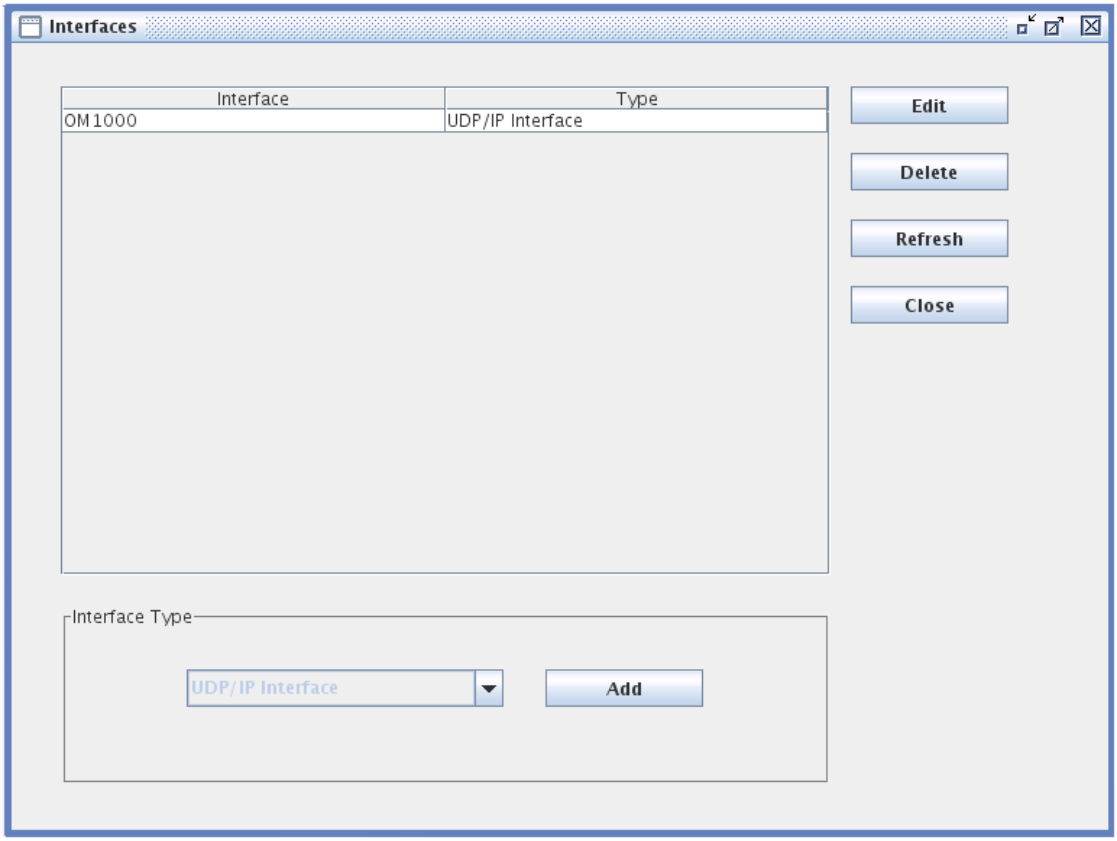
N O T E

In this release, only one Out Of Band Modulator may be connected to the OLL1000 server. Multiple OMs in a single system are not supported.

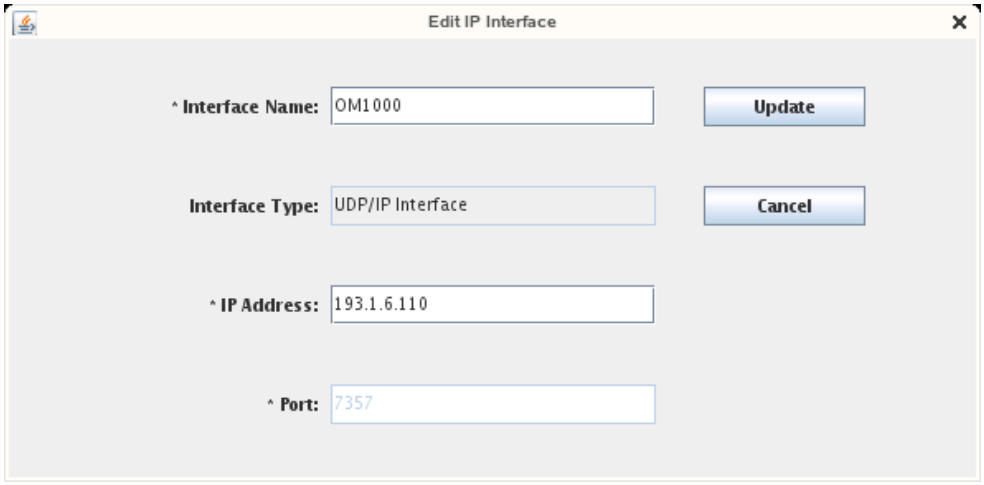
1. From the desktop, double-click on the blue Motorola icon (*OLL1000 User Interface*).
2. When the *Connect* dialog appears, click on *Connect*. The *Login* dialog will appear.
3. Log in using the default admin credentials:

   Username: **administrator**
   Password: **ippv4000**

4. Click *Login*. The *Carousel Status and Control* window will appear.
5. From the menu bar in the upper left-hand corner, pull down *Configure* and select *Interfaces*. The *Interfaces* window will appear.



6. Click on *OM1000 (OM1000* refers to the installed OM, whether OM1000 or OM2000) to select it, then click *Edit*.
7. The *Edit IP Interface* dialog for the device appears. Enter the IP address of the OM.



8. Click *Update*.
9. Click *Close*.

Appendix A
Code Object Examples in Package A

This appendix presents a list of 20 examples of typical code objects that may be used to populate a code download package. Each of the examples lists a number of properties (*Name, Type, Version, Image, Class, Store,* and *Description*). In actual operations, you may also see other properties (such as *Constructor, Destructor,* or *absolutADDR*), but the items listed are those pertinent to OLL1000 operation.

Object_001

```
NAME: "00c-2500"
TYPE: CODE
VERSION: 03.19
IMAGE: "00c-0319"
CLASS: PLATFORM
STORE: FLASH
DESCRIPTION: "DCT 2500 03.19"
```

Object_002

```
NAME: "Pgm_Guide"
TYPE: CODE
VERSION: 7.0.1
IMAGE: "tvg7424r"
CLASS: APP
STORE: NONVOLATILE
DESCRIPTION: "Interactive Program Guide version 7.0.1"
```

Object_003

```
NAME: "TC_CS_CB"
TYPE: CODE
VERSION: 16.42
IMAGE: "tc1642cb"
CLASS: PLATFORM
STORE: FLASH
DESCRIPTION: "Thin Client App"
```

Object_004

```
NAME: "Pgm_Guide"
TYPE: CODE
VERSION: 75.59
IMAGE: "tvg7559r"
CLASS: APP
STORE: NONVOLATILE
DESCRIPTION: "Interactive Program Guide V. 7559-Signed"
```

Object_005

```
NAME: "SEACVOD_"
TYPE: CODE
VERSION: 05.32
IMAGE: "stv0532_"
CLASS: APP
STORE: NONVOLATILE
DESCRIPTION: "GW A25 VOD Module 05.32 Signed"
```

Object_006

```
NAME: "TC_P3_CS"
TYPE: CODE
VERSION: 19.38
IMAGE: "tc1938c3"
CLASS: PLATFORM
STORE: FLASH
DESCRIPTION: "Thin Client App"
```

Object_007

```
NAME: "__CONFIG"
TYPE: DATA
VERSION: 50.03
IMAGE: "cfg_5003"
CLASS: MANAGED_OBJECT 94
STORE: NVM_DATA
DESCRIPTION: "ASTB_CSA_to_DES_converson"
```

Object_008

```
NAME: "00e-2500"
TYPE: CODE
VERSION: 20.41
IMAGE: "00e-2041"
CLASS: PLATFORM
STORE: FLASH
DESCRIPTION: "DCT 2500 20.41"
```

Object_009

```
NAME: "fibr0025"
TYPE: CODE
VERSION: 46.86
IMAGE: "f0254686"
CLASS: APP
STORE: NONVOLATILE
DESCRIPTION: "f025 2500 46.86"
```

Object_010

```
NAME: "TC_CS_CD"
TYPE: CODE
VERSION: 18.46
IMAGE: "tc1846cd"
CLASS: PLATFORM
STORE: FLASH
DESCRIPTION: "Thin Client App"
```

Object_011

```
NAME:"Pgm_Guide"
TYPE: CODE
VERSION: 7.0.1
IMAGE: "tvg7454r"
CLASS: APP
STORE: NONVOLATILE
DESCRIPTION: "Interactive Program Guide version 7.0.1."
```

Object_012

```
NAME: "TC_CS_CD"
TYPE: CODE
VERSION: 21.19
IMAGE: "tc2119cd"
CLASS: PLATFORM
STORE: FLASH
DESCRIPTION: "Thin Client App"
```

Object_013

```
NAME: "odc_0064"
TYPE: DATA
VERSION: 66.48
IMAGE: "d0646648"
CLASS: MANAGED_OBJECT 15
STORE: NVM_DATA
DESCRIPTION: "ASTB Relocatable Application."
```

Object_014

```
APPID: 2247
TYPE: CODE
VERSION: 06.86
IMAGE: "f0640686"
CLASS: APP
STORE: NONVOLATILE
DESCRIPTION: "HOSTASTB Relocatable Application."
```

Object_015

```
NAME: "00082000"
TYPE: CODE
VERSION: 07.96
IMAGE: "0-8-0796"
CLASS: PLATFORM
STORE: FLASH
DESCRIPTION: "DCT2000 07.96"
```

Object_016

```
NAME: "Pgm_Guide"
TYPE: CODE
VERSION: 75.09
IMAGE: "tvg7509r"
CLASS: APP
STORE: NONVOLATILE
DESCRIPTION: "Interactive Program Guide Version 7509"
```

Object_017

```
NAME: "00051000"
TYPE: CODE
VERSION: 07.94
IMAGE: "0-5-0794"
CLASS: PLATFORM
STORE: FLASH
DESCRIPTION: "DCT1000 AVI 07.94"
```

Object_018

```
NAME: "__CONFIG"
TYPE: DATA
VERSION: 00.02
IMAGE: "cfg_0002"
CLASS: APP
STORE: NONVOLATILE
DESCRIPTION: "DES to CSA Mode application for DCT2500"
```

Object_019

```
NAME: "odc_0025"
TYPE: DATA
VERSION: 06.86
IMAGE: "d0250686"
CLASS: APP
STORE: NONVOLATILE
DESCRIPTION: "Ajax Networks fibr_tv Data Object 06.86"
```

Object_020

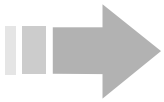
```
NAME: "Pgm_Guide"
TYPE: CODE
VERSION: 72.63
IMAGE: "tvg7263r"
CLASS: APP
STORE: NONVOLATILE
SVAR: 73542
DESCRIPTION: "Interactive Program Guide version 72.63"
```

Appendix B
Sample Download Control Commands

This appendix presents a list of examples of the kinds of Download Control commands that may be used to relate the various code objects in a package to their target set-top units. Examples are provided for both core set-tops and ASTB (Advanced Set-top Box) types.

Sample Control Commands for Core Set-top Boxes

The commands listed below are examples of entries in the *00_DL_Control_Core.cfg* config file.



N O T E

Commands related to Cable Cards, whether for Core or ASTB-capable boxes are included in the 00_DL_Control_Core.cfg config file.

2500 Acme Systems w/TV Guide

```
PREAMBLErom_id(80)
ASTB_TUNE Object_001 Object_002
WARM_RESET Object_001 and Object_002
```

QIP 2500 Ph 2 Ajax Networks w/Saturn Guide

```
PREAMBLE rom_id(209)
ASTB_TUNE Object_008 Object_018 Object_019 Object_009
WARM_RESET Object_008 and Object_018 and Object_019 and Object_009
```

2000 Acme Systems w/TV Guide

```
# PREAMBLErom_id(8)
# ASTB_TUNE Object_015 Object_016
# WARM_RESET Object_015 and Object_016
PREAMBLErom_id(8)
TUNEObject_015
ENABLE Object_015
TUNEObject_016
ENABLE Object_016
```

#ASTB 3412 cable card w/ TV guide

```
BOOTCODE Object_010 516
PREAMBLE rom_id(516)
ASTB_TUNE Object_010 Object_011
WARM_RESET Object_010 and Object_011
```

#QIP 7100 cable card

```
BOOTCODE Object_012 2304
PREAMBLE rom_id(2304)
ASTB_TUNE Object_012 Object_007 Object_013 Object_014
WARM_RESET Object_012 and Object_007 and Object_013 and Object_014
```

Sample Control Commands for ASTB Set-top Boxes

The commands listed below are examples of entries in the *00_DL_Control_ASTB.cfg* config file.

ASTB 6412 Acme Systems w/TV Guide

```
BOOTCODE Object_003 607
PREAMBLE rom_id(607)
ASTB_TUNE Object_003 Object_004 Object_005
WARM_RESET Object_003 and Object_004 and Object_005
```

ASTB 6416 Ajax Networks w/FIBR Guide

```
BOOTCODE Object_006 643
PREAMBLE rom_id(643)
ASTB_TUNE Object_006 Object_007 Object_013 Object_014
WARM_RESET Object_006 and Object_007 and Object_013 and Object_014
```

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