



OLL1000 Offline Loader



Service Providers Can Save Time and Money with the OLL1000 Offline Loader for Code Downloads



Overview

In this difficult global economy, cable operators and carriers face a number of challenges in controlling the costs associated with set-top deployments. One area of particular importance is the need to manage the operational expenses associated with code downloads. Since firmware code downloads and electronic programming guide (EPG) data distribution share limited available bandwidth with interactive applications, the typical set-top provisioning time at the customer premises can often exceed 20-30 minutes. The Motorola OLL1000 Offline Loader can help reduce overall set-top provisioning time while allowing operators to enjoy a net savings in op-ex.

The Motorola OLL1000 Offline Loader addresses these bandwidth constraints via a flexible, easy-to-use, cost-effective solution. It helps telcos and cable operators to more productively utilize their network infrastructure by enabling them to pre-stage set-tops in the warehouse, speeding up installation time in the home and reducing associated labor costs. The OLL1000 allows network operators to download code to set-tops offline, reducing the costs of installations and enabling installers to conduct up to one-or-two additional service calls each day—reducing op-ex, improving the customer install experience, and in many cases delivering a return on capital investment in as little as three months.

Implementing Code Downloads Offline

Preparing a set-top for deployment requires the installation of set-top firmware, EPG, and other application objects, and it can also require the purging of legacy code and subscriber information from redeployed set-tops, which can be a time-consuming and inefficient process if done completely in the home. Offline downloads are the most efficient and secure method of configuring set-tops for deployments, but typical methods require the ability to address each set-top uniquely and are procedurally more cumbersome than leveraging an easy-to-use graphical user interface (GUI) and flexible menus for easy configuration.

By pre-staging set-tops in a local warehouse, network operators can accelerate deployment and have additional flexibility for the out of band (OOB) channel bandwidth utilization. Efficiently configuring multiple devices simultaneously can dramatically increase productivity. In addition, using the OLL1000 completely isolates warehouse code download operations from plant OOB bandwidth so that the operator has the option of reducing the OOB bandwidth dedicated to code download on the live cable plant.

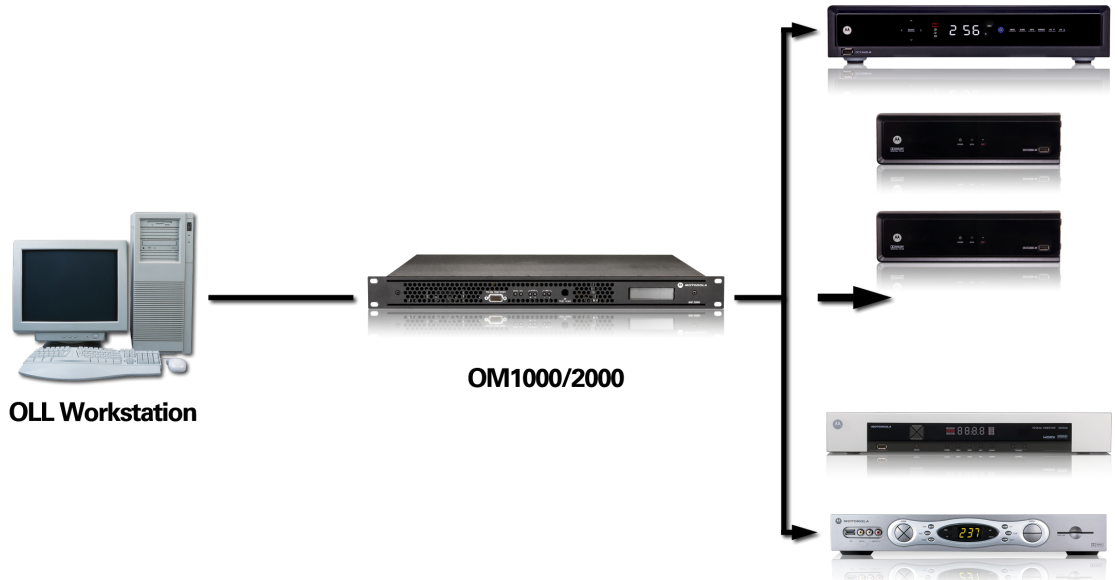
The Motorola OLL1000 provides service providers with more control over code suites by keeping the

The OLL1000 can significantly improve the performance and process for warehouses that use DAC and Billing System-generated transactions for on-plant code download. Instead of moving each set-top from off-plant "stock" status to on-plant "test" status for delivery of the virtual channel map (VCM), a single mouse click on the OLL1000 menu can deliver a VCM and download code objects to all boxes off-plant in under 5 minutes for typical configurations. There is no need to use the DAC or Billing System to repeatedly move each settop from off-plant to on-plant and back to off-plant status for pre-provisioning set-tops.

loading of software independent of the production network. This offers the added benefit of allowing network operators to pre-load set-tops in anticipation of planned code upgrades. The OLL1000 solution consists of an OLL Workstation (a Sun Fire X2250 server), an OM1000 or OM2000 Out-of-Band Multiplexer/Modulator, and a population of set-tops.

The set-tops can be comprised of any combination of core standard definition (SD) or advanced high definition (HD) units with or without digital video

recording (DVR) capabilities. The OLL1000 supports third-party set-tops compliant with DigiCipher 2 (DCII) code download messaging, and it offers support for set-tops with either radio frequency (RF) or Ethernet DOCSIS Set-top Gateway (DSG) returns. The OLL1000 provides an out-of-band transmission stream that is multiplexed through a Motorola OM1000 or OM2000 to the set-tops. It provides necessary configuration messages, code download control messages, and a DCII-compliant code download object carousel to allow a set-top to download the desired suite of code objects for a particular warehouse or region.



The OLL1000 broadcasts bulk code downloads offline to multiple set-tops, reducing set-top deployment times and associated costs for carriers and cable operators.

Flexible Code Downloads Enable Rapid Set-Top Deployment

Support for legacy code downloads and up to 20 concurrent code objects in a single code download package allows network operators to efficiently manage code downloads to multiple set-tops. It includes a flexible GUI that simplifies the configuration interface and the staging of the code downloads.

Operations personnel can easily define download packages via drag-and-drop configuration of code/data objects into a pre-defined directory structure, and the OLL1000 offers a highly simplified download control command syntax.

Templates are provided for creating new code download packages. Once a package is created, OLL1000 menus help prepare and stage each

package for download to set-tops. Other menus are provided for network address setup for the OLL1000 and OM1000/2000. Bit rates for each carousel can be individually adjusted to optimize the download rate, and a Warm Reset command can be added to cause the set-tops display to flash when code download is complete.

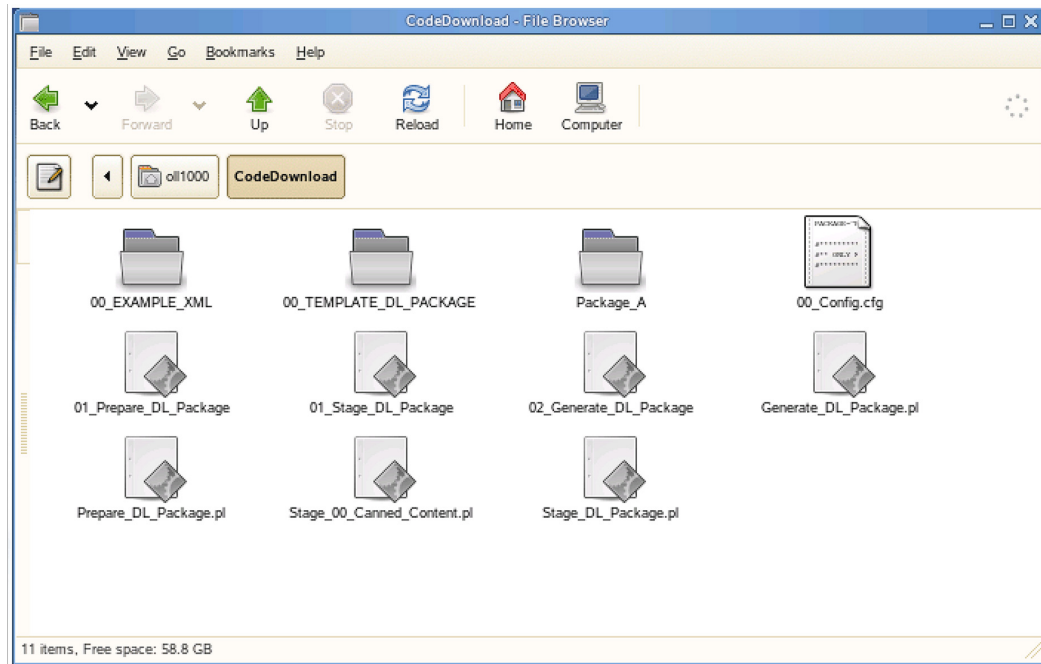
The Motorola OLL1000 is a specialized carousel server that provides the capability to rapidly load numerous code objects on multiple set-top boxes in a warehouse environment or other staging area—independent of the production system. It uses broadcast functions to clear stale code from existing or recycled inventory and reload a new complement of applications and features, saving time and expense in set-top deployment and installation.



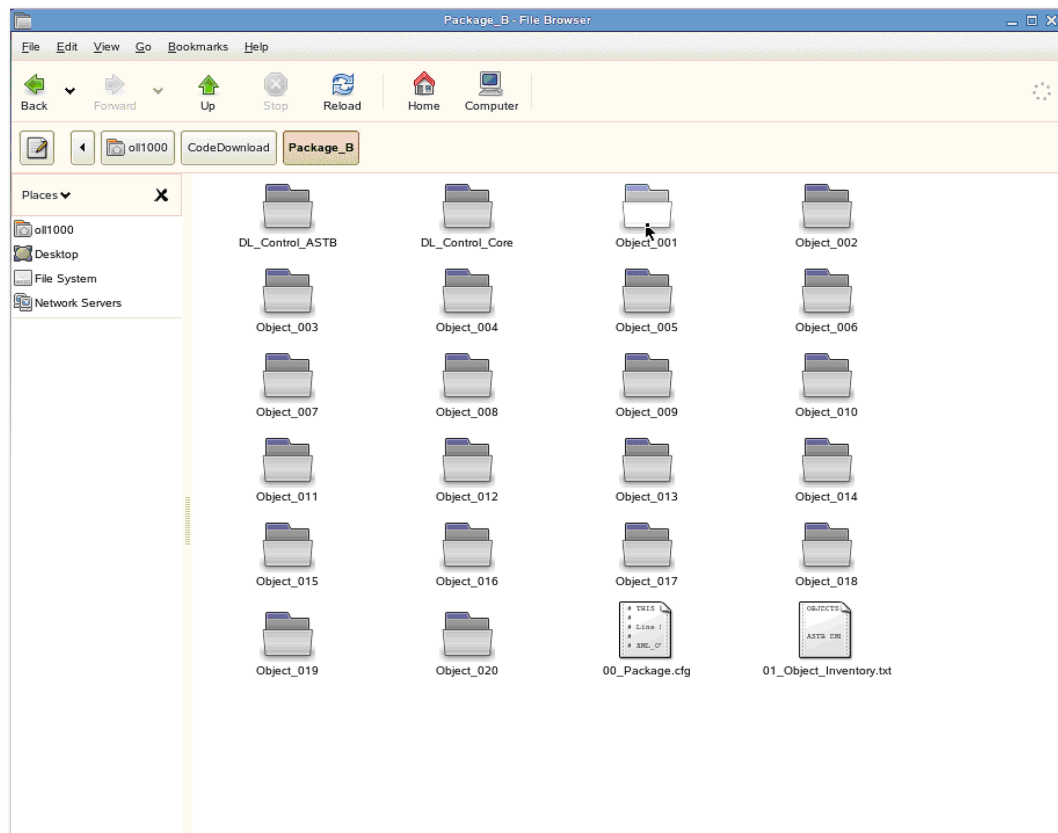
The OLL1000 software application runs on SUSE Linux Enterprise Server on a Sun Fire X2250 Server Platform. It includes an LCD flat-screen monitor, keyboard, mouse, and DVD-ROM drive.

The OLL1000 provides a pre-built template folder of 20 code object folders and two code download command file folders for easy provisioning with new code for set-tops. 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. The template folder, shown below, can be copied, renamed, and populated with files to be downloaded.

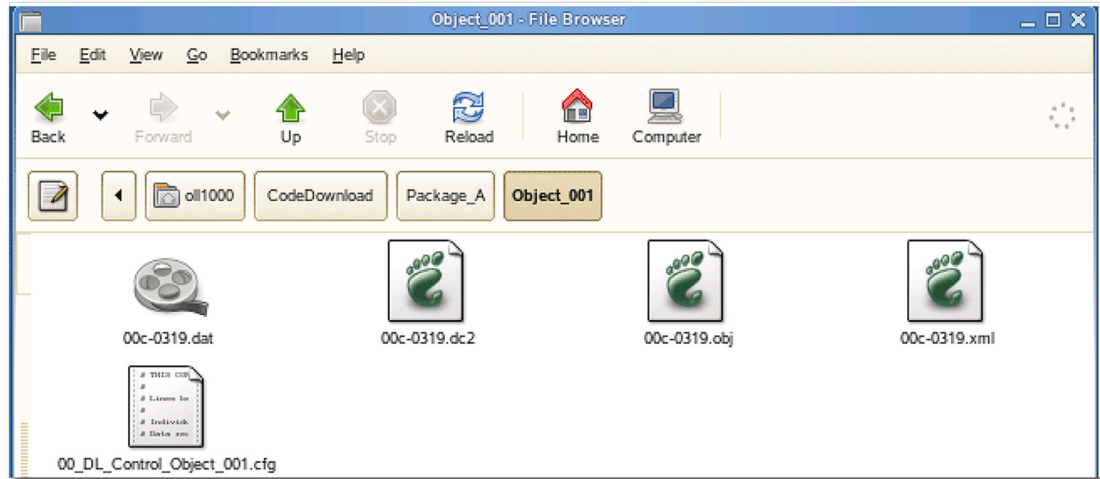


The template folder contains 20 code object folders as shown below:



Each object folder contains the files required for core (.dat, .obj) or advanced (.dat, .obj, .ecd, .oca) set-top boxes. Configuration folders are also provided for core and advanced set-tops where

control commands can be sent to the objects to be downloaded. For example, a Warm Reset command can be added at the end to provide a visual indication to each box type when the download is complete.



Other OLL1000 GUI and menu options enable you to perform the following:

- Configure and pre-provision set-tops.
- Stage code download packages and view cached packages.
- Configure the IP address of each downstream device as Unicast, Multicast, or Broadcast IP address types.
- Configure data rates from 1 Kbps to 200 Kbps for each active carousel.
- Control the pre-loaded code suite.
- Stage content and commands for transmission.
- Start/stop all or individual carousels.

Operators can use the OLL1000 to clear the settings of set-tops being redeployed to the field. The OLL1000 also supports optional:

- Cold Initialization of set-tops prior to downloading for clearing code from previously fielded set-tops.
- Warm Reset of set-tops when the download completes to flash the display as an indication of completed download.
- Initialization of set-tops after downloading, which is useful for clearing set-top configurations prior to deployment.

The OLL1000 support for offline operation frees up bandwidth on the production network. It offers increased flexibility for code downloads to set-tops without the risk of interaction with the production system. Because all code downloads are delivered offline, it enables greater quality control. The OLL1000 supports rapid deployment of new or redeployed set-tops, accelerating a network operator's ability to activate new subscribers.

Flexible Deployment Scenarios

There are two primary applications for leveraging the OLL1000 to reduce the cost and accelerate the deployment of set-tops:

1. Network operators who are already pre-loading code in a warehouse and seek a more efficient process.
2. Network operators that currently require field installers to download the code over the network.

The labor costs associated with installation time spent in the home has driven many network operators toward pre-provisioning of set-tops. Since field code download processes compete for limited bandwidth on the production system, there is a strong need to provide a mechanism where pre-loading set-tops can be achieved locally and independently of the production network. Many network operators are already preloading set-tops in the warehouse using an addressable system, where addresses are assigned for each set-top, and the code is downloaded.

However, the OLL1000 allows warehouse staff to download code objects to a population of set-tops efficiently and quickly without the need for addressing each set-top. Drag-and-drop configuration via an intuitive user interface streamlines production and facilitates warehouse managers to increase productivity by faster and more economical distribution of new code onto the set-tops.

The same code package can be distributed to multiple set-tops on a rack, enabling high-volume set-top configuration. Up to 20 concurrent code

objects can be downloaded, and service providers can centrally distribute the software packages to the warehouse, where they are loaded onto the OLL1000 for deployment. The broadcasting of a software package to multiple set-tops without the need to address each unit separately saves both money and time.

Keeping the firmware loading independent of the production network also has the added benefit of allowing service providers to pre-load set-tops in anticipation of planned code upgrades to support field installations on the day of the code upgrade. For example, code assignments can be created for the new code a day or two in advance, allowing the warehouse more control over the code suites being pre-loaded into the warehouse set-tops without any interaction with production.

Network operators that currently pre-load set-tops in warehouses need a more efficient code download solution for planned transitions or code upgrades, and the OLL1000 eliminates the need to wand individual barcodes to enter each set-top into the system because it eliminates the need to address each set-top by unit address to deliver the firmware and channel map. Multiple set-tops and set-top types can be configured via a single process, allowing service providers to more quickly prepare set-tops for deployment.

Network operators that currently require field installers to download the code over the network can realize even more dramatic reductions in the costs of installations. By deploying the OLL1000 in the warehouse and implementing code downloads offline, they can **save an average of 15 minutes or more off the time required for each set-top installation—potentially allowing each field installer to support one or two additional installations each day and providing a return on investment on capital outlay in as little as three months.**

Offline loading in the warehouse also creates further opportunities to reduce operating expenses. For example, network operators can pre-configure set-tops in regional warehouses and have them available at local depots, allowing customers the option to pick them and self-deploy them in the home.

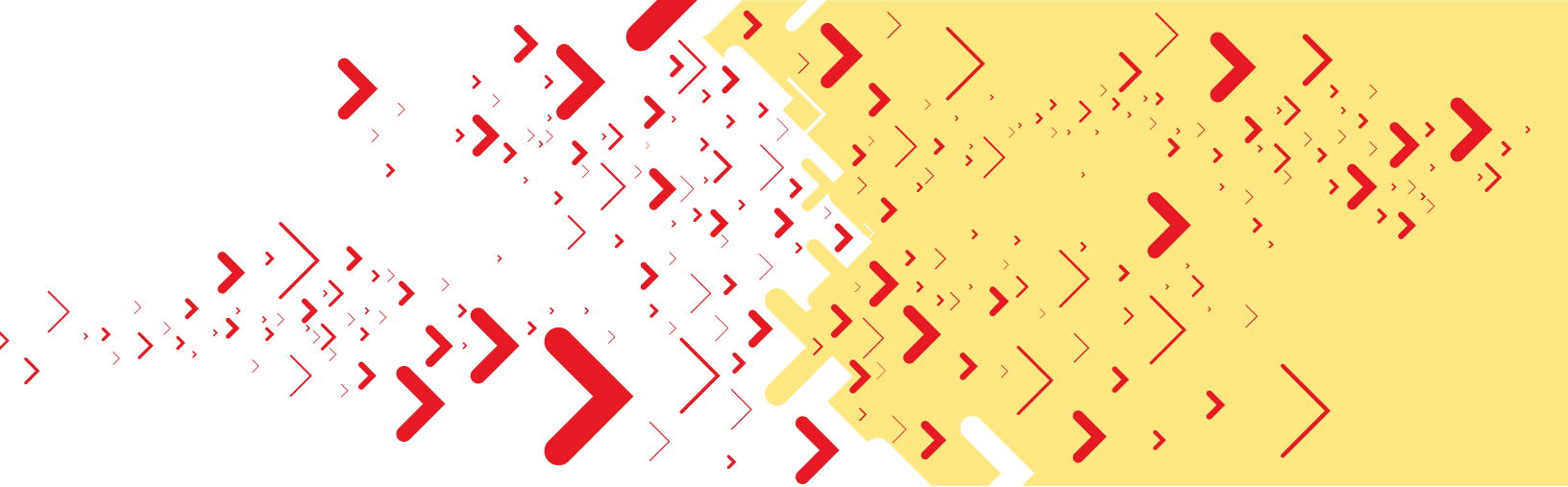
Reducing the Time and Cost of Set-Top Installation

With the OLL1000, cable operators and carriers can simplify downloads with fewer manual steps. The product includes enhanced tools that minimize manual steps and support flexible download configurations, allowing the warehouse to automatically stage content and distribute it offline.

Network operators can accelerate downloads, since the offline network delivers much higher bandwidth than available on the production network, and the OLL1000 supports simultaneous downloads to multiple set-tops—and to multiple models of set-tops. The OLL1000 allows personnel to detect the completion of the downloads across all set-tops, and offline loading reduces the occurrence of configuration failures, since the downloads are completed in a more controlled environment. Indication of a completed code download can be observed on the set-top front panel display (initiated by Warm Reset command) or on a set-top diagnostic screen shown on a connected monitor.

Carriers and cable operators can stage more set-tops with existing warehouse staff to support more installs, and offline loading with the OLL1000 provides independence and isolation from the live network. This improves bandwidth efficiency and ensuring greater security, control, and flexibility for code downloads to set-tops. It enables bulk pre-provisioning of set-tops in a warehouse, allowing service providers to load up to 20 code objects per package to typically between 10 to 100 set-tops at a time.

Motorola provides 24/7 support for the OLL1000 from the Motorola Technical Response Center, allowing service providers to safely deploy the OLL1000 to any number of warehouse applications to support the scalable bulk pre-provisioning of set-tops. Network operators can receive an accelerated return on investment (ROI) from the productivity advantages gained by deploying the OLL1000, in many cases recovering the cost of the equipment in as little as three months via streamlined operational efficiencies. They can also improve customer satisfaction by enabling faster service and more timely and swift set-top installations.



Conclusion

The OLL1000 streamlines the process of configuring new or redeployed set-tops, allowing cable operators and carriers to reduce set-top deployment cost and time. It supports fast code downloads to multiple set-top types, and frees up bandwidth on the production network. Service providers can avoid burdening the production network with code downloads, and they can efficiently load software onto set-tops offline—in a controlled environment. For more information about infrastructure solutions from Motorola, please visit www.motorola.com or contact your Motorola account representative.



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