DPI-1200

Digital Program Insertion Ad Server

USER GUIDE

v1.04.05 - 11.22.13

Contents

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Adtec Digital Support & Service

Technical Support and Customer Service includes troubleshooting product/system functional operations concerning Adtec equipment, embedded systems and single device issues; Service Order generation, processing and tracking; Warranty claim processing; and on-site system evaluation and maintenance. Technical Support plans do not include customer training programs. Programs incorporating customer training are defined in the Training Services Policy. Customer Services technicians provide limited instruction during a support call/email/fax in order to facilitate checking for proper equipment operation.

Telephone and Email Support

- **Telephone:** 615-256-6619 ext. 166
- **Email:** support@adtecinc.com
- **Internet:** http://adtecdigital.com/support/support-request

Adtec Digital offers telephone, email and fax support, warranty and service related inquiries during normal business hours: 9:00am to 5:00pm Central Standard Time (CST), Monday through Friday, holidays excepted. Support Requests can also be submitted on-line. All inquiries will be processed in the order in which they are received and by the criteria outlined in the Call Response Order. Inquiries and inquiry responses made after 5:00 PM (CST) weekdays, Saturday, Sunday or on an Adtec-recognized holiday will be processed the next business day in the order received.

Callers on hold and returned calls will be prioritized by the following criteria:

- Priority-24 Subscription Customers
- Standard-Priority Subscription Customers
- All customers that have purchased Installation & Training, within 90 days of the installation.
- Adtec Certified Operators (ACO)
- Limited Level Support, Warranty & Service Requests
- Multi-device system installations that have purchased Installation & Training from Adtec
- Distributors
- System Integrators
- Multi-device systems
- Single device users

Preparing for Support

To help expedite the troubleshooting process, please be prepared to provide the following information to the support representative:

- **Product(s) affected:** Please provide a list of the Adtec Products involved including the Revision Number for each affected product.
- **Description of the Problem:** Please include a detailed description of the problem. Include the approximate time and day the problem occurred, the spot ID of the material being inserted and what the operator reported about the incident. It is also helpful to note any recent changes to the system. More information is always better than too little information.
- **Your Contact Data:** Please include contact information so we can reach you to discuss how to fix the problem, additional troubleshooting steps that are required or to gather more complete information regarding the problem. Please include your facility name (or call letters), your name, title, email address, telephone number, hours of work, and other contact persons if you are not available.

Advanced Support Plans

In addition to our basic Inquiry Response Policy, Adtec offers two advanced levels of priority inquiry support: **Standard-Priority** and **Priority-24**. The Standard-Priority & Priority-24 plans provide guaranteed* response times with the Priority-24 plan offering after hours and holiday support. Standard-Priority support is included with the Adtec Certified Operator (ACO) training. Contact Adtec Sales to upgrade your current support plan.

Standard-Priority Support Plan

Customers can improve upon our normal call processing times and can expedite inquiry support responses through our subscription Standard-Priority service plan. Under this plan all telephone inquiries are guaranteed* a telephone response of no more than 4 hours after they are received (within the designated hours of operation). Telephone inquiries received by 4:00 PM (CST) on weekdays- excluding Adtec holidays- are guaranteed a same-day telephone response. However, inquiry responses may be made after hours until 8:00 PM (CST). Email and fax inquiries are limited in scope to normal business hours, excluding holidays. Standard-Priority customers are entitled to a 10% discount on site visit and training charges after the initial system/product installation and training. Standard-Priority customers also receive a 3-day turnaround time guarantee* on warranty and non-warranty repairs on Adtec manufactured equipment, excluding Studio Encoders.

Priority - 24 Support Plan (24 Hour)

In addition to our Standard-Support plan, after hours, weekend and holiday support is available with the **Priority-24** support plan. This plan is a subscription only service available for service inquiries 24 hours a day, 7 days a week. All telephone inquiries are

guaranteed* a telephone response time of no more than 2 hours. Email and fax inquiries are limited in scope to normal business hours, excluding holidays. Calls after 5:00 PM will be forwarded to a Customer Services representative on call. **Priority-24** customers are entitled to a 25% discount on site visit and training charges, after the initial system/product installation and training. **Priority-24** customers also receive a 1- day turnaround time guarantee* on warranty and non-warranty repairs on Adtec-manufactured equipment, **excluding** Studio Encoders.

Plan Comparisons

Feature/ Plan Name	**Priority-24**	**Standard Priority**	**Limited**
Hours	**24 Hours/Day; 7 Days/Week**	**9:00 AM – 5:00 PM, (U.S.Central Standard Time), Excludes Weekends & Holidays**	
Call Response Time	**Same day- 2 hours (1st in order of call list)**	**Same Day: 4 Hours (2nd in order of call list)**	**48 Hours**
Discounted Site Visits	**25%**	**10%**	**None**
Discounted Training	**25%**	**10%**	**None**
Repair Service	**Guaranteed* 1 Day Turnaround**	**3 Day Turnaround**	**None**

* A one-month free service extension will be awarded if Adtec fails to meet its service guarantee.

Electrical Device Compliance Notices

Safety Warnings and Cautions

For your safety and the proper operation of the device:

- This unit must be installed and serviced by suitably qualified personnel only.
- Do not break the warranty seals on the device or open the lid. Only approved service technicians are permitted to service this equipment.
- Disconnect all power before servicing the unit.
- Do not expose this device to rain or other moisture. Clean only with a dry cloth.
- If not installed in an equipment rack, install the product securely on a stable surface.
- Install the product in a protected location where no on can step or trip over the supply cord, and where the supply cord will not be damaged.
- If a system is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than the room ambient temperature.
- Consideration should be given to installing the unit in an environment compatible with the maximum recommended ambient temperature of 50 degrees Celcius (122 degrees Fahrenheit).
- Install the unit in a rack so that the amount of airflow required for safe operation is not compromised.
    - The recommended clearance on the top and sides of the unit is at least ½ " (one half inch/one centimeter).
- Mounting of the unit in a rack should be such that no hazardous condition is achieved due to uneven mechanical loading.
- Use only a grounded electrical outlet when connecting the unit to a power source.
- Reliable earth grounding of rack-mount equipment should be maintained.
    - Particular attention should be given to supply connection other than direct connections to the branch circuit (e.g., use of power strips).

Compliance Notices

FCC

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or

television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Warning: Changes or modifications to this device not expressly approved by Adtec Digital could void the user's authority to operate the equipment.

Industry Canada

This Class B digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations. Operation is subject to the following two conditions:(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Cet appareillage numérique de la classe B répond à toutes les exigences de l'interférence canadienne causant des règlements d'équipement. L'opération est sujette aux deux conditions suivantes: (1) ce dispositif peut ne pas causer l'interférence nocive, et (2) ce dispositif doit accepter n'importe quelle interférence reçue, y compris l'interférence qui peut causer l'opération peu désirée.

European Union EMC Directive Conformance Statement

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. Adtec Digital cannot accept responsibility for any failure to satisfy the protection requirements resulting from a user modification of the product. This product has been tested and found to comply with the limits for Class B Information Technology Equipment according to CISPR 22 / EN 55022.

Chapter 1 - Introduction

Product Overview

Designed to concurrently insert up to twelve MPEG2 or AVC programs into a digital cable or television service, the Adtec DPI- 1200 Ad Server offers the absolute highest transport standards required for broadcasting. From local storage or network attached storage, the DPI-1200 imports programs to its core, processes and multiplexes them in preparation for their delivery via ASI or IP to a single or multiple ad splicers.

The DPI-1200 seamlessly interfaces with Adtec's adVantage™ Enterprise Management Solution allowing it to operate with the industry-leading Adtec Duet™ Ad Inserter. The DPI-1200 and Duet work together to provide analog and digital tier ad insertion and interoperate with ad insertion systems from C-COR and SeaChange.

Availability

DPI-1200-DTMF: HD & SD - MPEG2 and MPEG4 capable. Standard unit comes with 2 channels Ad Streaming Transport via 3x Mirrored ASI and / or GigE. MPEG2 Layer 1, MPEG2 Layer 2 and AAC Audio compliant. Hardware RAID 1 Mirrored 750 GB SATA internal storage. 12 port DTMF / GPIO decoder (one I/O port for each channel). ANSI/SCTE 30 & 35 compatible. Optional ASI Redundancy Module.

DPI-1200 Stream: Additional Program Insertion License for one stream on the DPI. Each unit will support up-to 10 additional SD or 2 HD Insertion Channels (consult sales rep. for system bandwidth needs).

Benefits

Twelve Concurrent Inserts: The DPI-1200 delivers ads to seamless back-to-back splicing on twelve unique programs. Its ability to stitch together the media and maintain broadcast transport standards is unmatched by the competition.

Gigabit Ethernet Input: The DPI-1200 has been designed to incorporate a GIGE Ethernet interface to provide rapid media loading or connection to an industry standard Network Attached Storage (NAS) array. This flexible standards-based interface affords rapid and economical storage capacity growth and will be a future feature of this device.

RAID storage: The DPI-1200 includes 750 GB of RAID storage. Add extra storage or share storage between multiple DPI’s using industry standard Network Attached Storage (NAS)

High Availability Output: The DPI-1200 provides Gigabit and three mirrored DVB-ASI Outputs. This is ideal for interfacing with multiple Ad Splicers concurrently without external distribution hardware.

Absolute Control: Controlling and configuring the DPI-1200 is user-friendly. Whether using the integrated front panel keypad and LCD, on-board web-based application, SNMP or Serial Terminal, the DPI-1200 responds rapidly and reliably to the desires of the operator.

Traffic and Billing Interface: The DPI-1200 provides a native Traffic and Billing interface. When combined with the Adtec Traffic and Billing Gateway Server, the DPI-1200 will automatically retrieve media and schedules and return logs to their appropriate folders on the LAN/WAN.

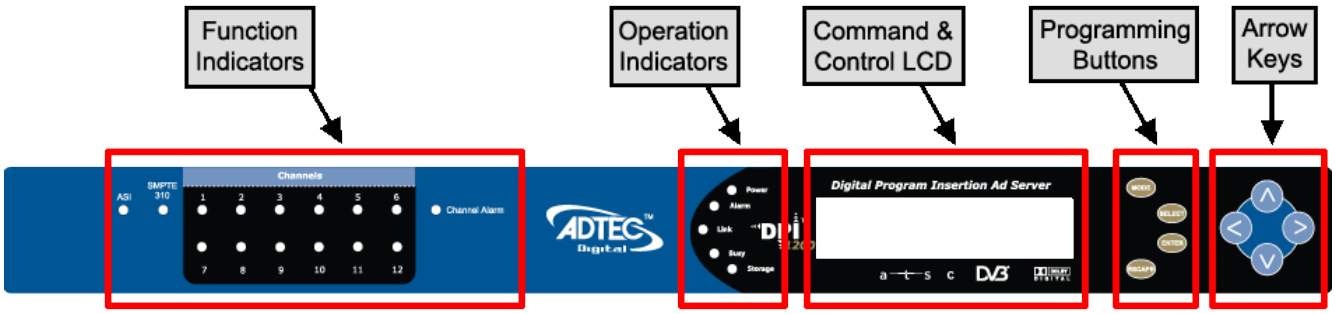
Chapter 2 - Getting Started

Front Panel

The Function Buttons and Directional Keypad of the DPI-1200 are used to configure and monitor the channel configurations and output of the device.

Panel Diagram

Front Panel LEDs



As illustrated in the diagram above, LED indicators are grouped on the DPI1200 front panel in two sections. The Function indicators describe the media insertion actions being performed on the unit's outputs. The Operation indicators describe the physical operations of the DPI1200 unit.

Channel Function Indicator LEDs (Channels 1-12)

- **Green**
  - Solid: connected and ready to insert
  - Flashing: inserting/commercial playout
- **Yellow**
  - Solid: connecting/trying to connect
  - Flashing: trigger received, at pre-roll mode
- **Red**
  - Solid: disconnected

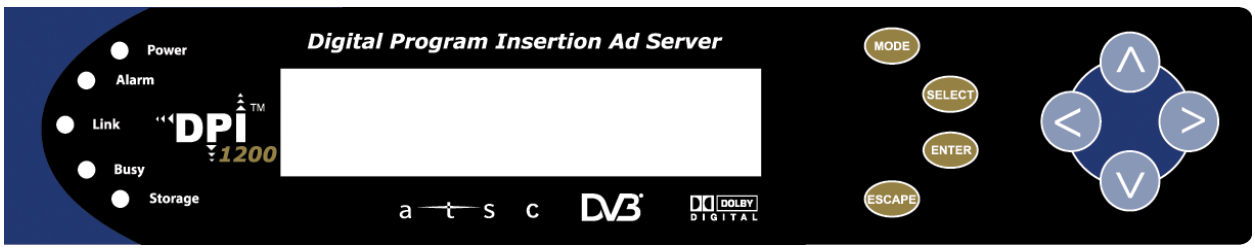
    - Flashing: attempting to connect / Insertion Failing
- **Off**: (not lit)
    - Channel is Disabled or turned off

System / Operation Status Indicator LEDs

- **Power**
    - **Green**: Power is on
    - Off (not lit): Power is off
- **Alarm**
    - Off (not lit): no alarm
    - **Yellow**: minor alarm
    - **Red**: major alarm
- **Link**
    - **Green**: link detected
    - Off (not lit): no link detected
- **Busy**
    - **Green**: system / traffic activity
    - Off (not lit): no activity from unit
- **Storage**
    - **Green**: media in storage
    - Off (not lit): no media in storage

Disabled Product State: When the product is in a disabled state, the LCD will relay the following information; "Product Error." This state is generally only used when a factory restore is performed. If that is the case, note that all of the configurations have been returned to factory defaults including Network configurations. To reapply network configurations simply press the Down arrow when in this state to navigate through the network menu. In the event that you see a similar message followed by a phone number, this indicates that the Temporary keys on the device have expired and you should contact your sales representative.

Programming Function Buttons and Arrow Keys

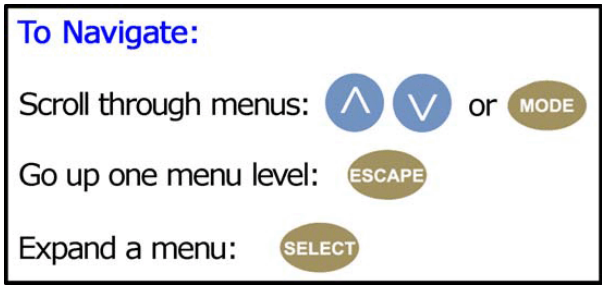


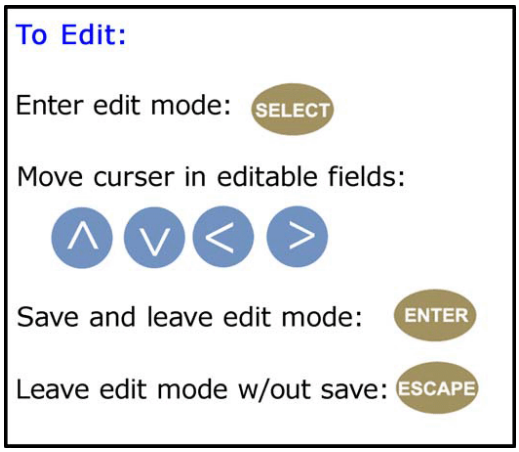
The DPI-1200 Ad Server has an LCD display on the front panel. Using the **Mode**, **Select**, **Enter**, **Escape** buttons and directional buttons, you can navigate the front panel menu and control the unit

Control	Function
Mode	Cycles through the available menus
Select	selects a menu or sub-menu
Enter	enter a value placed into a menu field
Escape	return one level within a menu or to the main menu

Directional Keypad

- Arrow keys control the cursor on the LCD display and are used to page through the options in a menu/sub-menu and to place entries in fields.





Unit Security
Rules:

- The DPI-1200 is always logged in on startup.
- If the device has logged out due to accident, or a login duration timer being set (see below), you will need to log back in. To log in from a logged-out status follow the key sequence below. Note that the key sequence spells the word U-S-E-R.

Step	Action
1	Press **<Select>**
2	Press **<Up>** arrow
3	Press **<Select>**
4	Press **<Enter>**
5	Press **<Right>** arrow
6	Press **<Enter>**

The front panel also has a login duration capability. This setting allows you to specify a time frame in which the unit will automatically log itself out if it receives no control inputs via the front panel or API session.

Possible Values:
0 (Zero): The unit will not auto-log-out
1-9: The number of minutes until log out if no input is received.

Main System Banner Menu

The main banner menu is a non-editable display. It displays the current installed and applied firmware version the unit is running as well as the product name.

Key Functions

While in the main menu, the following navigation keys have special meaning in the operation of the DPI-1200.

Increase LCD Contrast / Brightness

1. Press and hold <Mode> and <Escape> buttons
2. Press <Up> arrow to desired level

Decrease LCD Contrast / Brightness

1. Press and hold <Mode> and <Escape> buttons
2. Press <Down> arrow desired level

Reset the unit

1. Press and hold <Mode> and <Escape> buttons
2. Press the <Right> arrow
3. Release all three buttons at the same time

System Menu

The following diagram illustrates the structure and flow of the **System Menu** on the Adtec DPI-1200 device:

Login

Item	Function	Options	API Command
Login	If the front panel is in a 'logged out' state, all configurations are read only. User must login to change values.	N/A	N/A
Login Duration	Specifies the time-out value for automatically logging out of the front panel once a user logs in for security purposes. Setting a time of 0 disables automatic logout capabilities	0 - 9 (minutes)	*.SYSD LDR

Network Sub-menu

Item	Function	Options	API Command
Ethernet IP Address	IP address of unit on your network	user-defined using **<left/right arrow>** and **<select>** buttons default is 192.168.10.48	*.SYSD IPA
Ethernet Mask	Defines the unit relative to the rest of your network	user-defined using **<left/right arrow>** and **<select>** buttons default is 255.255.255.0	*.SYSD IPM
Ethernet DHCP	Dynamic Host Configuration Protocol; allows the device to self-locate network Ethernet parameters	**On** (finds own DHCP Address) **Off** (defaults to last entered IP Address) default is OFF	*.SYSD DHCP
GigE IP Address	route of traffic in/out on IPTV	user-defined using **<left/right arrow>** and **<select>** buttons default is 192.168.20.48	*.SYSD IPA eth1
GigE Mask	defines unit relative to the rest of an	user-defined using	*.SYSD IPM

	IPTV network	**<left/right arrow>** and **<select>** buttons default is 255.255.255.0	eth1
Gateway IP Address	traffic director for off-LAN resources	user-defined using <**left/right arrow**> and <**select**> buttons default is 192.168.10.1	*.SYSD GIP

Time Sub-menu

Item	**Function**	**Options**	**Adtec API Command**
Time	specifies system time 24 Hour Clock Format	user-defined using <**left/right arrow**> and <**select**> buttons	*.SYSD TIM
Timezone	specifies time zone unit operates in	user-defined using <**left/right arrow**> and <**select**> buttons	*.SYSD TIZ

NTP Sub-menu

Item	**Function**	**Options**	**Adtec API Commands**
NTP Status	Network Transfer Protocol	Displays whether or not your unit is in sync with the designated NTP server	*.SYSD NIP STATUS
NTP IP Address	IP address for Network Transfer Protocol server	user-defined using **<left/right arrow>** and **<select>** buttons; default = 0.0.0.0	*.SYSD NIP

Alarm Sub-menu

Item	**Function**	**Options**
Event Record	Log of events outside of operating parameters	scroll up and down to view log items

Mirror Sub-menu

Item	Function	Options	Commands
Host Mode	Set the automated ftp mirroring mode.	**Client** (Turns Mirroring Off) **Mirror List** (Use a MIRRORLISTFILE to add/delete local files) **Mirror Client** (Mirrors all files found on Server) **CCMS** (Used with TBGS and other enterprise systems)	*.SYSD HOM
Host IP Address	IP address for Mirroring Server	user-defined using **<left/right arrow>** and **<select>** buttons; default = 0.0.0.0	*.SYSD HIP
Client Name & Password	Sets the Username and Password to access Mirroring Server	user-defined using <**left/right arrow**> and <**select**> buttons Username and password are separated by a comma	*.SYSD CPW

Raid Status

Item	Function	Options
Raid Status	Provides status of the internal 750 GB mirrored RAID 1 Array (read only)	**Array OK:** RAID 1 and Drives are functioning well **Degraded:** Loss of 1 of the mirrored RAID drives

Host Name

Item	Function	Options	Adtec API Commands
Name	DIsplays and allows editing of the host name	user-defined using <**left/right arrow**> and <**select**> buttons	*.SYSD name

Firmware Version

Item	Function	Options	Adtec API Commands
Firmware	Displays current version of firmware (read	N/A	*.DPID VRN

	only)		

NetSet Menu

The following diagram illustrates the structure and flow of the **NetSet Menu** on the Adtec DPI-1200 device.

Control	Function	Options	API Command
Mode	Defines whether a current net set is active and able to be used or inactive	**InsertNet** (Typical Setting) Activates NetSet for use **Inactive** Setting is to to be used for trigger	*.DPID NST # x MODE
Days On	Specifies the specific days of the week to use the configured NetSet	**ALL** (Typical Argument) NetSet is used for all day of the week	*.DPID NST # x DAYSON
Type	Defines the type of cue to trigger insertion for that channel	**DTMF_TONE** Audible tone generated by receiver **GPI** Momentary Contact Closure **SCHED_TIME** Scheduled timed insertion based on schedule and clock **SCTE35** Network Embedded Cue passed from splicer to the DPI	*.DPID NST # x TYPE
Start Condition	Defines the event sequence to start the insertion process (DTMF or GPI Only)	**DTMF Cue**: 123* **GPI**: Closed or Open If using SCTE35, leave blank	*.DPID NST # x STARTCOND
Stop Condition	Defines the event sequence to stop the insertion process (DTMF or GPI Only)	**DTMF Cue**: 123# **GPI**: Closed or Open If using SCTE35, leave blank	*.DPID NST # x STOPCOND
Pre-Roll	Defines the time, in milliseconds, to delay the start of an ad insertion once a valid cue trigger is received (DTMF or GPI Only)	0 - 9000	*.DPID NST # x PREROLL
Post-Roll	Defines the time, in milliseconds, to delay the end of an ad insertion back to network	0 - 7000	*.DPID NST # x PSTROLL

	programming once a valid Stop Condition is received. (DTMF or GPI only)		
Avial Time	The total maximum time available for a series of spots played during a commercial insertion	Hours:Minutes:Seconds CCMS Mode 00:00:00	*.DPID NST # x AVAIL
End By	Condition which must be met before the Splicer will switch back to the network feed	**Spot:**(typical setting) Switch back when the spots have finished running and a scheduled break is completed **SpotAvail:** Switch back when the spot is finished and the configured Avail time is met	*.DPID NST # x ENDBY

Note: Up to twelve Insertion Channels are available on the product. If using API Commands, the '#' denoted in the NST Commands above are relevant to the twelve channel destinations indexed 0 - 11. The 'x' denoted in the Commands above represents the NetSet Index value indexed 0 - 9. (Each channel has 10 possible netset configurations.)

Splicer Menu

The following diagram illustrates the structure and flow of the **Splicer Menu** on the Adtec DPI-1200 device.

Item	Function	Options	Adtec API Command
Channel Mode	Enable or disable Splicer communication	**OFF:** Turned off / disabled **ASI:** ASI Streaming Channel **IP:** IP Streaming Channel	*.DPID CHM #
Channel Name	Output channel name on the Splicer for channel	text field; **Note:** Must match the name of channel on Splicer	*.DPID CLN #
Splicer IP Address	Management IP Address of the Splicer used for channel	user-defined; numeric field in format: xxx.xxx.xxx.xxx	*.DPID SIA #
Splicer Name	Name of the Splicer Interface used for	text field; **Note:** Match the name of the	*.DPID SPN #

	channel	Splicer Interface / Site	
Splicer Chassis #	Number distinction of the Splicer Chassis for channel	text field; 1-999 available Consult Splicer documentation **Note:** Can usually be left at 1	*.DPID SCS #
Splicer Card #	The numeric representation of the physical card, on the connected Splicer, where the Splicer Port connection is made	text field; 1-10 available (Consult Splicer documentation) Some splicer cards may be labled A, B, C, D or E. So, A = 1, B = 2, etc...	*.DPID SCA #
Splicer Port #	Physical connection, on the configured Splicer Card, for the insertion stream	text field; 1-20 available (Consult Splicer documentation)	*.DPID SPO #
Splice Lead In	Number of milliseconds before each splice point to start the insert	text field; Valid Range is 300 - 1500 ms.	*.DPID SLI #
CCMS ID #	The Unique numeric Traffic and Billing Native Mode Identifier for scheduling and verification	user-defined; numeric field in format: xxxxx Referred to as the CCHHH Number	*.DPID CNV C #
CCMS Format	Traffic and Billing media/Spot ID Format in schedule, also referred to as parsing format	**20/20** uses 6 right-justified characters **NOVAR** uses 8 right-justified characters **RAW** uses all 11 characters **LEFT** uses left-justified characters **NONZERO** Omits any leading zeros	*.DPID CNV P #
Break Repeat	Configures the behavior for dealing with incomplete breaks	**ON** partially played break can be triggered again, resuming with the previously aborted spot **OFF** (Typical Setting)	*.DPID BRP #
Splice Multicast Address	The IP Address of which the insertion stream is served to the splicer via the GigE Port. Valid Multicast addressing range is 224.10.XXX.XXX to 239.XXX.XXX.XXX. A Unicast address will be the unique IP of	user-defined; numeric field in format: xxx.xxx.xxx.xxx	*.DPID MSI #

	the Ad insertion receiving interface on the Splicer		
Splice Multicast Port	Port number used for IP Streaming in conjunction with Multicast Address.	user-defined; numeric field **Note:** If you are using the same Multicast or Unicast address for multiple channels, the Multicast Port will need to be incremented by 2 for each channel (The valid range is 1-65535)	*.DPID MSP #

Note: Up to twelve Insertion Channels are available on the product. If using API Commands, the '#' denoted in the Commands above are relevant to the twelve channel destinations indexed 0 - 11.

Cue Menu

The following diagram illustrates the structure and flow of the **Cue Menu** on the Adtec DPI-1200 device.

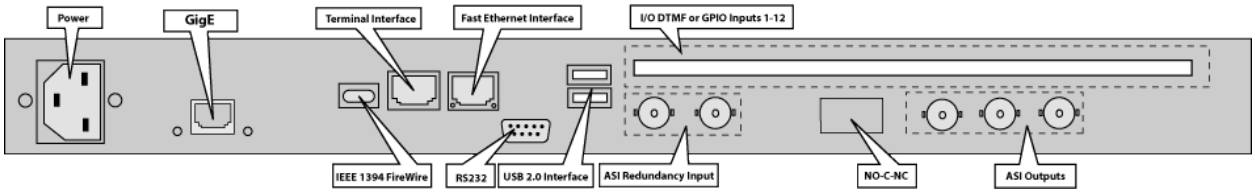
Item	Function	Options	Adtec API Commands
DTMF History	Displays the recent history of tones for each channel being cued with DTMF cues	Non-editable display, status only.	*.DPID THS #
DTMF Time Newest	Displays the time the most recent DTMF tone sequence was heard for a channel	Non-editable display, status only. Displayed in the format: Weekday Hour:Minutes:Seconds:Milliseconds (Day HH:MM:SS.mmm)	*.DPID THS # TIMENEW
DTMF Time Oldest	Displays the time the oldest DTMF tone sequence was heard for a channel	Non-editable display, status only. Displayed in the format: Weekday Hour:Minutes:Seconds:Milliseconds (Day HH:MM:SS.mmm)	*.DPID THS # TIMEOLD
GPI State	Displays the current state of the GPI Trigger port for a	Non-editable display, status only	*.DPID GHS #

	channel		
GPI Time Changed	Displays the time the most recent GPI trigger received for a channel	Non-editable display, status only. Displayed in the format: Weekday Hour:Minutes:Seconds:Milliseconds (Day HH:MM:SS.mmm)	*.DPID GHS # TIMENEW
GPO State	Sets condition of port state for trigger reception	**OPEN** Port is normally open **CLOSED** Port is normally closed (Front Panel Only Configuration)	*.DPID GPO #
DTMF Speaker	Routes a given input tone source to the speaker on the DTMF board	**ON** Turns on speaker for DTMF Tone for channel **OFF** Turns off the speaker for the channel	*.DPID SRP #

Note: Up to twelve Insertion Channels are available on the product. If using API Commands, the '#' denoted in the commands above are relevant to the twelve channel destinations indexed 0 - 11.

Back Panel Diagram

The back panel contains the ports and connection points for the device.



Connections

Connection	Function
AC Power	AC Power- standard 3-pin plug (70-240 VAC 50-60 Hz), 5Vdc Power (x2) - External Power Only
GigE	GigeE Interface - MPTS Output over UDP / Management
Firewire	FireWire Reserved for future use
Terminal Monitor	API Serial Communication Interface / Serial Port used for Troubleshooting
Fast Ethernet	10/100 base T-Ethernet interface
RS232	DB9; Used to communicate with redundancy switch (ASI Model Only)

USB 2.0	(hardware present, but not currently supported by firmware)
I/O DTMF or GPIO Inputs 1-12	DTMF tone / GPIO board option for DPI-1200
ASI Redundancy Input (Optional)	Used to link 2 DPI-1200's in tandem; one as primary, one as backup
No-C-NC	Redundancy Tally, used to hook up to an external alarm device
ASI Outputs (3)	BNC 75 ohm, Triple Mirrored ASI Outputs

Chapter 3 - Using the Web Application

Introduction

Adtec Digital has deployed a web-based configuration and control software application for our products. The program is optimized to work with the following browser versions:

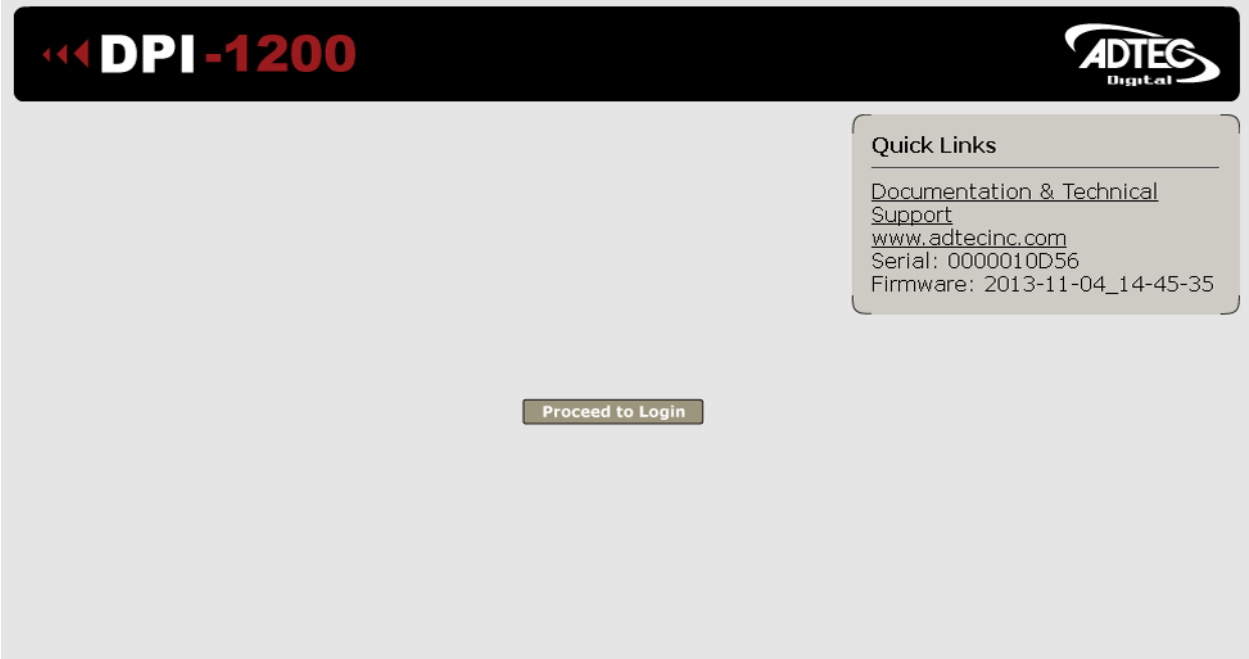
- Firefox: 3.5 (recommended) and higher
- MS Internet Explorer: 8.0 and higher
- Safari: 3.0 and higher
- Google Chrome: 5.0 and higher

Note for Safari users:

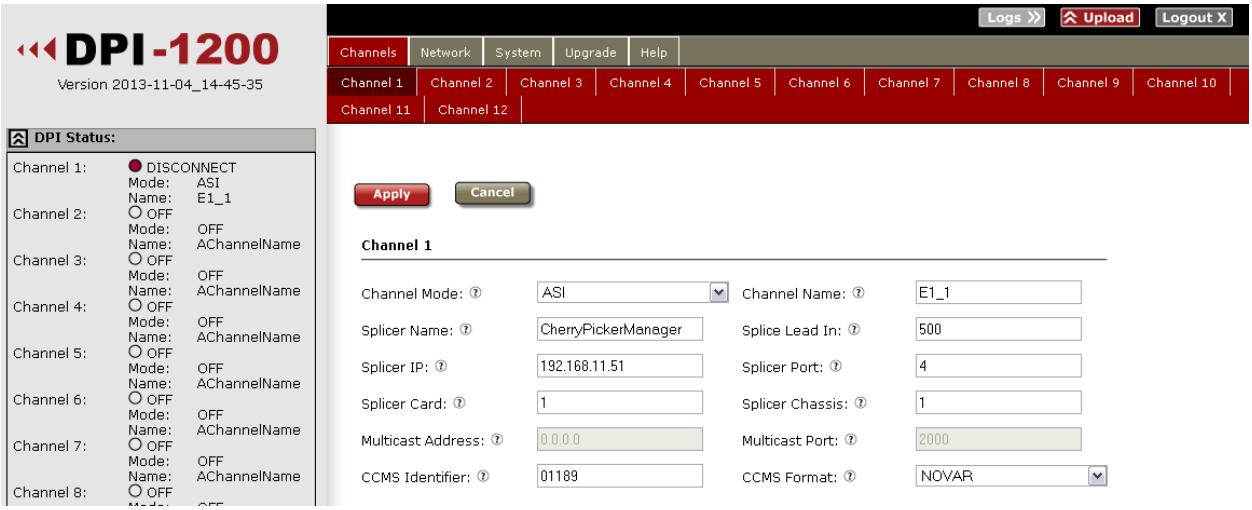
- The program is designed to use the Bonjour Zero Configuration Protocol.
    - When using Safari, click on the " **^^** " symbol to open a networked devices list.
    - Select the device to point the browser to that device's IPA.

Logging In

Access the application by pointing your web browser to the unit's IP address. The following screen (image reduced for clarity) will appear:



Log in to the application by clicking the **"Proceed to Login"** button and typing in the user name **'adtec'** and the password **'none'** in the pop-up box that appears.



The application has two operating windows, the **Status Window** and the **Main Window**:

Status Window: The Status Window is fixed on the left-hand side of the screen- it will display regardless of what function is being displayed in the Main Window. The current status parameters of the unit's are always in view and are updated in real time.

Main Window: The Main Window is used to access the device's configurations and operating settings.

Help Notes: Help blurbs are available for the configurations on each tab; click on the "Question Mark" symbol next to the configuration name for a pop-up screen explaining the control.

Upgrading your device

To upload new firmware versions, click on the **<Upload>** button in the top navigation bar next to Log Out. A pop-up screen will allow you to browse for the firmware file by clicking Upload within the pop-up screen. After the new version is uploaded, its availability on the device will display under "available versions".

After the new version is uploaded, Click **<Install>** to extract the firmware. It will then be available under **Installed Versions**.

Once you have the version you wish to use in the Installed Versions list, you can select into it by clicking the select button. The unit will reboot and come up running in the new version.

Chapter 4 - How-To Guides

How to Complete a Manual Upgrade

You can upgrade your Adtec device's firmware via built-in web-based application, described in the Upgrade Tab section, or via a Telnet/FTP session, described in this article.
To update your Adtec device 's firmware via a Telnet session, perform the following:

Manual Upgrade Process

Step	Action
1	Obtain the desired firmware version file from Adtec Support website via www.adtecdigital.com note*: Firmware releases are found in the Support -> Documentation & Downloads -> DPI 1200 Ad Server -> section of the website, there will be a link to the released firmware version for download. note**: Windows Internet Explorer renames adtec firmware file extensions to .gz . When saving please add a t within the extension to read .tgz if IE has renamed your file.
2	Using your favorite FTP client to upload the firmware file to the device. If you are unfamiliar with FTP you may use a 'My Computer' window and type in the address bar, ftp://adtec:none@192.168.10.48 where 192.168.10.48 should be replaced with the IP Address of YOUR device. You may then drag and drop the

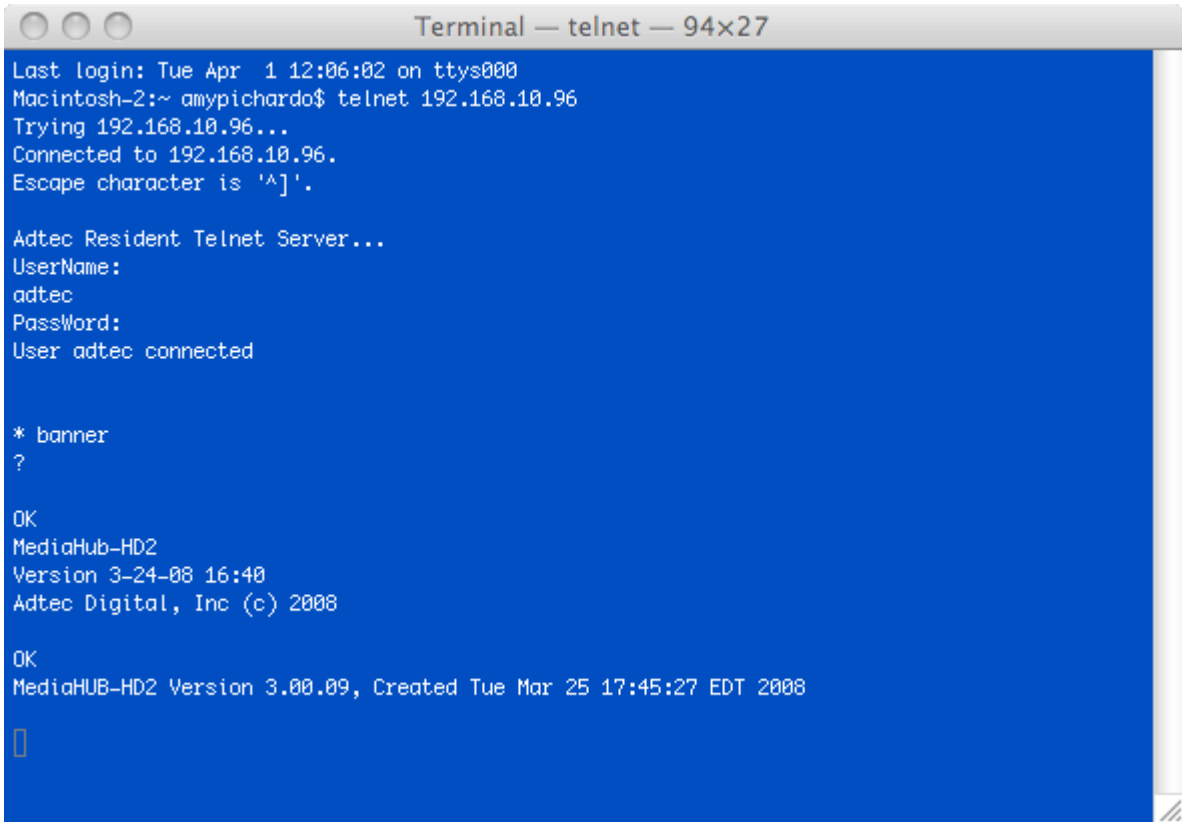
	firmware file into the hd0 folder.
3	Open a Telnet session and enter the IP address of the unit you are going to update. note*: If you are unfamiliar with telnet, open a command prompt window (windows: start -> run.., mac: macintosh hd -> applications -> utilities -> terminal) and type: telnet 192.168.10.48
4	Enter the username as ' **adtec** ' and the password as ' **none** '.
5	*.sysd vrn search - from the results, look for the pathname of recently uploaded firmware file
6	*.sysd vrn install [pathname of the .tgz file] ex: *.sysd version install /media/hd0/DPI-v1.04.05.nfcms.tgz

How to Connect via Telnet

* Using Telnet (standard 23 port)* To connect to your device using a terminal session, you will need to set the IP address of the unit. See earlier instructions on setting the IP via the front panel.
Using a terminal window, complete the following:

Step	Action
1	Type 'telnet x.x.x.x' in a terminal window, without quotes, where x.x.x.x is the IP address of the unit.
2	Press <Enter>.
3	When prompted for a username, enter adtec.
4	When prompted for a password, enter none.

Once you see "User 'adtec' connected", the session is open and you may issue API commands to the unit.



For the DPI-1200 device, there are specific commands for the DPI Channels and the unit's operating system. Each has a unique way of accepting commands. If using telnet is your preferred method of communication to your device, familiarize yourself with the API commands and their respective command handlers. For more information on this, point your browser to the IPA of your unit and look through the API notes that are described for the device.

How to Connect via FTP

FTP connections can be made to the adtec device using any ftp client.
Host: <ipa of the unit>
Default Username: adtec
Default Password: none
Port: 21
FTP is only useful for collecting logs from the device.

Media Encoding Guidelines

All media used for insertion should conform to SCTE guidelines for DPI insertion. The encoded material should be in a transport stream format at a constant bit rate. All audio should be encoded to match that of the insert stream.

How to Use API Commands

The Adtec DPI-1200 device is unique in that it handles up-to twelve different streaming channels for Ad Splicing. To accommodate commands for controlling each channel, you will need to specify which channel you are working with for each command you issue.
Please make the following adjustments:

- Instead of using *.dpid as noted the API descriptions, you will need to use.
    - *.dpid CLN 0 to specify the first channel.
    - *.dpid CLN 1 to specify the second channel.
    - *.dpid CLN 2 to specify the third channel.

Example: (*.dpid CLN 3) will give you the channel name of the third channel.

Most of the operational features of the Adtec DPI-1200 Ad Server can be controlled via telnet using Adtec's API commands. A reference of the API commands applicable to the DPI-1200 can be found on our website or on the Help Tab of the Web UI and select the API Notes Link.

Setting Time Zone and Daylight Savings

This allows the user to properly configure or view the Timezone offset and Daylight Savings time changes for the DPI-1200 Ad Server in an API telnet command window. Instructions on connecting to the DPI with telnet can be found in the How-To Guides. The API Command TIMEZONE has three different argument options [std] offset [daylight savings rule] where the std and
Daylight savings rule are optional. The form of the command TIMEZONE and argument explanation is as follows:

Command Handler: **SYSD**
Command: **TIMEZONE** | **TIZ** | **TZ**
Arguments:

std Name of the Time Zone
offset Hours offset from UTC (coordinated universal time)
dst Daylight Savings Setting

To configure only the time zone offset, you will use the following example:

*.SYSD TIZ -5 This sets the units' offset to -5 from UTC

To configure the units' time zone offset with a label for the offset, you will use the following example:

*.SYSD TIZ EST-5 This sets the units' offset to -5 from UTC and labels the setting as Eastern Standard Time

Format to add Daylight Savings Time:

Std offset dst [offset],start[/time],end[time]

The initial std and offset specify the standard time zone, as described above, the remainder of the specification describes when Daylight Saving Time is in effect. The start field is when Daylight Saving Time goes into effect and the end field is when the change is made back to standard time. The format of the start / end fields are formatted as: Mm.w.d. This specifies day (d) of week (w) of month (m). The day d must be between 0 (Sunday) and 6. The week w must be between 1 and 5; week 1 is the first week in which day d occurs, and week 5 specifies the last d day in the month. The month m should be between 1 and 12.

The time fields specify when, in the local time currently in effect, the change to the other time occurs.

An example, here is how you would specify the Eastern time zone in the United States, including the appropriate Daylight Saving Time and its dates of applicability. The normal offset from UTC is -5 hours; since this is west of the prime meridian, the sign is negative. Summer time begins on the first Sunday in April at 2:00am, and ends on the last Sunday in October at 2:00am:

***.SYSD EST-5EDT,M4.1.0/2,M10.5.0/2**

In 2007, the times for changing Daylight savings time in the US changed to:

EST-5EDT,M3.2.0/2,M11.1.0/2

Chapter 5 - System Integration Application Notes

This section contains various how to guides that will assist you in the configuration and integration of your unit to operate as part of your over all distribution system. These procedures are based on firmware version 1.04.03. When the DPI-1200 is powered up, the front panel will display "System Banner – DPI 1200 V1.04.03".

There has been every effort to ensure the accuracy of the information provided in these guides. However, due to software, firmware and hardware changes, there may be some degree of difference between what is represented here and what is displayed on your equipment.

Splicer Setup and Configuration

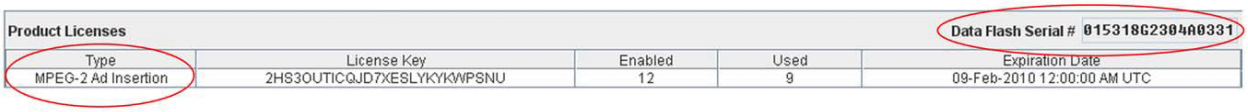
The DPI-1200 Ad Server works in conjunction with a various network splicers for seamless commercial insertion. Those include, but are not limited to: Motorola CherryPicker (DM3200 or DM6400), RGB's BNPxr, BNP2xr, BNP3xr, Cisco DCM and Scopus IVG 7500. (Adtec Digital does not endorse particular product) This section provides a guide on the general setup and configuration of some of these splicers

Motorola DM6400 Network CherryPicker™

Screen and guide samples are taken from DM 6400 Version: netcp5.0.1 (Build 18)

Licensing
When using the DPI-1200 in conjunction with a Motorola CherryPicker, you will need a license for each channel desired for insertion. Appropriate licenses will need to be purchased from your Terayon sales representative or reseller.
To check the DM to make sure it has the needed ad insertion license keys, you will need to log into the web interface and select **Accounts** from the top menu bar.

This page will have a section with the heading **Product Licenses**. If you do not see a line item called **Ad Insertion, MPEG-2 Ad Insertion or MPEG-4 AVC Ad Insertion** or the existing license has already expired, you will need to contact Motorola or your distributor for licensing service. Because each license key is linked to a specific Data Flash, you will need to look up the serial number for the Data Flash in your DM CherryPicker. (Illustration below)



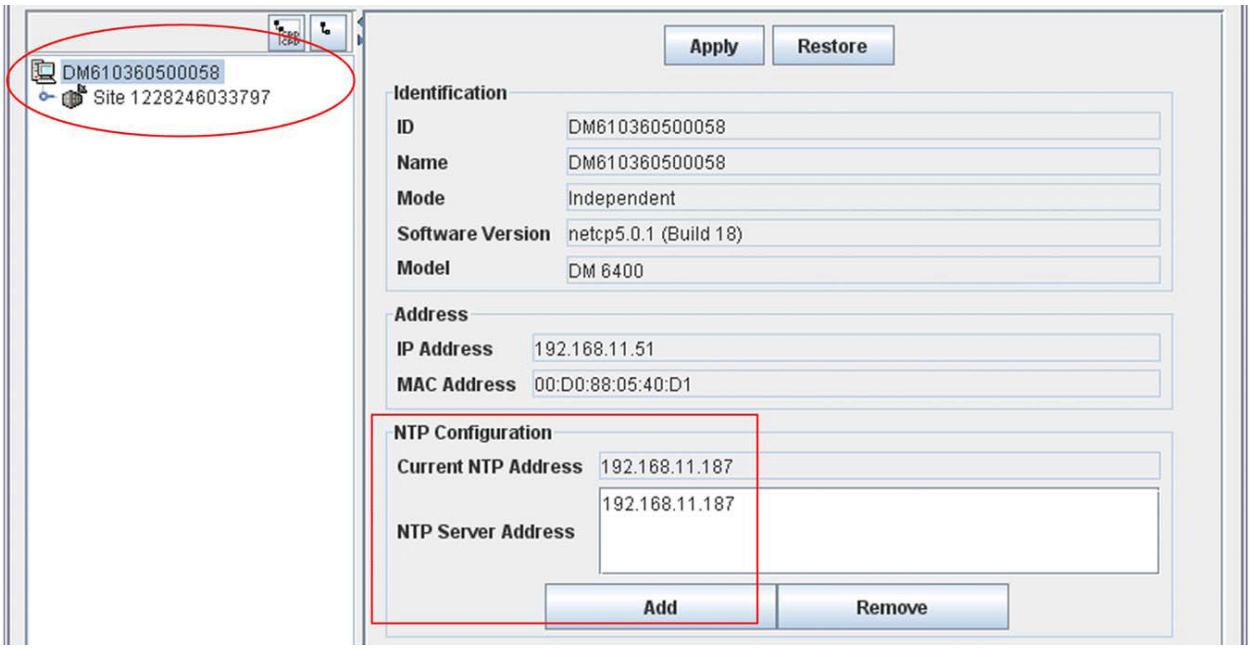
Time Sync
Per SCTE30 protocol, Time synchronization is required due to the passing of time between the Server and the Splicer. The delay on a TCP/IP message is somewhat unpredictable and is affected by other machines on the network. By having the machines synchronized, time can be passed between the two machines without concern for normal network delays keeping the splicing very accurate. The time synchronization system must be able to keep the Splicer and Server within +/- 15 ms of each other.

One possible method is to use Network Time Protocol (NTP) to keep the Server and the Splicer in synchronization. A network common host system NTP server could be used since this will also typically exist in a cable headend that has a network infrastructure. The DPI-

1200 can be used as an NTP server if an NTP network is not available. Please refer to the NTP Menu options under the System Menu description in Chapter 3 and additional time configurations later in this chapter.

To configure the DM CherryPicker to time sync from the DPI-1200, select **Configure** from the **DM Network CherryPicker Desktop menu bar**.

Select the **Controller** from the configuration tree. The controller information displays on the right side of the screen along with the **NTP Configuration** options. (illustrated figure below)

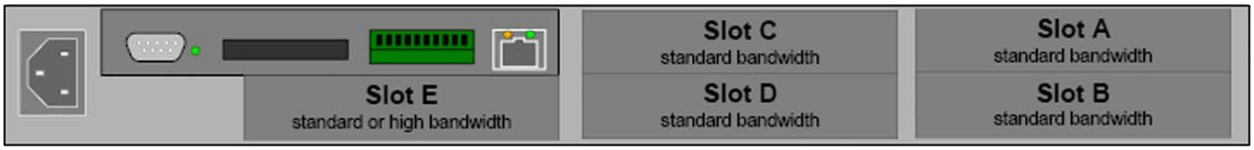


Note: NTP sync may take up to 30 minutes to be effective

Configuring the splicer for ad grooming
Note: Terayon does not support ad insertion on loopback input modules. (source DM Network CherryPicker 4.0 User Guide 2004)

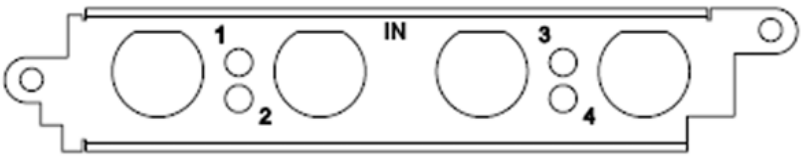
Physical Connections
ASI - Connection of the DPI-1200 Ad Server will need to occur on one of the four inputs of a DVB-ASI Input Module on the back of the CherryPicker using a coaxial cable with BNC connectors. See illustration below:

Back Labeling diagram of port / slot configuration:



The coax cable, from the DPI, will connect to a port (1-4 illustrated below). If the connection is recognized, the corresponding LED with the same number will light up Green.

4 port DVB-ASI Input Module



IP - Connection of the DPI-1200 will need to be on the same IP Ingest Network as any other IP Input Stream going to the DM6400. A standard GigE Ethernet Cable will be used.

Note: Please note all physical connections and their labels. This information is needed to configure the DPI properly to work with the attached splicer.

Grooming your ads into the channel
Once you have properly configured your splicer with all of the channels you are wanting to output and the DPI has been configured with the proper IP and channel information matching that of the splicer, the corresponding output program will have [Ad Server Connected] attached to the output name. (illustration below)

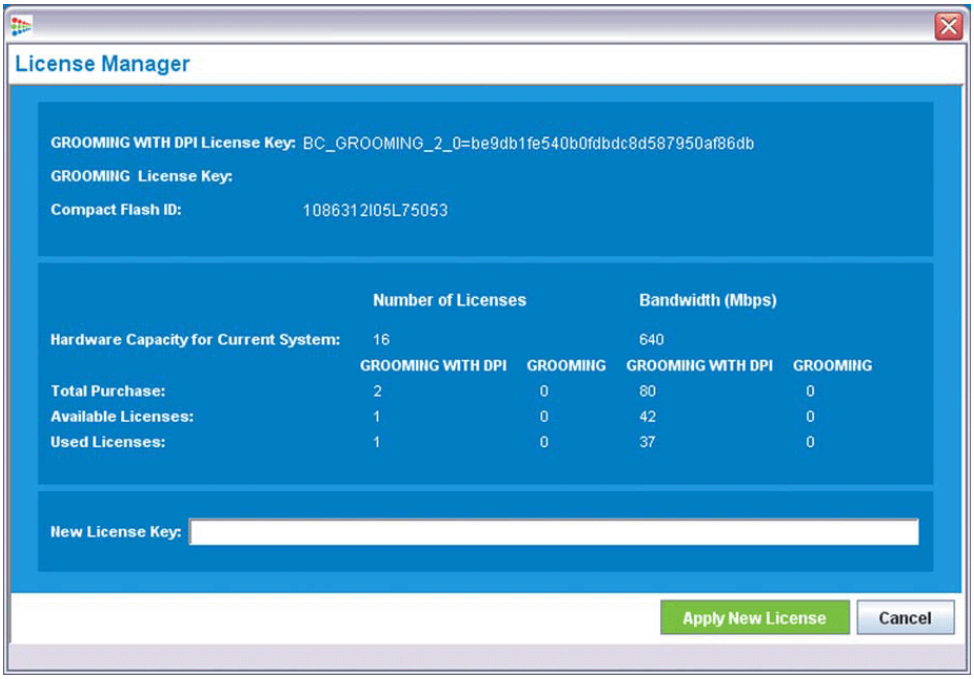
CherryPicker and Motorola are registered trademarks of their respective companies

RGB Broadcast Network Processor (BNP)™

Screen and guide samples are taken from RGB BNPxr Version: 1.2.5 Build# 18453

Licensing

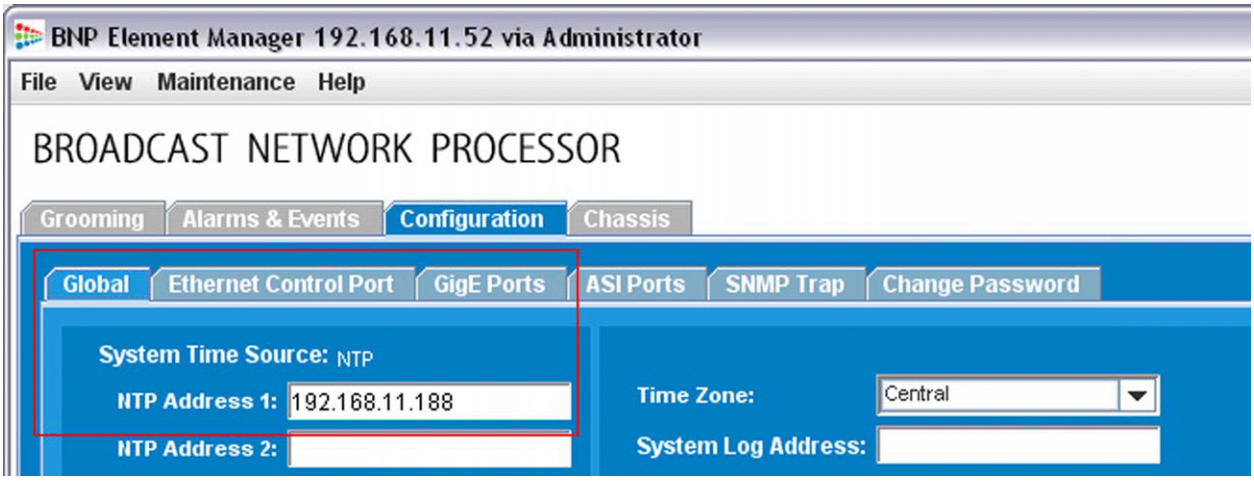
When using the DPI-1200 in conjunction with a RGB BNP, you may need grooming with DPI license key(s) depending on your application. Appropriate licenses will need to be purchased from your RGB sales representative or reseller.
To check the BNP to make sure it has the needed license keys, you will need to log into the **BNP Element Manager** web interface and select **Maintenance > License** from the top menu. (illustrated window below)



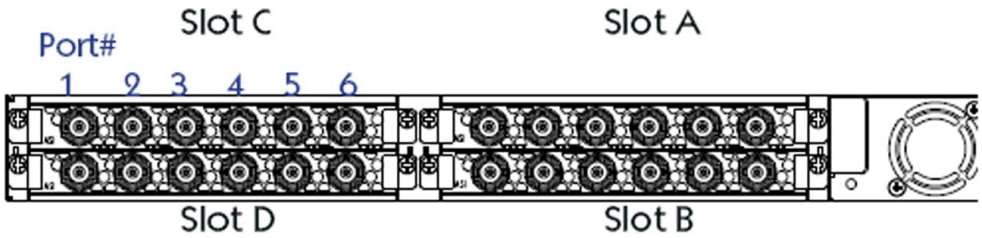
Time Sync
Per SCTE30 protocol, Time synchronization is required due to the passing of time between the Server and the Splicer. The delay on a TCP/IP message is somewhat unpredictable and is affected by other machines on the network. By having the machines synchronized, time can be passed between the two machines without concern for normal network delays keeping the splicing very accurate. The time synchronization system must be able to keep the Splicer and Server within +/- 15 ms of each other.

One possible method is to use Network Time Protocol (NTP) to keep the Server and the Splicer in synchronization. A network common host system NTP server could be used since this will also typically exist in a cable headend that has a network infrastructure. The DPI-1200 can be used as an NTP server if an NTP network is not available. Please refer to the NTP Menu options under the System Menu description in Chapter 3 and additional time configurations later in this chapter.

To configure the RGB BNP to time sync from the DPI-1200, select the **Configuration Tab** from the **BNP Element Manager** window, and select the Global subtab. (Illustrated below) Set the NTP Address 1 to that of the NTP Server or the connected DPI-1200 Ad Server.
Note: You must have the NTP Server or DPI up and running prior to booting the BNP.



Configuring the splicer for ad grooming
Physical Connections
ASI - Connection of the DPI-1200 Ad Server will need to occur on one of the six ports available using a coaxial cable with BNC connectors. The number of ASI ports in your BNP chassis depends on the number of ASI cards that are installed. Up to three ASI cards can be installed, each with six ports. See illustrated example below:

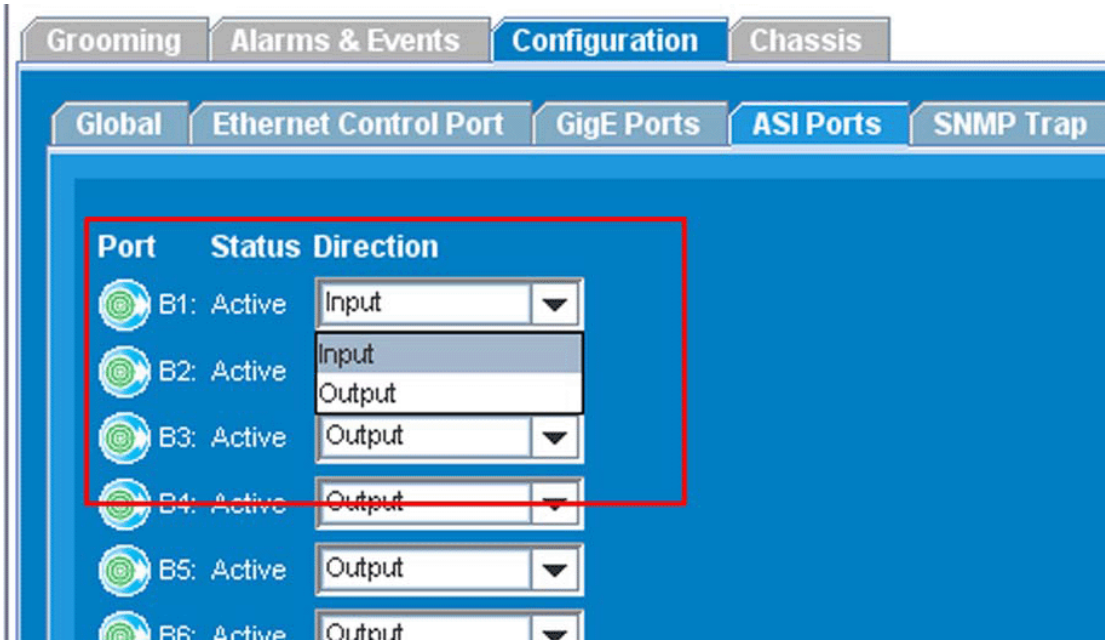


The coax cable will connect to one of the available ASI port connections on an available card. If the connection is good, the corresponding LED with the same number will light up Green next to the port with the corresponding port number.

IP - Connection of the DPI-1200 will need to be on the same IP Ingest Network as any other IP Input Stream going to the RGB BNP or attached directly to the IP Input Card (Typically Labeled E) using an SFP Optical Module Adapter. A standard GigE Ethernet Cable will be used. If the connection is good, the corresponding LED with the same number will light up Green next to the port with the corresponding port number.

Note: Please note all physical connections and their labels. This information is needed to configure the DPI properly to work with the attached splicer.

Note: The attached ASI and/or Ethernet port will need to be configured for proper data flow direction. This is set from the **Element Manager** by selecting the **Configuration Tab** then **ASI** or **GigE Ports** subtab. (Following illustration)



Grooming your ads into the channel

Once you have properly configured your splicer with all of the channels you are wanting to output and the DPI has been configured with the proper IP and channel information matching that of the splicer, the image icon associated with your program contained in your output transport stream will change. The new icon will have an arrow pointing toward the program name. (illustration below)

Chapter 6 - Scheduling

Scheduling the DPI

"Schedule” in the CCMS format (.sch) is required disregarding the types of triggering methods such as analog DTMF cueTone, GPI/GPO, Sched. Time, manual and digital cueTone – SCTE35 (detected by the Splicer). Similar to the analog Ad Insertion system, Duet – DPI-1200 provides NO play-spot command. The action to achieve a function similar to 'play-spot' is to trigger an event manually. The content being played is according to the pre-programmed CCMS schedule.

Schedules, verifications, commercial media files, etc… are stored in separate directories in the operating system.

Helpful system directory paths

Directory	Pathway	Notes
Media Directory	/media/hd0/media/	Location for all media to be inserted
Schedule Directory	/media/hd0/schins/	Location for all schedule files to be used
Verification Directory	/media/hd0/verins/	Location for all verification files
Log Directory	/media/hd0/log/	Location for all system log files

CCMS Schedule Reference

A schedule file exists for each channel of insertion. The file name will always be eight characters in length plus the three character extension of SCH.

MDDCCHHH.SCH

M –
: Represents month of intended airing
: Range 1 - C Ex. 1 = January, C = December
: Hexadecimal format

DD –
: Represents day of month of intended airing
: Range 01-31 Ex. 05

CC –
: Numeric identifier or Channel ID
: Range 01-99

HHH –

Numeric identifier or Headend ID
Range 001- 099

The records within the SCH file follow the following format. Each record is terminated by a carriage return and line feed. Each record will all be at least 77 bytes in length. The fields of each record are determined by its byte position. Each field is separated by a space character. All times are formatted in military time.

Field #	Field Name	Bytes	Description
1	Event Type	1-3	Type of event defined by record (LOI, REM,END, NUL)
2	Scheduled Date	5-8	T&Bs approximation of the date when the event will occur (formatted - MMDD)
3	Scheduled Time	10-5	T&Bs approximation of the time of day when the event will occur (formatted HHMMSS)
4	Window Start Time	17-20	Time of day to begin window of opportunity for event to occur (formatted - HHMM)
5	Window Duration Time	22-25	Length of window of opportunity for event to occur (formatted - HHMM)
6	Break Number Within Window	27-29	Break sequence number within window of opportunity for event to occur
7	Position Number Within Break	31-33	Position sequence number for event within break
8	Scheduled Length	35-40	Scheduled event length (formatted - HHMMSS)
9	Actual Aired Time	42-47	Actual aired time of day used in VER file. (Formatted HHMMSS)
10	Actual Aired Length	49-56	Actual aired length used in VER file (formatted - HHMMSSCC)
11	Actual Aired Position Within Break	58-60	Actual sequential position number that event occurred in. Used in VER file
12	Spot Identification	62-72	T&Bs spot identification code used by adManage as the commercial file name. See Headend>File Name Length configuration on how this spot ID is converted into a file name.

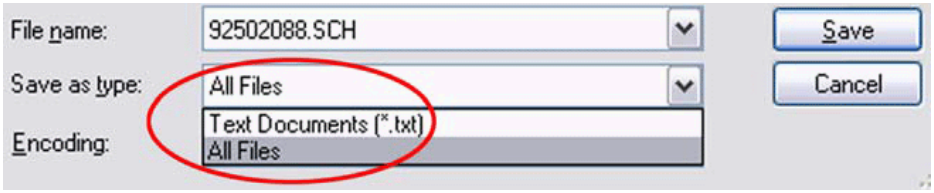
13	Status Code	74-77	Completion status Code used in VER file.(Definition of Status Codes later in this chapter)
14	Advertiser Name	79-110	Advertiser's name as identified in T&B System
15	Advertiser Spot Name	112-131	Advertiser's Spot Name as identified in T&B
16	Scheduled / Fill	133-136	Identifies the spot as either being scheduled contractually or used as filler in order to complete a commercial break.
17	Traffic System Reserved	138-143	Reserved for use by the Traffic System
18	User Defined	145-NNN	For use in tracking other data. adManage uses this field in Merged schedules to identify the event line as a local or interconnect event.

Manual CCMS Schedule Creation

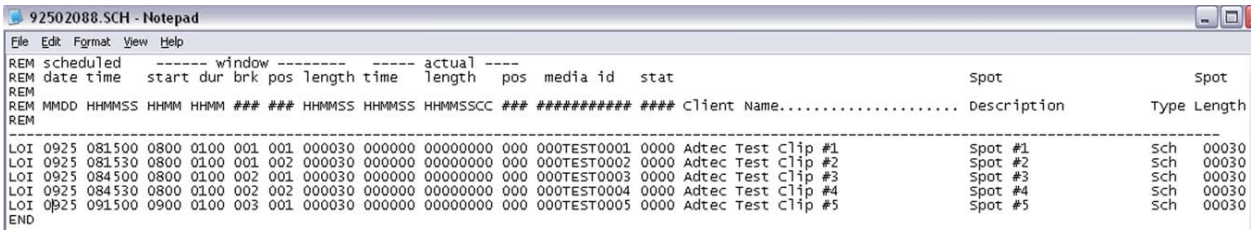
The simplest way of creating a CCMS schedule is by using Notepad. Name format of schedule file is MDDCCHHH.SCH.

- M - Represents month of intended airing.
    - Range 1-C.
    - Example: 1 = January and C = December.
    - Hexadecimal.
- DD - Represents day of month of intended airing.
    - Range 01-31.
    - Example: 25.
- CC - Numeric identifier or Channel ID.
    - Range 01-99.
- HHH - Numeric identifier or Headend ID.
    - Range 001-999.

CCHHH is the same as Schedule ID under "ChXX Schedule ID" of "SPLICER MENU". To save the file, make sure that "All Files" type is selected under "Save as type": (illustration indicates a schedule for channel 2 headend 088 for September 25th)



Example CCMS Schedules



Schedule Interpretation

Most remarks are referencing the first line of the schedule

Datum	Field	Notes
REM	1	Remark – text after REM will not be executed by DPI-1200 as scheduled
LOI	1	Language of Interaction. Each line of LOI refers to one event for DPI-1200
0925	2	September 25th - the date of the event which has to match the first three characters of the schedule file name. One schedule file is for one day only
081500	3	8:15 am -when the first event is estimated to occur; again, an estimate only – it does not mean that the event will absolutely occur at 8:15 am precisely. This necessitates the next two settings.
0800	4	8:00 am - is the earliest possible time when the 8:15 am event will be occurred. It is to prepare the DPI-1200 (to open up a time

		window) for receiving any possible trigger to start this line of event. Triggers will be discussed later in this chapter.
0100	5	1 hour – it is how long the time window will be opened. For this event, the time window will be opened from 8:00 am till 9:00 am. It means when the DPI receives a specific trigger between 8:00 am till 9:00 am, then, the commercial clip "Spot #1" will be played
001	6	1 - The break number within the window
001	7	1 – The position sequence of the scheduled insert within the break
000030	8	30 seconds, it is the scheduled length for this event - usually the same as the duration of the commercial clip selected. It means "Spot #1" is a 30-second commercial clip
000000 00000000 000	9 10 11	925002088.VER will be generated automatically with the updates of actual aired time, length and position to these three fields. These three fields always show zeroes in .SCH file
000TEST0001	12	The file name of the Spot #1 commercial clip. By default (CNVP is set to NOVAR), last 8 characters are used: alpha numeric field. The first three characters are reserved and always show zeroes. Any file names shorter than 8 characters have to be filled up with zero(es) prefix to fill this field by 11 characters. If CNVP is set to RAW, then all 11 characters in alpha-numeric format will be used but then, the mpeg files should not contain any extension
0000	13	Status code such as 0001 means aired successfully will be generated automatically to the 92502088.VER file. More status code information can be found in Appendix E of the adManage Manual. This field always shows zeroes in a .SCH file
Adtec Test Cl…	14	The Advertiser Client Description. (optional) Used for informational purposes only
Spot #1	15	The Spot Title of the commercial to be played. (optional) Used for informational purposes only
Sch	16	Identifies the spot as either being contractually scheduled or used as filler in order to complete a commercial break. (optional)
00030	17	A duplication of the scheduled length of the spot. (optional) Used for informational purposes only

CCMS Scheduling using adManage

Please refer to adManage TM Manual. It can be downloaded from the Support Section of our web page at: www.adtedigital.com

- Configure each channel's scheduling identifier, load schedules and media.
    - At this point, you will need to use the "API" interface to perform configuration.

- Using telnet to the "API" port 23, connect and log in.
- To test the connection, type "*<Enter>" and you should see a "0" returned.

The channel-headend scheduling identifier is used to map this channel to one in your traffic system. It should be in the form CCHHH, where CC is the channel identifier from 00-99 and HHH is the headend identifier from 000-999.

- Type the command " *.dpid cnv c <index> <CCHHH> " where index is the (zero-based) channel index (0-11).
    - The default configuration for channel 1 is "01001".
- To change this to channel 36 for headend 3, the command would be *.dpid cnv c 0 36003
    - The response should be "OK".
- Enter the command again without the CCHHH value to query the setting, so " *.dpid cnv c 0 " should reply "OK".
    - Native Mode ID: 0 36003

After configuring the scheduling identifier, the scheduler will automatically load the schedule from the schedule directory (/media/hd0/schins) when it is available. The name of the schedule should be in the format MDDCCHHH.SCH, where m is a single letter representing the month (1-9, A, B, C), dd is the day of the month (00-31), and CCHHH is the scheduling identifier.

Spots referenced by the schedule should exist in the directory /media/hd0/media . The scheduler has a configuration that controls the way the "spot ID" field in the schedule is interpreted. The field in the schedule is 11 characters wide, but the default setting ("novar") interprets the spot ID field by using only the 8 right-most characters of the spot ID field.

CCMS Verification Status Codes

Status Code	Definition	Possible Cause
0001	Aired Successfully	
0002	Generic Failed to Air	The scheduled event was not run by the DPI. All events are marked with a 0002 at the beginning of the broadcast day. As the event is run by the DPI, the status code is changed to an actual error code
0010	Failed, Device Not Ready	Possible hardware or splicing connection / timing issue
0012	Failed, Unknown Error	If any stall conditions occur during playback, the spot will not be verified, even if the system was able to continue after the stall condition. The actual played length will be updated in the VER file for

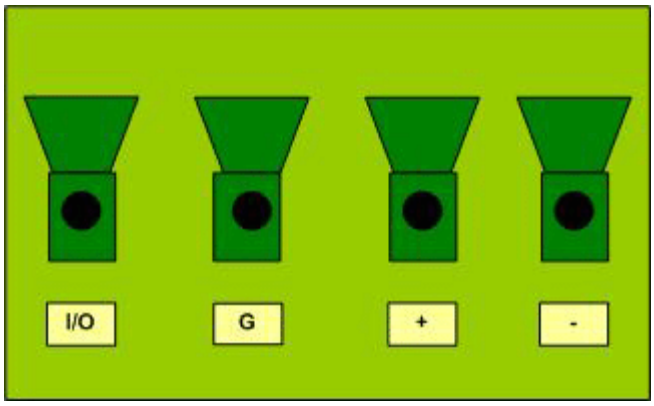
		partial verifications.
0013	Failed, Timeout	The break was closed before spot could be aired. Problem with media to be inserted. Timing issues with stream to be spliced
0020	Failed, No Ad Copy in Inserter	The DPI did not have the scheduled ad copy to play. Causes include: - Material not copied into adManage MasterVideoLibrary2. - The material is not in the inserter because of a communication error. - The material is on the headend PURGE list (see Content Management Purge).
0023	Failed, No Cue in Window	No cue was received in the scheduled window. See the chapter on Cue Methods for more information

Triggering Explained

DTMF Tone Triggers

DTMF tone board is an option for DPI-1200.
The Integrated Satellite Receiver Decoder (IRD) typically has a DTMF port which provides audio cue tones. Alternately, some networks use the secondary audio (SAP) channel to provide the cue tones. The DTMF tones should be nominally spaced by 50msec and be between 0.5v and 1.0v peek to peak.

Appearance of DTMF connector on the DPI-1200 back panel:



- Connect + and – for DTMF analog tone input to DPI-1200.
- 12 DTMF connectors, each corresponding to its channel number – for example, DTMF 01 connector is for channel 01.
- To configure Netset, please refer to NETSET MENU.

GPI / GPO Triggers

GPI/GPO trigger comes with the DTMF board option. GPI uses the I/O port on the DTMF connector, and the Ground cable uses the G port (see diagram above).
Connect I/O and G to form a circuit.

- There are a total of 12 GPI (General Purpose Input) connectors, each corresponding to its channel number, for instance, GPI 01 is the connector is for channel 01.
    - To configure GPI port, refer to the CUE MENU section.
- There is one General Purpose Output (GPO) connector.
    - To configure GPO port, refer to the CUE MENU section.

SCTE35 Triggers

A trigger embedded into the original network signal passed directly to the Splicer. It is detected and triggered by the Splicer to the DPI.
Please refer to your specific splicer model's manual (non-Adtec material) for more information

Manual Trigger

The manual trigger is the basic, fundamental trigger for the DPI-1200.

- Open a telnet session to the DPI-1200.
- At the prompt, type: *.DPID TG 0 6000 0
    - Triggers channel 01 at a pre-roll time of 6000 milliseconds (6 seconds) following the Avail Time in the CCMS Schedule.

Chapter 7 - Appendix

Appendix A - GNU General Public License

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Appendix B - Troubleshooting Guide

Problem	**Solution**
New IP addresses don't work	Check: are your eth0 and eth1 addresses on the same subnet? If so change one of them to a different subnet
I cannot get Ethernet (LAN) connectivity to my DPI-1200	1. Verify that the LINK LED (center group, front panel) is lit. a. If the LED is not illuminated, verify the connection between the Ethernet patch cord and the hub/switch. b. An Ethernet cross-over cable will not work-it must be a patch cord. 2. Ensure that the port on the hub/switch is not the

	MDI or chaining port- if this port was used, move the patch cord to a non- MDI or -chaining port.
Channel indicators are neither red or green	The channel has been administratively disabled or feature locked. Re-enable the port via the front panel or command API, if unlocked
Channel indicators flash red and yellow	The DPI has lost communication with the splicer for that channel. Check the splicer configuration for that channel and the splicer interface for issues with the output.
Channel indicator flashes red during insert and then goes back to green	There is a discrepancy between the splicer and the DPI. Check the time sync and media being used.
Verification files show a status of 0013 “Time Out”	Check the timing sync between the DPI and the splicer. Check the media to be inserted for proper encoding and audio formats to the stream
Verification files show a status of 0023 “No Cue”	Check cue method being used. If DTMF or GPI, check the connector cable running between the receiver and DPI. If SCTE35, check the insertion stream and splicer configuration to make sure that it is available and used
NTP Clock will not sync to address	Check the NTP server to make sure that it is a Linux stratum server and the time server daemon is running.

Appendix C - Understanding the DPI System Log File

System Operators

CHNLMGR – Channel Manager
CMDL – Command Log
FTPC – File Transfer Protocol Client
MIRROR – Mirror Client
SCHED – Schedule Daemon
STRM – Stream Manager
TRGRD – Trigger Daemon

CHNLMGR: The channel Manager interacts with the splicer. The dpi has 12 channels that are referenced by 0 – 11. When a cue is received from a network (the TRGRD catches the triggers) the channel manager will send a request to the splicer to insert on the requested channel.

The TRGR Daemon receives a GPI Trigger for channel 3. Notice the State is 1.

Feb 4 00:02:12 dpi-010E09 [TRGRD]: 250003 Netset ACTIVE and Type is GPI, sending GPI to State Machine for channel: 3 at index: 0
Feb 4 00:02:12 dpi-010E09 [TRGRD]: 250003 GPI Trigger; Chan: 3; Preroll: ; Sec: 12.272129
Feb 4 00:02:12 dpi-010E09 [TRGRD]: 250003 Inserting GPI on Chan: 3 State: 1 Time: 4988ccf4
Feb 4 00:02:12 dpi-010E09 [TRGRD]: 250003 Storing GPI into buffer on Chan: 3 State: 1 Time: 4988ccf4

The CHNLMGR for channel 3 starts processing the trigger for a splice at the proper time and cues the scheduler

Feb 4 00:02:12 dpi-010E09 CHNLMGR-03: 90013 Processing trigger for splice at 1233702138,772129, avail 0 stop insert 0
Feb 4 00:02:12 dpi-010E09 CHNLMGR-03: 250003 Cueing scheduler0

The SCHED receives the information from the CHNLMGR and builds the playlist

Feb 4 00:02:12 dpi-010E09 SCHED: 250003 03, Cue received:1233702132 545737
Feb 4 00:02:12 dpi-010E09 SCHED: 250003 03, Build
playlist: /media/hd0/media//312CMCH0027.MPG 1233702132 547513
Feb 4 00:02:12 dpi-010E09 SCHED: 250003 03, Build
playlist: /media/hd0/media//312CCAI0182.MPG 1233702132 552598
Feb 4 00:02:12 dpi-010E09 SCHED: 250003 03, Build
playlist: /media/hd0/media//312CLIN0024.MPG 1233702132 554922
Feb 4 00:02:12 dpi-010E09 SCHED: 250003 03, Build
playlist: /media/hd0/media//312GNGF0003.MPG 1233702132 557551
Feb 4 00:02:12 dpi-010E09 SCHED: 250003 03, Build
playlist: /media/hd0/media//312CMCH0028.MPG 1233702132 560231

The CHNLMGR for channel 3 starts processing two spots for the insertion and sends the request to the splicer
The splicer replies with the go ahead: SCTE30 splice response (100). The channel manager will send this same request for each spot and if the splicer says ok then it will return the same response.
Feb 4 00:02:12 dpi-010E09 CHNLMGR-03: 250003 Processing scheduled
spot: /media/hd0/media//312CMCH0027.MPG (5032, 4)
Feb 4 00:02:12 dpi-010E09 CHNLMGR-03: 250003 buf(6), 1233702138 272129
1040 /media/hd0/media/312CMCH0027.MPG

Feb 4 00:02:12 dpi-010E09 CHNLMGR-03: 250003 Sending splice request, last offset = -4161 5032
Feb 4 00:02:12 dpi-010E09 CHNLMGR-03: 250003 Processing scheduled spot: /media/hd0/media//312CLIN0024.MPG (5034,
Feb 4 00:02:12 dpi-010E09 CHNLMGR-03: 90007 **SCTE30 splice response (100)**

Each channel has two streams assigned to it. In this case channel 3 has streams 6 and 7 managed by the stream manager (STRM). As one spot is being played the next spot is cueing behind it. After the spot is played by the first stream it will cue another spot while the second stream is being played. You can see that demonstrated here:
The processes swap until all 5 of the files are played.

Feb 4 00:02:18 dpi-010E09 STRM-06:
250003 /media/hd0/media/312CMCH0027.MPGStarted at 1233702138, 272182 micro
Feb 4 00:02:27 dpi-010E09 STRM-06:
250003 /media/hd0/media/312CMCH0027.MPGFinished
Feb 4 00:02:28 dpi-010E09 STRM-07:
250003 /media/hd0/media//312CCAI0182.MPGStarted at 1233702148, 142137 micro
Feb 4 00:02:57 dpi-010E09 STRM-07:
250003 /media/hd0/media//312CCAI0182.MPGFinished
Feb 4 00:02:58 dpi-010E09 STRM-06:
250003 /media/hd0/media/312CLIN0024.MPGStarted at 1233702178, 62900 micro
Feb 4 00:03:17 dpi-010E09 STRM-06:
250003 /media/hd0/media/312CLIN0024.MPGFinished
Feb 4 00:03:17 dpi-010E09 STRM-07:
250003 /media/hd0/media/312GNGF0003.MPGStarted at 1233702197, 941731 micro
Feb 4 00:03:42 dpi-010E09 STRM-07:
250003 /media/hd0/media/312GNGF0003.MPGFinished
Feb 4 00:03:42 dpi-010E09 STRM-06:
250003 /media/hd0/media/312CMCH0028.MPGStarted at 1233702222, 862673 micro
Feb 4 00:03:47 dpi-010E09 STRM-06:
250003 /media/hd0/media/312CMCH0028.MPGFinished

After each insertion the FTPC will push the VER file to the server (HIP). It will upload the VER file after the SCHED has made its updates on the appropriate spot and VER file. Notice that the FTPC process triggers after the SCHED process makes and update following the insertion.

Feb 4 00:03:45 dpi-010E09 SCHED: 90017 updateSpotStatus (3): schTime:1233732600, m_unDayStartSec:1233702000, index:3 pSpotStatus->Result:100 resultCodeMap:0001

Feb 4 00:02:15 dpi-010E09 [FTPC]: Uploaded: /media/hd0/verins/20405901.VER to 62.45.52.86:21/Verifications/20405901.VER

Once the splice is complete there is a message from the CHANLMGR. If the end time is subtracted from the start time it will give you the avail time or total insertion time.

Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 90009 100,005036, -4161,
(out) /media/hd0/media/312CMCH0028.MPG
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 <<<SPLICE>>>
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 avail: 0
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 start: 1233702138.772129
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 avail end: 1233702138.772129
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 end: 1233702228.102129
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 ID: 5032, priorId: 4294967295, state:
COMPLETE, exp start: 1233702138.772129
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 exp pad: 000000.000000
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 in msg: 5032,0,0,0
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 out msg:
5032,1,2976464,892800(887400)
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 ID: 5033, priorId: 5032, state:
COMPLETE, exp start: 1233702148.632129
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 exp pad: 000000.000000
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 in msg: 5033,0,0,0
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 out msg:
5033,1,3120397,2689200(2688300)
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 ID: 5034, priorId: 5033, state:
COMPLETE, exp start: 1233702178.562129
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 exp pad: 000000.000000
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 in msg: 5034,0,0,0
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 out msg:
5034,1,2856844,1792800(1788300)
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 ID: 5035, priorId: 5034, state:
COMPLETE, exp start: 1233702198.442129
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 exp pad: 000000.000000
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 in msg: 5035,0,0,0
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 out msg:
5035,1,2611994,2246400(2238300)
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 ID: 5036, priorId: 5035, state:
COMPLETE, exp start: 1233702223.362129
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 exp pad: 000000.000000
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 in msg: 5036,0,0,0

Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 out msg:
5036,1,2788872,439200(437400)
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003 <<<SPLICE>>>
Feb 4 00:03:49 dpi-010E09 CHNLMGR-03: 250003

The MIRROR process works at separate times. Here you can see the mirroring process delete old schedules and check the server (62.45.52.86) for new schedule files.

Feb 4 00:00:27 dpi-010E09 [MIRROR]: Checked 0 files, 0 failed.
Feb 4 00:00:57 dpi-010E09 [MIRROR]: Started CCMS process with 62.45.52.86.
Feb 4 00:00:59 dpi-010E09 [MIRROR]: Deleted: /media/hd0/schins//20302901.SCH
Feb 4 00:01:16 dpi-010E09 [MIRROR]: Deleted: /media/hd0/schins//20303901.SCH
Feb 4 00:01:38 dpi-010E09 [MIRROR]: Deleted: /media/hd0/schins//20305901.SCH
Feb 4 00:01:55 dpi-010E09 [MIRROR]: Deleted: /media/hd0/schins//20307901.SCH
Feb 4 00:02:11 dpi-010E09 [MIRROR]: Deleted: /media/hd0/schins//20321901.SCH

The FTPC will upload all verification files to the (HIP) just after midnight as a safeguard against corrupt files or any error that may have occurred.

Feb 4 00:00:06 dpi-010E09 [FTPC]: Uploaded: /media/hd0/verins/20323901.VER to 62.45.52.86:21/Verifications/20323901.VER
Feb 4 00:00:06 dpi-010E09 [FTPC]: Uploaded: /media/hd0/verins/20325901.VER to 62.45.52.86:21/Verifications/20325901.VER

The internal schedule (SCHED) it will make periodic polls sure the trigger daemon is up and running.

Feb 4 00:55:00 dpi-010E09 SCHED: 253083 Triggering trigger daemon. Trigger register: 20 Trigger time: 1233705300,117309

Additional Logging Notes and examples

In this case, the DPI cannot communicate with the splicer and responds with the message disconnecting.

Feb 9 00:02:53 dpi-010CC6 CHNLMGR-02: 250003 Disconnecting

Here the DPI cannot recognize the channel name because the name is not the same in the splicer and DPI

Feb 6 00:01:42 dpi-010D71 CHNLMGR-08: 90018 Invalid or Unknown Channel Name

List of log codes as of dpi-v1.02.07:

= 90000 BASE_FOR_DPI

90001 TRACE_MSG_SCTE30_BASE,
// 90002 TRACE_MSG_SCTE30_APPSTART,
// 90003 TRACE_MSG_SCTE30_PROTOCOL_ESTABLISHED,
// 90004 TRACE_MSG_SCTE30_LOST_CONNECTION,
// 90005 TRACE_MSG_SCTE30_CUEREQ,
// 90006 TRACE_MSG_SCTE30_SPLICEREQ,
// 90007 TRACE_MSG_SCTE30_SPLICERESP,
// 90008 TRACE_MSG_SCTE30_SPLICEIN,
// 90009 TRACE_MSG_SCTE30_SPLICEOUT,
// 90010 TRACE_MSG_SCTE30_GENRESP,
// 90011 TRACE_MSG_CMDCUE,
// 90012 TRACE_MSG_ERRCFGLOAD,
// 90013 TRACE_MSG_TRIGGER,
// 90014 TRACE_MSG_DPID_START,
// 90015 TRACE_MSG_SPLICETIMEOUT,
// 90016 TRACE_MSG_ABORT,
// 90017 TRACE_MSG_UPDATESTATUS,
// 90018 TRACE_MSG_SCTE30_INIT_FAILED,
// 90019 TRACE_MSG_ERROR_NOT_SPTS,
//91000 BASE_FOR_TRGRD = BASE_FOR_DPI + 1000,
//91001 TRACE_MSG_TRGRD_DTMF_ENABLE,
//91002 TRACE_MSG_TRGRD_DTMF_OBJECT_FAIL,
//91003 TRACE_MSG_TRGRD_DTMF_COM2_FAIL,
//91004 TRACE_MSG_TRGRD_NETSET_GET_MODE_INVALID,
//91005 TRACE_MSG_TRGRD_NETSET_SET_MODE_FAIL,
//91006 TRACE_MSG_TRGRD_NETSET_GET_TYPE_INVALID,
//91007 TRACE_MSG_TRGRD_NETSET_SET_TYPE_FAIL,
//91008 TRACE_MSG_TRGRD_NETSET_XML_PARSE_ERROR,
//91009 TRACE_MSG_TRGRD_NETSET_XML_PARSE_SUCCESS,

You may also see code in the range 250000 - 250009.

LOG_GENERAL_BASE = (MILLION/4),
// Process status
LOG_PROCSTAT_BASE = (0 + LOG_GENERAL_BASE),
LOG_PROCSTAT_START
LOG_PROCSTAT_END
LOG_PROCSTAT_INFO
LOG_PROCSTAT_WARN
LOG_PROCSTAT_ERR
LOG_PROCSTAT_CHILD
LOG_PROCSTAT_REGISTRATION
LOG_PROCSTAT_UNREGISTER
LOG_PROCSTAT_SIGNAL

Select SCTE30 Splice Response Messages

Result	Result Name	Description
100	Successful Response	
104	Invalid/Unknown **Channel Name**	Possible configuration error
105	Invalid Physical Connection	Possible configuration error
108	Splice Failed – Unknown Failure	
110	No Insertion Channel Found	This error shall be returned if the Insertion Channel is missing at the start of a splice.
111	No Primary Channel Found	This error shall be returned if the Primary Channel is missing at the Splice-in or Splice-out times.
112	**Splice_Request** Was Too Late	The **Splice_Request** message was not received early enough (3 seconds) for the Splicer to initiate the splice.
113	No Splice Point Was Found	The Splicer was unable to find a valid point to splice into the Primary Channel

Appendix D - Technical Specifications

Inputs

10/100 base-T Ethernet Connector: 8 pin RJ45 x1

Gigabit Ethernet Connector: 8 pin RJ45 x1

NAS Compliant Storage Interface

DTMF/GPI

Twelve GPI or GPO

Twelve DTMF Input (-10 to +0 dB)

Outputs

ASI (optional)
Connector: 75 Ohm BNC x3
ISO13818-1 MPEG 2 Transport Stream per EN 50083-9:1997 (188 byte only)
PCR, PTS re-stamping
*Overall egress supported bandwidth limit of 160 Mbit/s.

GigE Transport Over IP (TSoIP)
Use: May also be used for control.
Connector: 8 pin RJ45 x1
ISO13818-1 MPEG 2 Transport Stream per EN 50083-9:1997 (188 byte only)
*Overall egress supported bandwidth decreases when using TSoIP streams. The sum of all UDP streams must fall within the IP supported limit of 100 Mbit/s.
Tally Output (optional ASI Only)
Contact closure for On-Air or external device control

Standards Compliance

Splicing
SCTE 30 Ad Server to Splicer IP based command/control protocol
SCTE 35 Via SCTE 30 from Splicer Transport private data cueing

Video
CableLabs MD-SP-VOD-CEP-I01-040107
SPTS - H.264/MPEG-4 Part 10
SPTS - ISO/IEC 13818-1 / MPEG-2
- Supports ANSI/SCTE 20 2003 Captioning

Audio
MPEG 1 Layer 2, MPEG 2 Layer 2, ATSC A/52 & A/53 (Dolby Digital AC3) and AAC Audio Compatible

Storage
750GB Mirrored RAID 1
NAS (software included NAS device and hard drives extra)

Host Platform
PowerPC CPU
Linux 2.6 Kernel OS (Hardened)
IPv4 via ETH0 Fast Ethernet
IPv4 via ETH1 GIGE
Serial / Terminal RS232 via RJ45
Serial Port (RJ-48)
GPIO (9 Pin D-sub)

Operating Temperature
0 to 90 Degrees Fahrenheit
Less than 70% RH
Non-Condensing
Active cooling (Push pull Fans)

Power Usage

70-240 VAC switching power supply
50/60 Hertz
Rated at 150 Watts nominal usage 40 watts

Physical

Measurements: (H X W X D) 1.75” X 19” X 14”
11 pounds gross weight

Management

8 Button Tactile Raised Keypad Front Panel with Status LEDs
Browser-based Web Interface
10/100 base-T Ethernet and GigE
HTTP, FTP, Telnet, IP Logging, SNMP MIB II and private MIB, DHCP, (XCP Adtec encrypted layer 3 protocol)
Terminal Monitor port
Use: API Serial Communication Interface
Default Baud Configuration: 38,400 bps 8 data bits 1 stop bit no parity
Connector: 8 pin RJ45 (supplied with DB9 to RJ45 adapter)
Use: Serial Port Used for Troubleshooting (Terminal)
Baud Configuration: 115,200 bps 8 data bits 1 stop bit no parity