

FLEXTUNE INTEGRATOR'S MANUAL



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1 FLEXTUNE INTRODUCTION

1.1.DESCRPTION

- FlexTune is a software upgrade designed to work with COM51 cards installed in a COM421 or COM400 chassis.
- IPTV only
- Cost effective solution for properties with 46 end devices or less. One tuner per end device.
- Supports IP end devices such as a UCW4026 in an Advanced Entertainment Platform or IP endpoints in an IPTV system (Smart TV or set back box with IP tuner).
- Endpoint controls COM51 tuner enabling system to display all channels in the customer’s DIRECTV lineup.
- Requires a Layer 2 managed ethernet switch.

1.2. LICENSING REQUIREMENTS

- COM51s must be licensed for FlexTune by your Distributor. The license should be applied to the first card in the chassis.
- Never use two COM51s licensed for FlexTune in the same chassis.
- License files allow a maximum IGMP tuner count for the system:
- A single COM51 system will be licensed as an igmpTune=23 and will support up to 23 tuners.
- A System with two COM51 are to be licensed as an igmpTune=46.

Licensed features can be viewed in the COM51 SysInfo tab as shown below:

Chassis	Slot	CardIP	EPG	MAC_Address	Tuners	Features
1	1	192.168.3.18	EPG	60:3d:26:9f:3a:29	23/23	IP HD StreamOut Monitored igmpTune=46

Note the IP license is also needed when no QAM is installed in the chassis.

2 OPERATIONAL OVERVIEW

Flexitone uses the last two octets of the multicast IP address to tell the COM51 to tune to a requested program. Multicast address must be configured in a specific format for Flexitone to work.

Examples:

- 226.101.0.4 will tune an unused tuner to DIRECTV Ch 4 and steam to the end device requesting that multicast IP
- 226.101.2.6 will tune DIRECTV channel 206
- 226.101.2.45 will tune DIRECTV channel 245

2.1 AEP EPG

Build the EPG using to reflect the IP assignments.

- 4-0 4-65535-hd 226.101.0.4 5000
- 206-0 206-65535-hd 226.101.20.6 5000
- 245-0 245-65535-hd 226.101.2.45 5000

Electronic Program Guide Display

DestIP:	<input type="text" value="0.0.0.0"/>	For GuideChannel only. (Does not control QAM vs. IP for AEP, 401, Now/Next.)
DestPort:	<input type="text" value="0"/>	
TimezoneOffset:	<input type="text" value="0"/>	Pacific=8;Mountain=7;Central=6;Eastern=5
TimezonePsip:	<input type="text" value="0"/>	
Mode:	<input type="checkbox"/> GuideChannel; <input type="checkbox"/> PSIP; <input type="checkbox"/> Welcome; <input type="checkbox"/> IgnoreDST; <input type="checkbox"/> QAM; <input type="checkbox"/> IP; <-- Choose up to one <input type="checkbox"/> Now/Next; <input type="checkbox"/> 401; <input type="checkbox"/> AEP; <-- Choose up to one <input type="checkbox"/> Reserved; <-- Do not use	
HoursEvents:	<input type="text" value="0"/>	Default=32;
HoursDetails:	<input type="text" value="0"/>	Default=6; *Limit guide size to maintain 401 and AEP stability
LogoFtpServerIP:	<input type="text"/>	
LogoFilename:	<input type="text"/>	170x60 24bpp bmp bitmap file

The format is displayNumber-minor majorNumber-minorNumber-[hd|sd] qamChassis port
 OR displayNumber-minor majorNumber-minorNumber-[hd|sd] multicastIP port
 OR displayNumber-minor majorNumber-minorNumber-[hd|sd] -qamCarrier program
 OR displayNumber-minor NpYChan_Event_info qamChassis port
 The chassis and port are used for PSIP guide generation. Set to -1 to disable.

```

104-0 104-65535-hd 226.101.10.4 5000
106-0 106-65535-hd 226.101.10.6 5000
202-0 202-65535-hd 226.101.20.2 5000
206-0 206-65535-hd 226.101.20.6 5000
207-0 207-65535-hd 226.101.2.7 5000
208-0 208-65535-hd 226.101.20.8 5000
209-0 209-65535-hd 226.101.20.9 5000
217-0 217-65535-hd 226.101.2.17 5000
219-0 219-65535-hd 226.101.2.19 5000
220-0 220-65535-hd 226.101.2.57 5000
229-0 229-65535-hd 226.101.2.29 5000
230-0 230-65535-hd 226.101.2.30 5000
231-0 231-65535-hd 226.101.2.31 5000
    
```

If you are using AEP boxes as your endpoints check the AEP box in the EPG setup.

If you are using an IPTV television or set top box, check the Guide channel box and set the guide to play on a multicast IP address. IPTV televisions and STBs must be programmed with a matching lineup

2.2 IPTV END POINT DEVICES

UCW4026 will download this guide information and send a join request for the specific multicast IP address when tuned to that channel.

An IPTV or LG STB6500 will require the equivalent IP channel table to be programmed via proprietary software. COM51 sees the request, sets a tuner to the channel, and streams the programming.

2.3 COM51 SETTINGS

Do not set up channels in the Discover or Overview tabs. Leave them blank.
When licensed for IGMP the COM51D becomes the IGMP querier

2.4 COM51 OPERATION

When a channel is tuned on an endpoint device the IP address and program name will display in the COM51D Discover screen.

In the figure below two channels are sending transport streams.

Tuner 1 has received a request from an end point device to stream 226.101.2.9. The tuner interprets this request and tunes to ESPN2, DIRECTV channel 209.

Tuner 2 has received a request from an end point device to stream 226.101.2.6. The tuner interprets this request and tunes to ESPN, DIRECTV channel 206.

Chassis	Slot	Tuner	IpAddress	Port	Channel
		1	226.101.2.9	5000	209 ESPN2HD
		2	226.101.2.6	5000	206 ESPNHD

2.5 COM51 SYSLOG ENTRIES FOR TUNE REQUESTS

The syslog in the figure below shows syslog entries for FlexTune operations. In this scenario tuner 2 is streaming DIRECTV channel 207 and is changed to 245 (Some functional line entries are removed for clarity)

Tuner 2 is streaming programming from 207 and receives a channel change command. The first step is to stop or leave the CH207 stream. The “IGMP Leave” command also instructs network switches to remove 226.101.20.7 from IGMP groups.

```
COM51 user.warn syslog: n: IGMP Leave 226.101.2.7 -> 192.168.40.91
```

The stream is closed on tuner2 (tuner 1 in log)

```
COM51 user.warn syslog: s: SoapServiceTunerChannelClose
COM51 user.notice syslog: a: STREAM_Close(1, 1)
```

The COM51 is then instructed to join 226.101.2.45. The “IGMP Join” command adds 226.101.2.45 to IGMP and directs the stream to the port of the switch connected to the requesting end device.

```
COM51 user.warn syslog: n: IGMP Join 226.101.2.45 -> 192.168.40.91
```

COM51 tunes Ch 245 on tuner 2

```
COM51 user.warn syslog: n: IGMP Tune (0xc0a80312:2 0x0:0 245)
COM51 user.warn syslog: a: wget(127.0.0.1:80, /cgi-bin/webcmd?screen=TuneCard&cardIp=192.168.3.18&tuner=2&ip=226.101.2.45&port=5000&protocol=0&channelObjectId=1&majorNum=245&minorNum=65535&streamId=100&securityMode=0&persistent=0&quick=1)
COM51 user.notice syslog: a: MO(index=1, networkId=10, freqIndex=22)
Jan 31 15:03:15 COM51 user.notice syslog: a: >>> Tuner(1) Locked quality=81
```

COM51 Advanced Edit > Channel Tune and Info Display showing Ch 245 tuned

Channel Tune		Info
Dest_IP_Address:	<input type="text" value="192.168.3.18"/> OR Qam-Sub	*Chassis_ID: <input type="text" value="1"/>
Dest_Port_Number:	<input type="text" value="1000"/>	*Slot_ID: <input type="text" value="1"/>
Protocol_Type:	<input type="text" value="0 = UDP"/> ▾	*Tuner: <input type="text" value="1"/>
Channel_Object_ID:	<input type="text" value="2220257"/>	*Card_IP: <input type="text" value="192.168.3.18"/>
Major_Number:	<input type="text" value="245"/> ***	*Receiver_ID: <input type="text" value="023375271766"/>
Minor_Number:	<input type="text" value="65535"/>	*CAM_ID: <input type="text" value="003375368697"/>
Stream_ID:	<input type="text" value="111"/>	*Network_ID: <input type="text" value="10"/>
Security_Mode:	<input type="text" value="0 = None"/> ▾	*Frequency_Index: <input type="text" value="22"/>
Persistent:	<input type="text" value="1 = TRUE"/> ▾	*Authorized: <input type="text" value="1"/>
<input type="button" value="Submit"/> <input type="button" value="Channel_Close"/>		*Paired: <input type="text" value="1"/>
		*Blackout: <input type="text" value="0"/>
		*SW_Version: <input type="text" value="ST04.02.05"/>