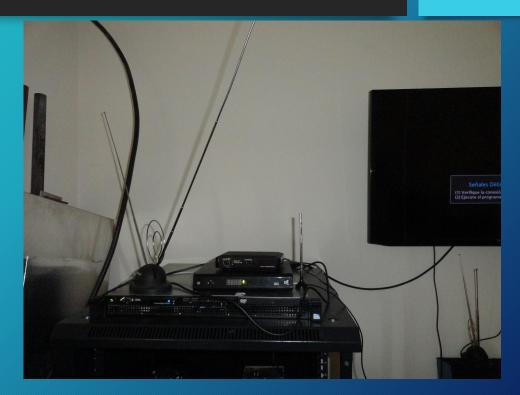
Transmisión de TVD ELO-323

Roberto Muñoz Gonzalo Callender

Motivación

Varios estudiantes han trabajado en el Laboratorio de Televisión Digital y a pesar de eso no existe una documentación resumida que señale cómo realizar una transmisión. Por este motivo, se decide realizar una transmisión conjunta de un video y aplicación GINGA, documentando los pasos realizados.



Transmisión TVD - Norma ISDB-T



Pasos para Transmisión de TVD

- 1. Codificación de Video
- 2. Incorporar Video al servidor
- 3. Crear Servicio
- 4. Asociar Video a Servicio creado
- 5. Crear y configurar Transport Stream
- 6. Asociar Servicios a capas de TS
- 7. Subir Aplicación
- 8. Asociar Aplicación a algún servicio del TS

Codificación de Video

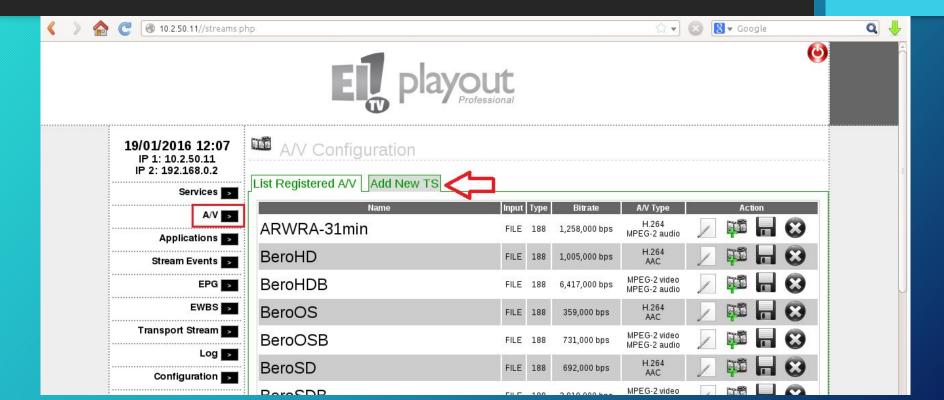
Creación de One-Seg con MPEG4

```
ffmpeg -i video_1.mp4 -c:v libx264 -c:a libfdk_aac -profile:a aac_he_v2 -s 256x144 -aspect 16:9 -streamid 0:170 -streamid 1:171 -b:a 32k -b:v 278k -maxrate 278k -minrate 278k bufsize 278k -bsf h264_mp4toannexb video.ts
```

Creación de Video SD en MPEG

```
ffmpeg -i video_1.mp4 -s 720x480 -aspect 16:9 -streamid 0:42 -streamid 1:43 -b:a 128k -b:v 2298k -maxrate 2298k -minrate 2 298k -bufsize 2298k video_sd.ts
```

Configuración Playout



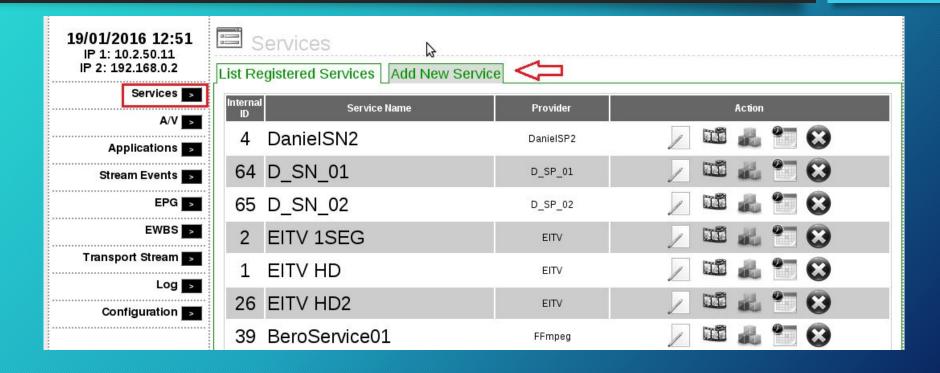
Incorporación de Video al Servidor (mediainfo)

gear_kleinrock@gear4001642: ~/Escritor	io	-08
Archivo Editar Ver Buscar Terminal Ayuda	a	
gear kleinrock@gear4001642:~/Escritori	o\$ mediainfo elo323 os.ts	1
General		
ID	: 1700 (0×6A4)	
Complete name	: elo323_os.ts	
Format	: MPEG-TS	
File size	: 4.63 MiB	
Duration	: 1mn 48s	
Overall bit rate mode	: Variable	
Overall bit rate	: 357 Kbps	
No. 10		
Video	100	
ID	: 170 (0×AA)	
Menu ID	: 1710 (0×6AE)	
Format Format/Info	: AVC : Advanced Video Codec	
Format profile		
Format settings, CABAC	: High@L1.2 : Yes	
Format settings, CABAC Format settings, ReFrames	4 frames	
Codec ID	: 4 Tranes	
Duration	: 1mn 48s	
Bit rate	: 308 Kbps	
Nominal bit rate	: 278 Kbps	
Width	: 256 pixels	
Height	: 144 pixels	
Display aspect ratio	: 16:9	
Frame rate mode	: Variable	
Color space	: YUV	
Chroma subsampling	: 4:2:0	
Bit depth	: 8 bits	
Scan type	: Progressive	
Stream size	: 3.99 MiB (86%)	
Writing library	: x264 core 129	

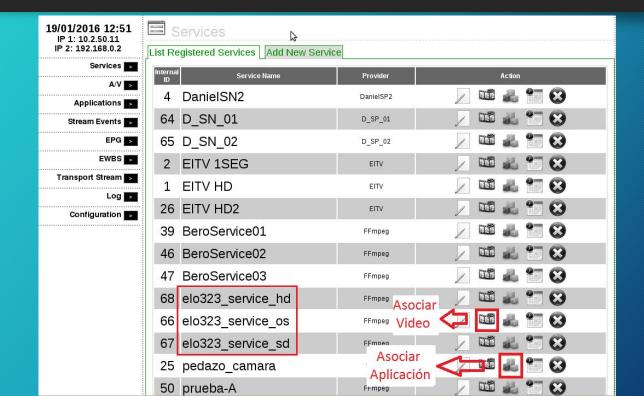
1		
Audi o		
ID	: 171 (0×AB)	
Menu ID	: 1/10 (0×6AE)	
Format	: AAC	
Format/Info	: Advanced Audio Codec	
Format version	: Version 4	
Format profile	: HE-AACv2 / HE-AAC / LC	
Muxing mode	: ADTS	
Codec ID	: 15	
Duration	: 1mn 48s	
Bit rate mode	: Variable	
Bit rate	: 31.4 Kbps	
Minimum bit rate	: 27.4 Kbps	
Maximum bit rate	: 88.9 Kbps	
Channel(s)	: 2 channels / 1 channel / 1 channel	
Channel positions	: Front: L R / Front: C / Front: C	
Sampling rate	: 44.1 KHz / 44.1 KHz / 22.05 KHz	
Compression mode	: Lossy	
Delav relative to video	: -137ms	

Incorporación de Video al Servidor

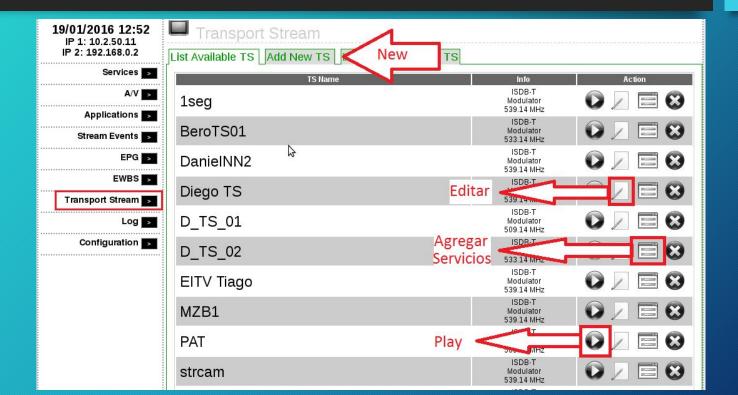
A/V Configuration				
List Registered A/V Add New TS				
List Registered	AVV Add New 15			
188 or 204 bytes TS Stream (CBR)				
Name	elo323_os			
Source	● File □ IP			
File	Examinar elo323_os.ts (Maximum Size: 1000 MB) FTP \$			
IP Interface	Address: Port: Protacol: O UDP O RTP			
PID Video	170			
Video Stream Type	[0x01B] ITU-T Rec. H.264_ISO/IEC 14496-10 video ▼			
PID Audio	171			
Audio Stream Type	[0x0F] ISO/IEC 13818-7 AAC Audio (ADTS transport syntax) 🔻			
PID PCR	170			
TOT time decode	☐ Synchronize system time with TOT from this input			
Bitrate Video (kbps)	308			
Bitrate Audio (kbps)	32			
Bitrate TS (bps)	357000			
	Add			



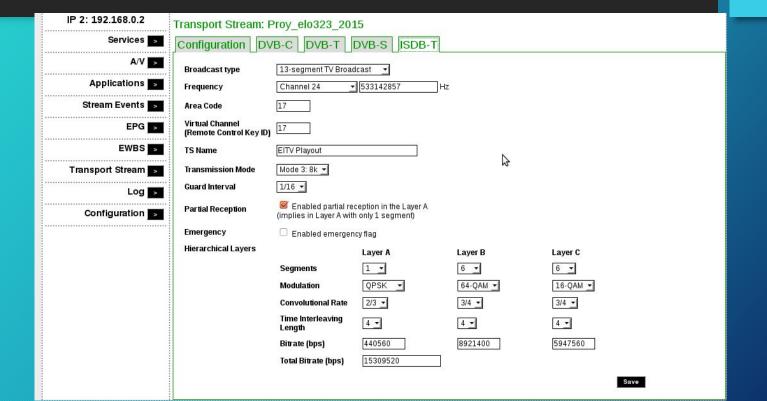
List Registered Services Add New Service				
General				
Name	elo323_service01			
Provider	FFmpeg			
Service Type	[0x01] Serviço de televisão digital			
EIT Schedule Flag				
EIT Present Following Flag				
H-EIT Flag				
M-EIT Flag				
L-EIT Flag				
Custom	6			
The following parameters only nee	The following parameters only need to be configured if custom values are needed. The value "0" (zero) can be left for defaults.			
Program PIDs				
Primary Video PID	170 (decimal)			
Video Descriptors	(tag:length:byte:tag:length:byte)			
Primary Audio PID	171 (decimal)			
Audio Descriptors	(tag:length:byte:tag:length:byte)			
PCR PID	170 (decimal)			

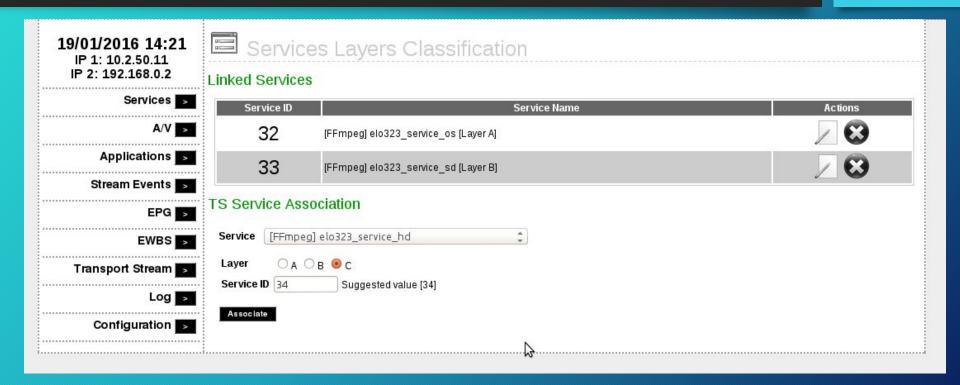


19/01/2016 12:45 IP 1: 10.2.50.11	A/V Playlist for Service 'elo323_service_os'		
IP 2: 192.168.0.2	Name	Action	
Services >	Associate Stream		
A/V >	Stream elo323 os		
Applications >	Associate		
Stream Events	Back		
EPG 🗾			
EWBS >			
Transport Stream			
Log s			
Configuration S			
1	i		

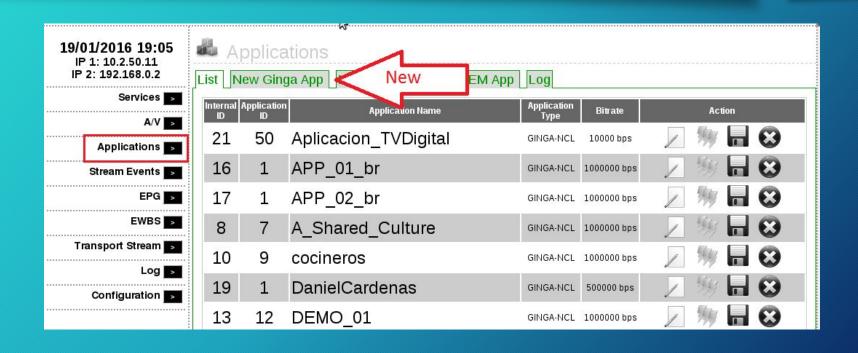


19/01/2016 14:17 IP 1: 10.2.50.11	Transmission Configuration	
IP 2: 192.168.0.2	Transport Stream: Proy_elo323_2015	
Services >	Configuration DVB-C DVB-T DVB-S ISDB-T	
A/V >	Transmission Mode	
Applications >	Out Interface Modulator 💠	
Stream Events	Network ID 1	
EPG >	Network Name Proy_elo323_2015	
EWBS >	Transport Stream ID 1	
Transport Stream	Original Network ID 1	
Log >	Broadcast Information Table (BIT)	₩.
	Affiliation ID 0	M.
Configuration	<u> </u>	7 (to a do not be by to do not be by to
	1st Descriptors Loop	(tag:length:byte:tag:length:byte)
	Save	

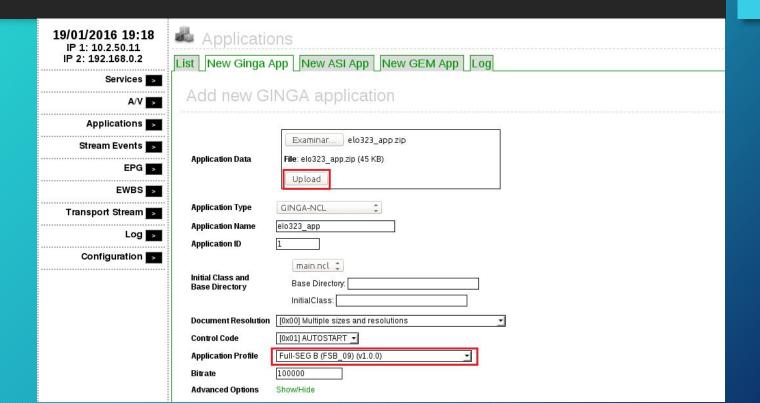




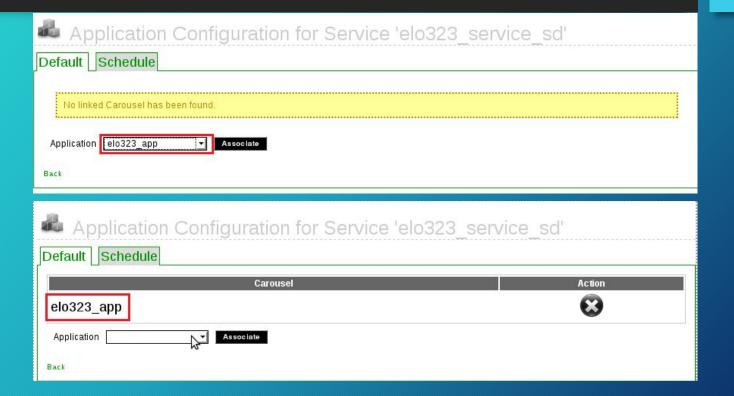
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Resultados Experimentales

Video