ECE-612 Project
TS Manipulator
Phase I
Points to be Covered

- What is Video Broadcasting?
- What is Digital Video Broadcasting (DVB)?
- Why DVB?
- MPEG
- MPEG 2 -Transport Stream
- System Setup
- System Design and Implementation
- Questions
Video Broadcasting

- Analog Video Broadcasting

  - Various Standards of Analog Video Broadcasting
  - Problems with Analog Video Broadcasting
    - Only one A/V in a given Broadcast Channel
    - No multiple Audios for given channel
    - No additional Services except Audio/Video
  - Inability to cope up with increasing need of time
Video Broadcasting

• Digital Video Broadcasting

• More Services in a given channel
• Multiple Audio or a given Video Service
• Quality of the Service
• Value added services such EPG
• Conditional Access System
• Scope beyond TV (can be used on Mobile etc)
MPEG

- Motion Pictures Expert Group
- MPEG 1
- MPEG 2
- MPEG 2 Transport Stream
- MPEG 4
A Typical Transport Stream

Simplified View of a Typical TS

Where,

Each slot denotes a TS Packet of 188 bytes length
A Audio Packet of a Channel
V Video Packet of a Channel
PAT Program Association Table, denotes which channel includes which Audio/Video Packets (It's an Index Page)
Numbers denote Channel Numbers
System Requirement Specifications

» Receive DVB-IP Data (TS Streamed on UDP)
» Parse the TS to Identify available Services/Channels
» Display the TS Information on the UI
» Except TS Manipulation Parameters through UI
» Manipulate the TS as per the Input Parameters
» Maintain the Output TS Bit Rate equal to the Input TS Bit Rate
» Transmit DVB-IP Data (TS Streamed out on UDP)
Processes & Threads

- TS Receiver Thread
- Software Demux Thread
- UI Thread
- TS Manipulator Thread
- Output TS Generator Threads
- TS Transmitter Thread
Data & Control Graph

Where:

1. Input Thread, Receives DVB-IP Packets and writes it into TS-Pool
2. Software Demux Thread, Parses TS and Filters A/V & Sys. Table Packets
3. A/V Packet Manipulator
4. System Tables Manipulator
5. Modified TS Pool Writer
6. Output Thread, Transmits DVB-IP Packets

C : If the TS Packet is an A/V Packet
!C : If the TS Packet is a System Table Packet
Real Time Challenges

• Avoiding Data Drop at the Input
• Avoiding Data Drop at the Output
• Maintaining Output Bit Rate equal to Input Bit Rate
• Equally Spaced modified TS Packets
Project Progress

• TS Pool RD/WR  Fully functional
• TS Packet Pool RD/WR Single RD/WR done
• UDP Rx/Tx  Fully functional
• MPEG2-TS Demux &  Design done
  Modifier
• User Interface  Design initiated
Questions ?