Conditional Access and DRM for Broadcast Systems

Course Code  PWL270
Duration  3 Day Course
Price  Available on request

Course Description

Content Protection for broadcasters is highly important. This course examines the technical architecture of content protection systems used by broadcasters. It identifies the objectives and key techniques necessary for successful systems and analyzes Conditional Access and Digital Rights Management used in broadcast systems. Standards exist from ETSI within the DVB family of technical specification and from the Open IPTV Forum. These approaches will be analyzed in some detail.

Objectives

Upon completion candidates will be able to:

- Identify the functions of content protection systems
- Compare cryptographic techniques employed to identify strengths and weaknesses
- Describe how standardised DVB Conditional Access systems function
- Use a Transport stream Analyzer to identify the Conditional Access System used
- Analyze Conditional Access And Service Information Tables
- Recognise the DVB CA Interface
- Describe how Digital Rights Management functions
- Describe the IPTV Forum approach to content protection
- Examine Youview, Marlin and Nagra systems

Target Audience

Who Should Attend:

Project Managers, Systems Engineers, Systems Integrators, Developers and service delivery engineers who have and
interest in learning about the security of content over an IPTV network.

Course Modules

Content Protection (18 topics)

- Objectives of content protection
- Intellectual property that must be protected
- Legal and technical requirements
- ETSI and Open IPTV Forum (OIPF) approaches
- OMA Open Mobile Alliance
- Cryptographic tools
- Symmetric and public key encryption systems
- Stream and block ciphers
- AES encryption standard
- Digital signatures
- Watermarking systems
- Protection Systems
- Conditional Access
- DVB Simulcrypt and Multicrypt
- DRM Digital Rights Management
- Protected Media Path
- HDMI High-Definition Multimedia Interface
- HDCP High-bandwidth Digital Content Protection

DVB Conditional Access Systems (21 topics)

- MPEG Transport streams
- Analyzing a transport stream using TSreader Hands-on
- Service Information Table Structure
- CA Identification Codes
- Basic symmetric key encryption used
- CA Table
- Control Words
- Encrypted Control Word Key transmission
- Variable key encryption
- ECM frequency
- Odd Even Key system
- User Management - EMMs
- Subscriber cards
- Subscriber System Management
- ECM and EMM based system enhancements
- Fingerprinting
- Pairing
Blackouts
ECMs and EMMs in the MPEG Transport Stream
ECM Bandwidth Calculation
EMM Bandwidth/Latency Calculation

Digital Rights Management (37 topics)
- Typical DRM Models
- Protected Services
- DRM Delivery Model
- Compliance and Robustness
- Copyleft and Copyright
- Data room
- Fair use
- Floating licensing
- Hardware restrictions
- License manager
- Open Digital Rights Language (ODRL)
- Open Music Model
- Product activation
- Smart contracts
- Smart Cow Problem
- Software metering
- Superdistribution
- Tivoization
- Trusted Computing
- Voluntary Collective Licensing
- Extensible Rights Markup Language (XrML)
- Rights Expression Language (REL) for MPEG-21
- Open Mobile Alliance (OMA) DRM v.2.0
- OMA Marlin DRM standards
- Authentication, Content Protection and
- Service Protection
- Subscriber Domain License
- Microsoft DRM System
- Microsoft Protected Media Path
- NAGRA Media Solutions
- NAGRA Media CABLE
- NAGRA Media DTT
- NAGRA Media DTH
- NAGRA Media IPTV
- NAGRA Media MOBILE
- NAGRA Media HYBRID
- NAGRA Media OTT
Services (3 topics)

- Yourview and how customers will get it
- Freeview
- Freesat

Prerequisites

Delegates should have a good understanding of IPTV technology and general broadcasting principles

What Our Customers Say

“*The instructors knowledge is fantastically broad and deep!*”

— Vice President, ABS-CBN

“*An excellent course, one of the best I have attended for IP training, covering a very wide range of topics.*”

— MCR Manager, Sky TV New Zealand

“*Good course, well presented. Good content and mix of theory and practical alike.*”

— Software Engineer, Arris
“Very good overview of technologies new and old.”

— Broadcast Engineer, Formula 1

“Very good background to help our development away from Broadcast TV.”

— Account Manager, Thomson

“TOMSON

Instructor knowledge and experience was excellent.”

— Solutions Engineer, Akamai

“Good level of detail and industry examples of the technology and its usage. Trainer extremely knowledgeable with a great deal of experience in the field.”

— Software Manager, Panasonic

“Panasonic