Understanding

# IPTV

"The Players - The Technology - The Industry - The Trends - The Future"

## Course Description

The course introduces you to the building blocks of IPTV. You will learn what IPTV is and what it isnt and why companies in the telecommunications industry are engaging in IPTV deployments. You will also learn about video production and distribution and the services offered in the IPTV product. This course describes the technical architecture of the IPTV solution and how an IPTV providers operational processes will change. This course also covers in-depth comparisons, trends, technologies used and the future of IPTV, plus alternate broadcast approaches currently used in the cable and satellite industry.

This course will also provide in-depth details for modern television broadcast systems and infrastructures, with particular focus given to the delivery of TV over the Internet. This will encompass both IPTV and Video on Demand (VoD). The course is designed to give students practical and real-world experience to this technology, equipment and network architectures that are being utilized to deploy these services. Lastly, this course provides an incredible comparison to other broadcast technologies and markets today.

## Students Will Learn

- **Identify why Telcos must offer an IPTV Solution**
- **Describe IPTV and its Components**
- **Describe the Service Components of the IPTV Solution**
- **Describe the Technical Requirements and their Functionality**
- **Describe the Operational Process Required to Support IPTV by the Telco**
- **Provide an Overview of Competitive Approaches**
- **Understand the Equipment and Software used to Deliver IPTV and VoD**
- **Describe the Architecture of these Modern TV Services**
- **Compare Cable, Over-Air Terrestrial, Satellite and Internet**
- **And much more...**

## Target Audience

This course is intended for Executive Management, Presidents, CEOs, CTOs, Supervisors, Managers and anyone inquiring into the world of IPTV Systems.

## Prerequisites

A basic understanding of telecommunications or equivalent knowledge. This information can be obtained in our courses below

TeleCom Networks Today II
Basic Telephony & Telecom Electronics

## Course Outline

**Module 1: IPTV Course Overview**

What IPTV Is
What IPTV Is Not
IPTV Benefits
The Technology

**Module 2: Telco Evolution & IPTV**

Telco Industry Dynamics
Triple Play Strategy
IPTV Challenges
The Players
The Trends

**Module 3: Video & Audio Processing**

Video Recording, Storage, & Distribution
IPTV Video Distribution Process
Viewing IP Video

**Module 4: IPTV Service Offerings**

Channel Packages
Audio Services
Interactive Program Guide (IPG)
Pay Per View (PPV)
Video on Demand (VOD)
Video Security
Personal Video Recording (PVR)
Additional Service Features

**Module 5: IPTV Technical Architecture**

The Evolution to IP
Technical Components Overview
Head End
IPTV Middleware
Broadband Core Network
Access Network
Home Network

**Module 6: IPTV Operational Processes**

Service Activations
Service Delivery
Customer Support
Network Operations
Content Management
IPTV Service Operations Manager

**Module 7: IPTV and Alternate Broadcast Approaches**

Cable TV Solution
Satellite TV Solution
IPTV Solution
Future Trends

**Module 8: Television Architecture and Evolution**

Introduction to Cable Broadcasting
The Signals
Analog Television
Digitally-Compressed Television
Digital Modulation: MPEG Hierarchy, MPEG1, MPEG2, MEGPEG4
Digital Video Broadcasting
Cable Networking Protocols
Over-the-air broadcasting

**Module 9: Cable Television Architecture**

Head-ends
Signal Reception
Head-end Signal Processing
Head-end Operation
Broadband Distribution Systems
Coaxial RF Technology
Coaxial Distribution Design

Linear Fiber-Optic Signal Transportation
Wavelength-Division Multiplexing
Linear Microwave Signal Transportation
End-to-End Performance
Upstream Issues
System Architecture
Service-Related Architecture Requirements
Architectural Elements and Examples
Digital Fiber Modulation and Deep Fiber Architectures
Network Reliability

**Module 10: Transmission for Next Generation Digital Systems**

Wavelength-Division Multiplexing
Linear Microwave Signal Transportation
Digital distribution Systems
Linear Fiber-Optic Signal Transportation
Fiber Optic Transmission
Passive Optical Fiber (PON)
Wavelength Division Multiplexing: CWDM and DWDM
End-to-End Performance
Upstream Issues

**Module 11: TV Distribution Systems**

Terrestrial UHF/VHF Broadcast Delivery
Satellite Television Delivery
Cable Television Delivery
IPTV Delivery
- From head-end to viewer
- Set-top Box Issues
- Next Generation Media Players
IPTV Service Features
Encoders: MPEG-2, MPEG-4, DVB-T, DVB-H

**Module 12: IPTV Network Architecture**

Applications and their service needs
TV Program Distribution
Components of IPTV Service Network
Video Head End (HVE), Video Hub Office (VHO) , Video Serving Office (VSO)
Streamers
Routers and Switches
Distribution Networks
Core Networks
Access Networks: Wired vs Wireless
DSL Technology: ADSL, VDSL
Satellite Access
Fiber and Copper Loops
Set-top Boxes

Media Player Applications
Video-on-demand
Integration with Telephones and Internet Access: Triple Play

**Module 13: Next Generation Network Technology**

Internet Protocol (IP) Delivery
Internet delivery options
Studio to distributor delivery
IP Delivery mechanisms
Unicast vs Multicast
Multicasting Addressing and Protocol Issues
PIM and IGMP
Quality of Service Issues
MPLS
21st Century Network Implications
Triple Play Networks
Internet TV Portal

**Module 14: The Customer Interface: Set-top Boxes**

Analog Video Reception
Digital Video Reception
Migration issues from Analogue to Digital
Consumer Electronics Interface
Equipment Compatibility
Networking Interfaces
Decoding Mechanisms

**Module 15: Security: Protected and Conditional Access**

Protected Broadcast Driver Architecture
Asymmetric Public Keys
Symmetric Keys
Revocation
Windows Media Digital Rights Management
Watermarking

**Module 16: Industry Trends**

Transmission innovations
HDTV and Improved Quality
Convergence Protocols

## Delivery Method

Instructor led with numerous Case Studies and exercises.

## Equipment Requirements

**(This apply's to our hands-on courses only)**

BTS always provides equipment to have a very successful Hands-On course. BTS also encourages all attendees to bring their own equipment to the course. This will provide attendees the opportunity to incorporate their own gear into the labs and gain valuable training using their specific equipment.

## Course Length

1 Day