It’s not just TV, it’s my TV!
Networks Need To Be Managed Simply…

The management of telecommunication systems, networks and services proves to be a complicated task. More than ever, carriers are facing severe integration difficulties, and due to a plethora of technologies, vendors & middleware, they seek for an all-in-one solution to replace existing management silos efficiently and cost-effectively.
INTRACOM TELECOM offers a complete content delivery solution that enables Telecom operators to offer “Multi-Play” services over any IP-enabled access network, either homogeneous (e.g. exclusively xDSL or FTTH network) or hybrid ones (e.g. a combination of xDSL and DVB-T network), leveraging the benefits of each network type. The Full-Service Content Distribution Network (fs|cdn) platform of INTRACOM TELECOM allows Telcos and broadband service providers to bundle video with existing data and telephony services and offer a complete service package to their customers.

Furthermore, the fs|cdn™ platform provides a common interface for service provisioning and subscription management, while it is interoperable with 3rd party access network element management systems, as well as billing and customer care systems.

Platform modules & components

The complete fs|cdn™ solution includes all elements required for the reception, protection, distribution and consumption of digital content, starting from the Video Encoders and Video on Demand Servers (at the head-end), the Content Encryption modules, and going all the way, until the IP Set-Top Boxes and the Interactive Service Guide for the end users to access a plethora of value-added services.

The platform also includes a wealth of management tools and interfaces, while the offering is completed with the necessary business and content consulting, as well as the customization services that an operator or service provider may require to effectively compete in the Triple-Play services arena.

In the aforementioned long list of platform modules and components, INTRACOM TELECOM owns, develops, and continuously enhances:

- the Middleware (both server and client / Set-Top Box side)
- the Conditional Access / Content Protection (both server & client / Set-Top Box side)
- the Service Management modules and interactive applications

The total solution is complemented by encoders, Video on Demand servers and Set-Top Boxes manufactured by 3rd party partners, nevertheless all tightly integrated by, INTRACOM TELECOM, as part of a turn-key project.

Services

The services supported by the fs|cdn™ platform include:

- Broadcast digital TV / radio
- Video on Demand (VoD)
- PVR & Time-shifted TV
- Parental control
- On-line gaming
- Multiple languages support
- On-screen content services
- Integrated Telephony Services
- T-commerce applications
- Unified messaging (Voice-mail, e-mail, Chatting / Messaging) on TV
Video Head-end

The Video Head-end enables the reception, encapsulation, encryption and transmission of the video content obtained from local or remote sources, either in live or stored format. This module may also include all the video servers that allow the delivery of Video on Demand (VoD) services. In addition, Video Head-end controls the components of the content delivery network and provides the interface with the Core Network.

Video Head-end equipment & video processing

Video content is usually received from remote or local content providers in the form of digital satellite feeds, IP streams or even analog live camera / video feeds. The configuration of the Audio / Video processing equipment strongly depends on whether the A/V content source is analog or digital. The video content received in either format can be processed either real-time (TV broadcasting) or can be stored on local video servers for time-shifted view in the form of on-demand services (e.g. Video on Demand, network-based Personal Video Recording).

The fs|cdn™ platform has been integrated with a number of Video Head-end equipment vendors, ensuring smooth operation and timely deployment.

Nevertheless, it should be underlined that the fs|cdn™ platform is transparent to the encoding scheme employed, enabling the operators to select the encoding format based on the quality of the service they want to offer and the capabilities of the client devices.
Conditional Access Content Encryption System

Video content protection

After being processed by the Video Head-end components, all video outputs, including the ones stemming from local video servers, are routed to the fs|cdn™ IP Scrambler.

The IP video packets are then encrypted, using the fs|cdn™ Conditional Access System, in order to be securely transmitted over the Core and Access networks.

The fs|cdn™ Content Encryption System is transparent to the encoding scheme employed, enabling the operators to select the encoding format based on the quality of service they want to offer and the capabilities of the underlying network infrastructure.

The fs|cdn™ Conditional Access (CA) includes the subscriber authentication / authorization and content encryption mechanisms. It also provides centralized Rights Management by generating usage and charging records thus tracking the end-user access to the content (either for Pay Per Order, Pay Per View or on-demand offerings).

The CA interacts with the Subscriber Management System (SMS) for the authorization of services and users and with the Content Transmission Management System (CTMS) for the encryption of the content that is being transmitted. The decryption process takes place at the subscriber Set-Top Box or the subscriber PC.

Generally, the CA module enforces all content protection policies, supporting both subscription, Pay Per Order and Pay Per View models. The CA handles subscriber authentication and authorization and also manages encryption keys distribution, safeguarding content provider revenues.

Content Distribution Edge Network

The Content Distribution Edge Network handles end-user interaction and carries out real-time authentication and authorization of subscribers and delivery of content through the fs|cdn™ Edge Servers. These modules are located either at the Central Offices - in the case of a centralized deployment scenario - and/or the Points of Presence (PoPs), in the preferred case of a distributed architecture.

Edge architecture for content distribution

The fs|cdn™ platform supports both types of content distribution (i.e. centralized & distributed) and operates seamlessly regardless of the underlying access network technology (e.g. DSL, ETTH, FTTH, Broadband Wireless). Edge Servers perform user authentication and authorization and instruct the corresponding access node (e.g. DSLAM, OLT) to connect the user with the requested multicast/unicast stream. Edge Servers also transmit the encryption-keys for the requested content and maintain usage records.

They also maintain personalized copies of the Interactive Service Guide and retain user preferences, as well as optionally providing value-added services like information / content services on TV.

The distributed Edge architecture employed in the fs|cdn™ platform provides enhanced redundancy, reduces traffic on the core network and allows for service customization and local user management.

In addition, it allows platform operators to adopt a “buy-as-you-grow” model, minimizing the up-front investment.

For the delivery of Video on Demand (VoD) services, which require point-to-point traffic, two scenarios can be applied depending on the number and the distribution of video subscribers. When subscribers reside in a small concentrated area, they can be served from a single network point of presence (one PoP). In order to serve a larger number of subscribers and avoid single point-of-failure, the fs|cdn™ platform can also be deployed in a distributed fashion; replicating the Network Operation Center (NoC) functionality to distributed PoPs where the VoD and PVR servers are located. Each server handles the requests from a small number of subscribers, reducing the traffic on the core network. A distributed deployment ensures better customer response-times as the servers are near the customer premises, while it allows for gradually serving a larger number of subscribers.
Customer Premise Network

The Customer Premise Network includes all the hardware (DSL modem, Set-Top Box and/or PC, analog or IP Phone) and software components (i.e. middleware, applications) that subscribers need to access the available Interactive Content Services.

The video services are implemented using a set of software modules that reside on the customer premise equipment and cooperate with a number of distributed servers located at the Content Distribution Edge Network, enabling service selection, service presentation, application downloading, secure storage, content descrambling and encryption key management.

The fs|cdn™ Client Software comprises Java-based software modules that run on digital TV Set-Top Boxes and PCs, which interoperate transparently with the rest of the fs|cdn™ platform providing a user-friendly interface to service subscribers.

Customer Premise Equipment & Interactive Service Guide

The fs|cdn™ platform encompasses all components required for the delivery of broadband converged services, including Customer Premises Equipment (CPE) and Customer Software modules.

The CPE devices are interconnected using Ethernet cabling although alternative home-networking technologies like Ethernet-over-Coax, Home PNA and PowerPlug could be utilized.

For the support of video services, the fs|cdn™ solution includes approved third-party IP Set-Top Boxes, offering great flexibility to the end user. In addition to this, INTRACOM TELECOM is in position to suggest a complete set of CPE devices, including the broadband access modems (e.g. xDSL modems) and Integrated Access Devices (IADs).

In addition to the aforementioned CPE devices, INTRACOM TELECOM’s main offering also includes an interactive service catalogue software component, otherwise known as Interactive Service Guide (ISG), enabling customers to log onto the network, connect to the service providers’ portal, view the available content packages and subscribe to individual or bundled services.

The catalogue service allows users to navigate, preview and select TV channels, Pay Per View events and the available value-added services.

ISG has been implemented using jvClient, an XML-based interactive graphical environment for PCs and embedded devices like Set-Top Boxes. It can be easily ported on different hardware platforms and graphic environments ensuring compatibility with 3rd-party Set-Top Box and PC platforms.

The ISG may also be offered as a Software Development Kit, allowing service providers to customize the presentation of their services and develop new applications.
The Integrated Management Platform provides centralized monitoring & management of network elements, content assets and system users, enabling operators to control all system parameters from a single, unified interface.

Furthermore, the Integrated Management Platform provides tight control of the content transmission process, minimizing network traffic and ensuring high QoS for delay-sensitive traffic. The Integrated Management Platform represents the interface of operators and service providers with the fs|cdn™ platform, allowing them to define service packages, provision and authorize subscribers and maintain usage records of the individual system resources.

**Integrated Management Platform modules**

All individual modules of the fs|cdn™ platform are controlled by the Integrated Management Platform that enables centralized monitoring and management of network elements, content assets and subscribers. The individual modules of the fs|cdn™ Integrated Management Platform described hereafter include the:

- **Subscriber Management System (SMS)** that enables the subscriber provisioning, service bundling and commercial packages definition, CPE assignment and inventory monitoring, as well as detailed usage records maintenance for all types of services. Specifically, the SMS stores and manages information regarding subscribers, services and assets and interacts with the other management modules, as part of the service provision and subscriber administration processes.

- **Content Transmission Management System (CTMS)** that allows operators to control the content transmission process. This module enables the service providers to access the system resources and render video and data services effortlessly and in an automated manner. The primary responsibilities of this module are the management of the system’s transmission engines and the management of the resources (e.g. storage, bandwidth) used by the service providers.

- **Network & Element Management Systems (NMS & EMS)** that controls the operation of the IP Streamers / Scramblers at Video Head-end, the Content Distribution Edge Network and the Customer Premise components. The NMS also integrates well with third-party element management software, ensuring efficient operation of the content delivery platform. Monitoring and control of resources, is not limited only on the hardware components but it is also extended to the application level (remote initiation / termination of applications). The NMS also provides an interface, which enables Service Providers to monitor and manage the physical fs|cdn™ resources they have leased for service provision.

The integrated nature of the fs|cdn™ management platform ensures transparent operation of services while it guarantees optimal performance and availability of network resources.
Services & Offerings

INTRACOM TELECOM’s fs|cdn™ platform is designed to support several types of services, ranging from plain telephony to high-speed data access and enhanced video entertainment, that would allow service providers to offer attractive services to their customers and add significant value to their existing customer packages.

Specifically regarding telephony, it must be underlined that such services have been tightly integrated with the fs|cdn™ platform, enabling telecom operators, Internet service providers, property owners, utilities and enterprises to offer true “Triple-Play” Services.

Over the fs|cdn™ platform, users can enjoy advanced telephony and messaging services like Caller-ID, Phone Directory services and messaging over their TV sets.

All such services are made available by integrating the fs|cdn™ platform with the existing voice switch or softswitch that Providers operate.

Platform upgradability

fs|cdn™ is designed to be application-transparent and accommodate any additional services that may be required by the service providers, or any new applications that may emerge in the future.

At any time, the platform can be upgraded in order to enhance the service offerings, according to market and customer demands, enforcing the service provider to obtain market leadership in the multimedia service provision arena.
Entertainment / Video Services
- Broadcast digital TV & radio
- TV information overlay
- Video and music on Demand
- Pay Per View movies
- Personal Video Recorder (PVR)
  - Time-shifted TV
- Parental control features
- Favorites channel bookmarking & layout customization
- On-line gaming
- Multiple languages support
- Advanced search on video programs, based on title, actor & category

Data Services
- Content services from collaborating providers (e.g. sports news, finance, weather)
- Emergency Alert and promotion messaging
- Interactive applications, including:
  - On-line, bundled billing information
  - Subscriber self-care (personalization, subscription, billing)
  - On-line browsing and subscription to individual content packages
- Presence notification for multiparty services (e.g. Games, Chatting)
- T-commerce
- Enhanced TV applications

Telephony Services
- Basic dial-up telephony (using analog or IP terminals)
- Advanced telephony features on PC and TV sets:
  - Caller ID (on telephones / TVs)
  - Call waiting
  - Call transfer
  - Three-way calling
  - Call hold & music-on-hold
- Phone Directory (on telephones / TV)
- Unified Messaging (Voice-Mail, e-mail, Chatting / Messaging on TV)
Solution Benefits

The fs|cdn™ solution enables operators to deploy Triple-Play services in a cost-effective way enhancing their profitability, reducing the customer churn and accelerating the recovery of their network investments.

fs|cdn™ offers:

- End-to-end “Triple-Play” solution, eliminating the need for extensive cross-vendor interoperability tests and therefore enabling operators to enter the market quickly
- True integration of IP-Telephony with video and data services
- Incorporation of a comprehensive, end-to-end content protection mechanism, covering all aspects of user authentication, authorization and content encryption, thus ensuring service providers revenue streams and easing content providers intellectual property concerns
- fs|cdn™ middleware allows quick customization of the Interactive Service Guide, while it enables operators to develop their own services and applications
- Remote CPE configuration and management enabling operators to minimize set-up time and customer support costs
- Unified application environment, allowing subscribers to access the same services over TV and/or PC, transparently roaming their preferences and personalization settings
- Based on a distributed architecture which enhances system reliability, reduces traffic on the core network, enables gradual network deployment and reduces response time to TV channel-change requests

Professional Services

The wide breadth of INTRACOM TELECOM’s expertise in most areas of the Content Delivery business enables quick time-to-market and adaptation of the final solution to customer requirements.

INTRACOM TELECOM possesses the know-how required in order to be involved in all steps of a successful service delivery proposition and provide a rich portfolio of professional services, including:

- Business cases development
- Network Planning, Design & Optimization
- Content Delivery Solution Design & Implementation
- Service Customization
- Customer Training
- After-Sales Support
- Content providers / Aggregators Partnership Development

The rapid evolutions in the telecommunications area, as well as the changes in operation and development of Service Providers and Network Operators, dictate the utilization of integrated platforms & networks, as well as the effective support in all areas of business operation.

Responding to these demands, INTRACOM TELECOM has established the workforce and processes to provide turnkey solutions and help Operators expand their business, as the only way to ensure INTRACOM TELECOM’s own growth and success.
INTRACOM TELECOM is an international telecommunication systems vendor operating in Eastern Europe, the Middle East & Africa, Russia, the CIS and Asia-Pacific. Over 100 customers in more than 50 countries choose INTRACOM TELECOM for its state-of-the-art products and solutions. INTRACOM TELECOM has 2,400 employees, operates subsidiaries in 16 countries and is amongst the largest European companies leading in R&D investments. Since June 2006, INTRACOM TELECOM has been controlled by JSC SITRONICS (Russia) with 51%. JSC SITRONICS is the technology subsidiary of JSFC SISTEMA, a leading diversified holding company in Russia and the CIS. INTRACOM HOLDINGS Group (Greece) retains a 49% stake.