



**SCTE**

**Central Florida Chapter**

**IP Applications & Revenue**

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# Driving Forces

- **MSOs have invested billions in plant upgrades**
- **Investors are pressing MSOs for increased revenues to maximize the networks and upgraded infrastructure**
- **DOCSIS provides common IP transport capability for multi-services**
- **Competition from the RBOCs**

# Potential IP Applications

- **Tiered Data Services**
- **Home Networking**
- **Security Monitoring**
- **Interactive Gaming**
- **Videoconferencing**
- **Unified Messaging**
- **Telecommuting**
- **Intercom and paging services**
- **Streaming media and entertainment**
- **PacketCable voice services**

# Security Monitoring

- **Security Broadband**
  - **Backed by Cox, Comcast, Adelphia, Charter, Rogers & Shaw**
  - **SafeVillage System - Uses DOCSIS Cable Modems & 128 kb/s**
  - **Comcast to test in Sarasota, FL and Cox has entered a marketing phase in Las Vegas**
  - **Service is 7x24 including two-way audio and real-time video applications letting you see and hear inside your home**
  - **False alarms (95% of alarms) could be more reliable and verifiable through more intelligent systems offering real-time video & audio**
  - **\$499 complete installation + one year monitoring service contract for \$39.95 per month**
  - **20% of homes in USA have a security service**
  - **Subscribers can remotely view their premises, checking on family or pets via an Internet Connection to a password protected Web site**

# Residential Video Conferencing

- Videophones vary in price from \$1000 to \$1500 each, with voice and video via IP.
- Lower cost solution such as buying a PC camera for \$30 to \$100 and paying for phone charges for the audio portion of the call.

# Tiered Data Services

- **Charter's Offering**
  - **256 Kbps for \$24.95 (45% of subscribers are taking the service)**
  - **512 Kbps for \$30-\$35{depending on region} (45% take rate)**
  - **768 Kbps or higher (balance of customers are subscribing)**

# Home Networking - What Is It?

- **Traditional Definition:**
  - A technology that lets you connect computers and other devices to each other and the Internet.
- **What Would That Allow Me To Do?**
  - Allow more than one computer to access the same Internet connection or printer.
  - Play games and share files between two or more computers.
  - Play your computer's MP3 music collection on your stereo.
  - Use web cameras to set-up a home security system.
  - Share peripherals such as printers and scanners.
- **Consumers Possible Options Today**
  - Purchase additional IP addresses for \$5 to \$10 each per month or use a Network Address Translation (NAT) solution.

# Why The Sudden MSO Interest In Home Networking?

- **Competition from telephone companies**
  - **Telco's offer DSL**
  - **Providing home networking allows them to offer "full-solution" services, creating an edge to gain and retain more DSL customers**
  - **MSOs in order to remain competitive must offer similar solutions and may have an advantage since home entertainment appears to be consumers key interest**

# RBOC Efforts

## ● BellSouth

- Just introduced their “FastAccess Internet Service”
- Allows DSL users the ability to share their high-speed connections
- Using 2Wire’s home networking gateways
- Deploying HPNA, studying wireless options, especially 802.11b
- Positioned towards ease of installation/use - probably wouldn’t appeal to those with knowledge of installing Category 5 wiring

## ● SBC Communications

- Launched service last summer
- Deploying 2Wire’s home networking gateways with HPNA
- Averaged 2000 sales per month in Q3-2000
- Targeting DSL users with the beginnings of a bundled package of services, including security monitoring, telemetry and device control
- Slowing down its efforts due to regulatory issues

# RBOC Efforts

- **Verizon**
  - **Marketing 2Wire's gateways to DSL user base**
  - **Deploying HPNA, but exploring wireless options, including 802.11a, 802.11b and Bluetooth.**
  - **Taking a more aggressive approach and working with homeowners before they move in to design structured wiring systems**
  - **Working with 250 home builders to pre-wire homes from everything from security systems to shared high-speed Internet access**

# Others Who Want A Piece Of The Action

- **Everyone wants to own the home network, billions of dollars are at stake**
- **Telecom cabling firms, electrical contractors and sound companies are all getting involved in cabling and networking**
- **Sears has engaged in a trial in Dallas, TX with Ucentric, a software company that has developed a platform that ties together electronic devices ranging from computers and TVs to stereos and phones**

# AT&T Trial Findings

- **Five month trial took place in Seattle, WA**
- **Offered a free, managed system that could link their cable modem driven home computers to TV sets and stereos**
- **Discovered:**
  - **Subscribers most often used the network to link multiple PCs to peripheral devices and to share MP3 and CD audio files**
  - **Participants spend more time listening to audio with the home server and the file sharing technology**
  - **Personal video recording (PVR), otherwise known as digital video recording (DVR) is considered critical in terms of developing different services and revenue streams**
  - **Subscribers preferred a monthly package offered for a fee, with installation provided and no purchase of equipment**

# Current Popular Applications

- **Personal Video Recording (PVR)**
  - Often referred to as: Digital Video Recording (DVR)
  - Most popular in-home entertainment service
  - Uses content storage technology to allow broadcast content to be cached, cataloged, and stored for later retrieval
  - Consumers may create custom TV viewing, recording the specific episode broadcasts, and watching at their convenience, even blasting through commercials
  - TiVo and Replay TV were early market adopters
  - PVR use is estimated at just over 1 million units in the U.S.
  - 75% of current PVR systems were sold by satellite dealers in the last 18 months, with EchoStar's, DishPVR 508 integrated receiver and PVR offering up to 80 hours of storage
  - MSO's see the threat and many view PVR as the next generation service beyond VOD and SVOD

# Current Popular Applications

## ● PVR Sidecar Architecture

- A box with PVR storage and processing capabilities connects with the digital set-top box
- AT&T announced market trials with partner TiVo, which provides a box that communicates via IR with the set top - priced at \$299 for the 40 hour TiVo plus a \$9.95 monthly service fee.
- Keen Personal Media and CacheVision are current vendors

## ● PVR Centralized Server Architecture

- Two current vendors: Ucentric & Moxi Digital
- Ucentric conducted trials with Comcast, AT&T and Rogers and discovered this to be their most popular application
- Consumers were willing to pay \$15/month to have two sets on a single PVR and up to \$5 for each additional set
- 70% of customers stated that multi-TV PVR was a “must-have”

# Another Application

- **Caller ID**

- **Multi-screen Caller ID, which allows subscribers watching TV to view a pop-up in the corner of the screen showing the name and number of the person calling or may display Caller ID information on the PC**
- **Ucentric found this to be the 2nd most popular application in their service offering**
- **Consumers were willing to pay from \$2 to \$4 per month**

- **Digital Jukebox**

- **The transfer of music from multiple stereos and computers to “the best speakers in the house”.**
- **Subscribers and retail customers are willing to pay \$3 to \$5 a month to have their music portable.**

# Networked Appliances - The Future

- **Possible Appliances:**
  - **An alarm clock that can adjust its wake-up time based on your calendar and current weather and traffic conditions. The alarm clock may turn on the bedroom lamp.**
  - **An Internet-enabled home security system that allows you to see the people approaching your home when you are in the office.**
  - **A refrigerator that reports to a service station when it needs maintenance, without ever needing to inform the owner.**

# Networking Technologies - Wired Technologies

## ● Ethernet

- CAT 3 - Supports 16 Mbps. Supports 10BaseT. FCC now mandates all new home wiring installed be at minimum category 3.
- CAT 5 - Supports 100Mbps & 1000Mbps (with four pairs)
- Majority of homes have neither type.
- Medium Cost: Low hardware cost, higher cost if new wiring is installed.
- Good privacy

## ● HPNA 2.0

- Leverages existing telephone wire (including quad wiring)
- Supports >10Mbps, 100Mbps in next generation
- Good Cost: initial installation <\$100
- Good privacy

# Networking Technologies - Wireless Technologies

WLAN System	Physical Layer	Real Max. Throughput	Max. Range	Frequency	QoS	Shipping
802.11b	11 Mbps	6 Mbps	100 m	2.4 GHz	No	Now
802.11a	54 Mbps	31 Mbps	80 m	5 GHz	No	Now
802.11g	54 Mbps	12 Mbps	150 m	2.4 GHz	No	Late 2002
HomeRF2	10 Mbps	6 Mbps	50 m	2.4 GHz	Yes	Now
HiperLAN2	54 Mbps	31 Mbps	80 m	5 GHz	Yes	2003
5-UP	108 Mbps	72 mbps	80 m	5 GHz	Yes	2003

# CableHome

- **CableHome Architecture Framework Technical Report is now at “Interim” status.**
- **Defines interface specifications that facilitate the delivery of cable-based services into the home and enables core DOCSIS functionality on home networks, with additional focus on home network management.**
- **The functionality concerns that are being addressed are:**
  - **Provisioning**
  - **Network Management**
  - **Quality of Service (QoS)**
  - **Network Address Management**
  - **Security**

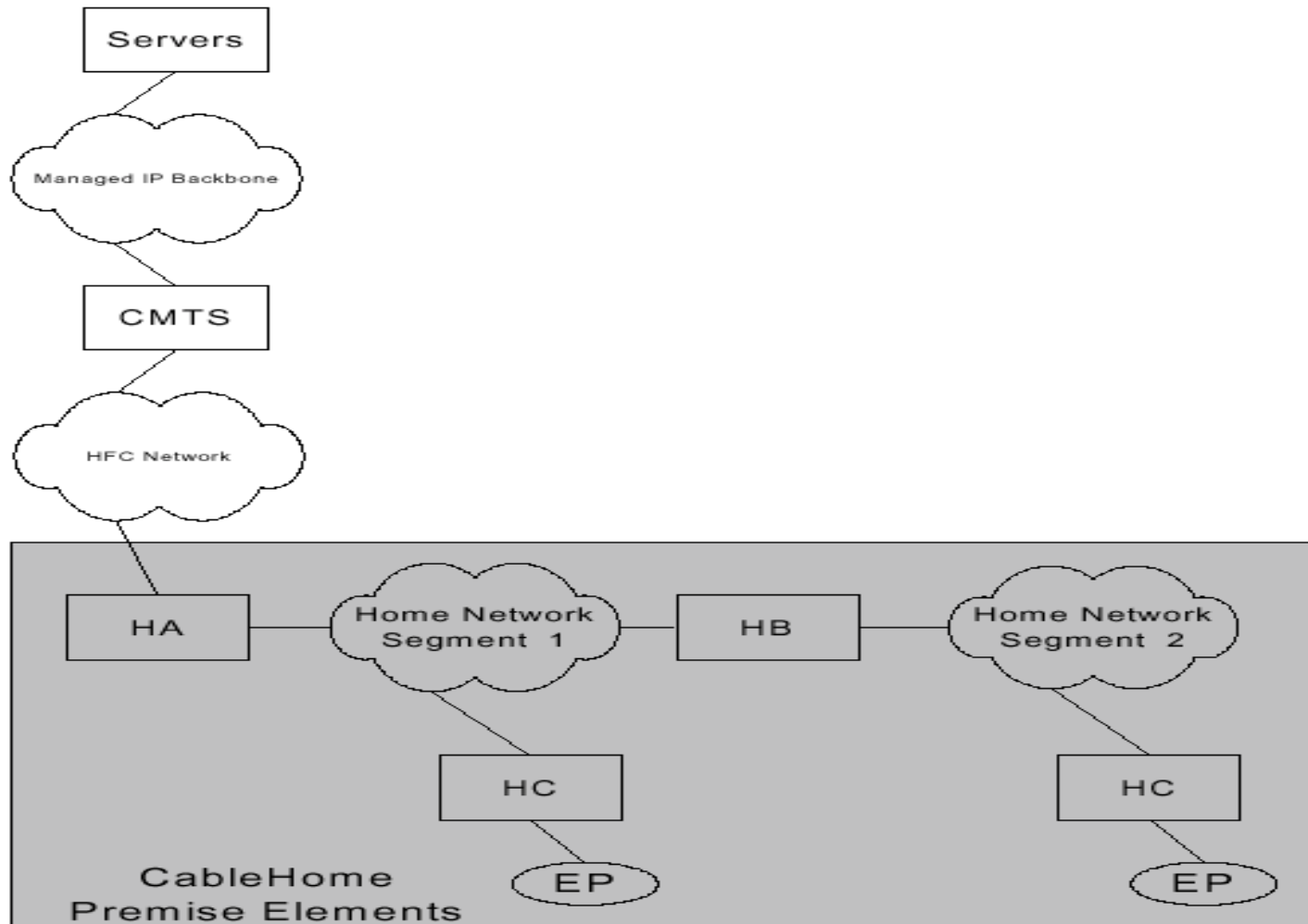
# CableHome Basics - Domains

- **Introduces the concept of domains**
  - **Composed of two sub-domains**
    - **Q-domain (QoS) and M-domain (Management domain)**
- **Introduces two distinct classes of logical elements and are used to extend or terminate the CableHome domain.**
  - **gateways (GW)**
  - **boundary points (BP)**
- **Non-compliant devices, known as endpoints (EP), are isolated from the CableHome-compliant network by the boundary point preventing the EP from adversely affecting the CableHome network.**

# CableHome Basics - Device Classes

- **CableHome defines three classes of devices.**
  - **HA (Home Access)**
    - One DOCSIS physical network interface
    - Zero or more CableHome compliant network interfaces
    - Zero or more CableHome non-compliant interfaces
  - **HB (Home Bridge)**
    - Zero DOCSIS physical network interfaces
    - Two or more CableHome compliant interfaces
    - Zero or more CableHome non-compliant interfaces
  - **HC (Home Client)**
    - Zero DOCSIS physical network interfaces
    - One or more CableHome compliant network interfaces

# Simple CableHome Reference Architecture



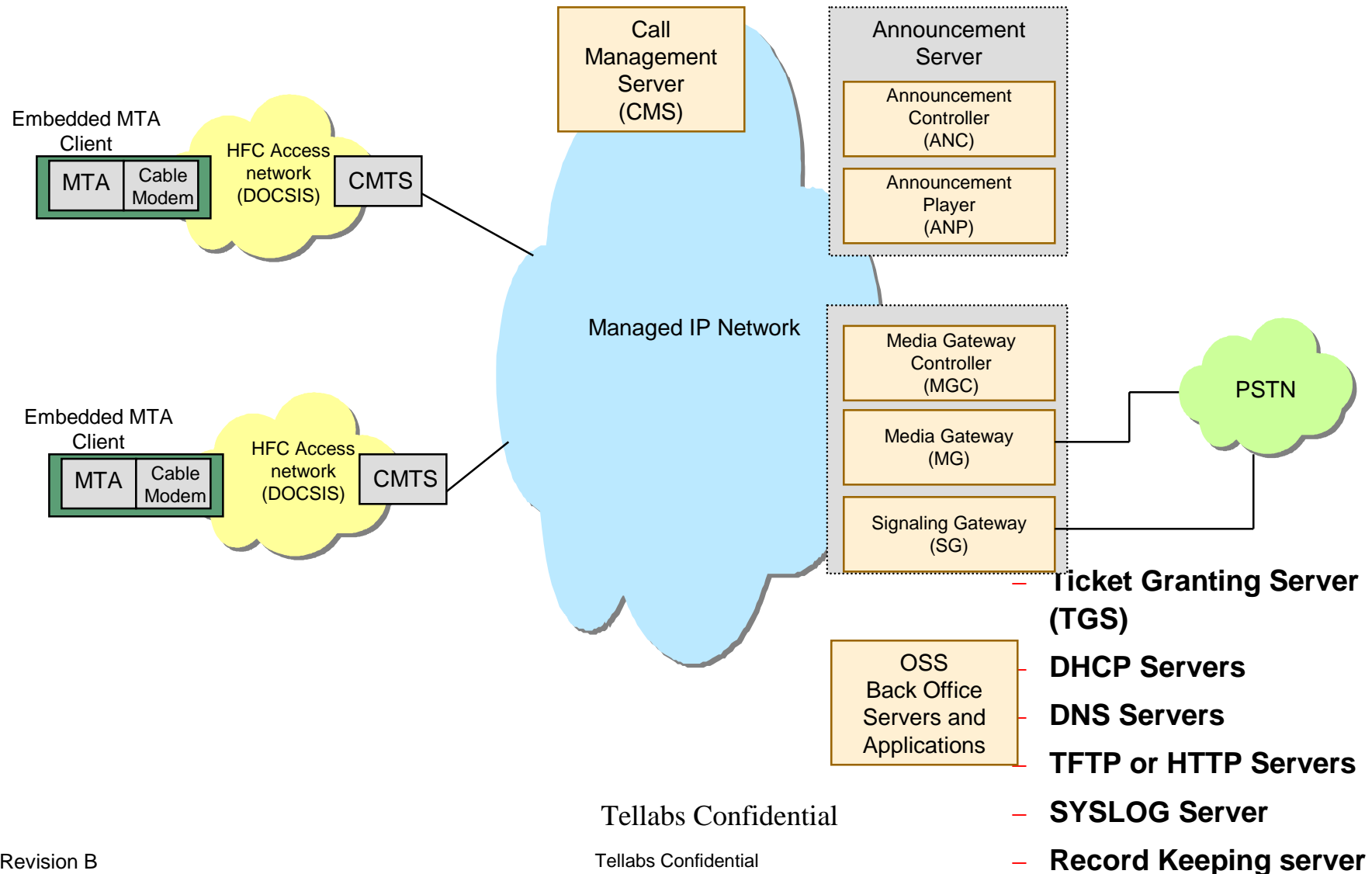
# Home Networking - Further Business Info

- **Some Data Points To Ponder**
  - **Jupiter Media Metrix survey found that 28% of broadband homes have some type of home networking setup versus 5% of dial-up households.**
  - **Earthlink is to offer cable-based home networking service for \$9.95 per month plus \$149.95 for a 2Wire box that uses a HPNA scheme or \$300 for a box with wireless 802.11 connection. This buys the consumer a managed service, including a firewall and security features.**
  - **Linksys has completed a marketing deal in January to sell its gear to AT&T BB cable modem subscribers. According to Linksys, 40-50% of broadband homes have multiple PCs. AT&T BB is reported to be receiving 10-15% of all Linksys gear sold.**

# Home Networking Business Case

- **What Is The Business Case? Questions to Consider**
  - **Should we consider wired or wireless solutions? Or both?**
  - **Which service should be deployed?**
    - **Firewall**
    - **Intrusion Detection System**
    - **AntiVirus**
    - **Parental Control**
  - **Do I charge for each service or is this only a gimmick to attract broadband subscribers?**
  - **Do I offer installation or not?**
- **Most MSOs are trying to determine the business model for their subscribers and the answers are not yet clear.**

# PacketCable Architecture



Tellabs Confidential

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Revision B

# **PacketCable Multi-Media (moving beyond voice)**

- **PacketCable from the conception was intended to be a technology from which to launch multiple multimedia services - voice was just the first service application tackled**
- **PacketCable is now defining the multimedia architecture report**
- **Application managers and policy servers will be new components**
- **The application manager will contain applications and will likely be MSO operated although, third party application providers are a possibility**
- **The policy server will acts as a broker between the application manager and CMTSs**

# Summary

- **There will be new services and applications which will lead to higher revenues per subscriber for MSOs**
- **Most of the new services are expected to work with PacketCable Multimedia and CableLabs Home Networking standards**
- **The future is bright for broadband**



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