Use Cases Over Coax In Access Environments
Helge Tiainen, Business Development InCoax Networks
Chair MoCA Access Working Group
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MoCA Overview

- Alliance established in 2004.
- Fastest and most reliable home networking technology standard available.
- MoCA Access specification now available.
- Actual throughputs (MAC) of 1Gbps (MoCA 2.0), 2.5Gbps (MoCA 2.5) and future 10Gbps (MoCA 3.0)
- Uses existing coaxial cabling. Not dependent on type or age of wiring.
- MoCA in deployment by cable, telco and satellite operators worldwide.
- More than 270 million chipsets in the field
- 225 certified products.
MoCA Technology Roadmap

Numbers shown indicate actual data rates.

MoCA 1.0
100 Mbps

MoCA 1.1
175 Mbps

MoCA 2.0
1 Gbps

MoCA 2.5
2.5 Gbps

MoCA Access™ 2.5
2.5 Gbps

MoCA 3.0
10 Gbps

2005
2006
2007
2010
2015
2016
2017
2018

MoCA 1.0
Field Tests
Demonstrated 100+ Mbps in 97% of all outlets
250 homes (U.S.)

MoCA 2.0
Field Tests
Demonstrated 400 Mbps in 90% of all outlets
212 Homes (U.S.)

MoCA Wi-Fi® Mesh Field Tests
MoCA 2.0: 800 Mbps in 100% of homes
MoCA 2.0: 900 Mbps in 75% of homes
Orbi: 300 Mbps in 50% of homes
Eero and Plume: less than 200 Mbps
MoCA Access 2.5 Features

- Transparent IEEE802.3 bridge
- MAC speed up to 2.5Gbps (DL:2.5/UL:2.0)
- Configurable DL/UL ratio
- Profiles for 1.0 /1.5/2.0 or 2.5Gbps MAC rates
- MAC using time division multiple access (TDMA)
- Supports up to 512 multicast addresses and full VLAN range
- Shaping and QoS up to eight classes
- Average latency < 3ms
- Max MTU size 2k
- Client node with three power states

- Frequency range 400-1675MHz
- Profile C 225MHz/profile D 300,400 or 500MHz bands with channel bonding
- P2PM up 63 modems
- PHY using time division duplexing (TDD) and OFDM modulation
- Up to 1024QAM
- Packet error rates < $10^{-6}$ or $10^{-8}$
- Supports multicast over a coax link
- 5 pre-defined bands for AL-IP or co-exist TV services
- AES cryptographic algorithm with 128-bits key with AATEK refreshment within six hours
- Three power contours with 45dB, 55dB or 65 dB link budget
Coax Network Topologies

- Star, cascade, tap and tap/splitter
GPON Co-existence With TV
GPON Co-existence With TV And DOCSIS 3.0
GPON Co-existence With Satellite
GPON Using Full Coax Spectrum
How Does MoCA Access Work?

QoS, Shaping, Link Booking, Security, VLAN, IGMP, Management

Network Processor

MoCA 2.5 MAC-PHY

Ethernet

IEEE1905

MoCA Access MIB’s / TR-181 / YANG

2 RF-channels, 200MHz
3 RF-channels, 300MHz
4 RF-channels, 400MHz
5 RF-channels, 500MHz
250 m

Fiber

Ethernet

Ethernet
InCoax Coax Link Controller – In-building Node

Key features:
- Accumulated 10 Gbps over four RF-ports
- Each RF-port delivers 2.5 Gbps
- Delivers IPTV, VoIP and high-speed Internet
- Operational bands between 400-1675 MHz
- Co-exist with terrestrial and cable-TV services
- Uses existing in-building coaxial cables
- Delivers broadband through existing antenna outlet
- Fast and cost-efficient in-building deployment
MoCA Access 2.5 Management Model

MoCA TR-181 Objects and MoCA MIBs are one to one mapped
(MoCA MIB OIDs are included in the MoCA TR-181 objects)

BBF TR-069 CPE WAN Management Protocol (CWMP) [L7]
SNMP [L4]

SNMP Agent

MoCA TR-181 Data Model

TR-069 Agent (Specified by BBF)

Management Agent (Proprietary)

MoCA Layer 2 Remote Management Protocol

MoCA MAC/PHY

MoCA Management MIB & Vendor_Specific TLVs [L2]

MoCA Remote Management Frames [L2]

MoCA Datagrams [L1/L2]

Network Management Entry Node (Access NC)

Network Managed Node (Client Node)
InCoax Remote Management

- CLC RF-channels settings and accumulated MAC speed
- PHY speed to each modem
- Attenuation to each modem
- Packet loss to each modem
- Modem and Wi-Fi status and Ethernet ports connected
Thank You