Introduction to IEEE 802.3 EPON Protocol over Coax (EPoC)

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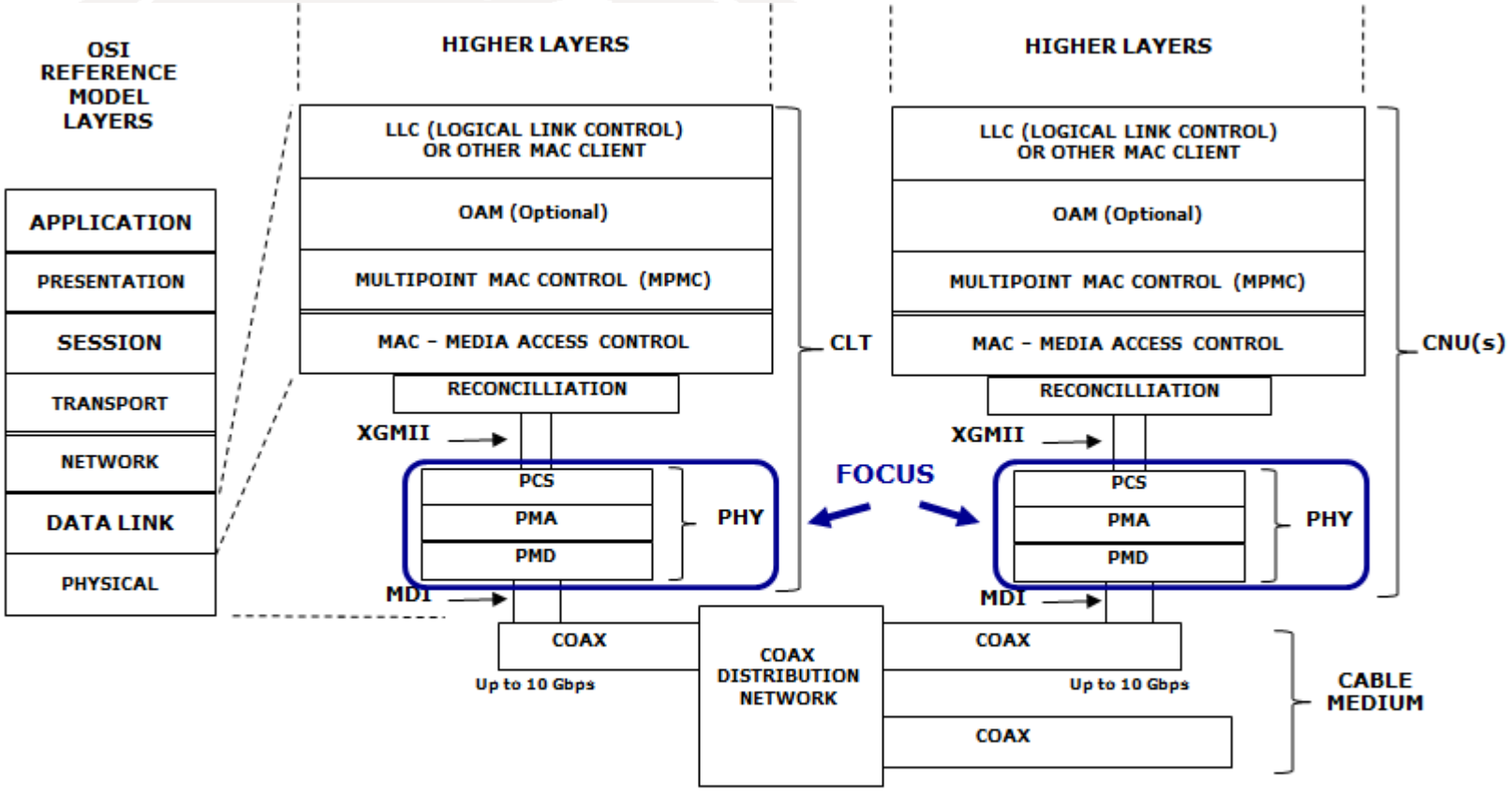
Outline

- Progress to date and current status
- Layer model and project focus
- EPON/EPoC Applications
- Common coaxial cable topologies
- Project objectives
- Further reading

Progress to date and current status

- Call for Interest (CFI) performed November 2011
  - IEEE 802.3 EPoC PHY Study Group formed
- IEEE 802.3 EPoC PHY Study Group completed the new project documentation in May, 2012
  - IEEE 802.3bn Project Authorization Request (PAR)
  - 5 Criteria Responses
  - Project objectives
- IEEE 802.3 Ethernet Working Group approved the project documentation on 19-July-2012
- IEEE 802 LAN/MAN Standards Committee Executive Committee approved the project documentation on 20-July-2012
- IEEE Standards Association Standards Board approved the PAR on 30-August-2012
- First IEEE 802.3 EPoC PHY Task Force meeting to be held 27-28-September-2012 (Here! Next week! You are welcome to attend!)

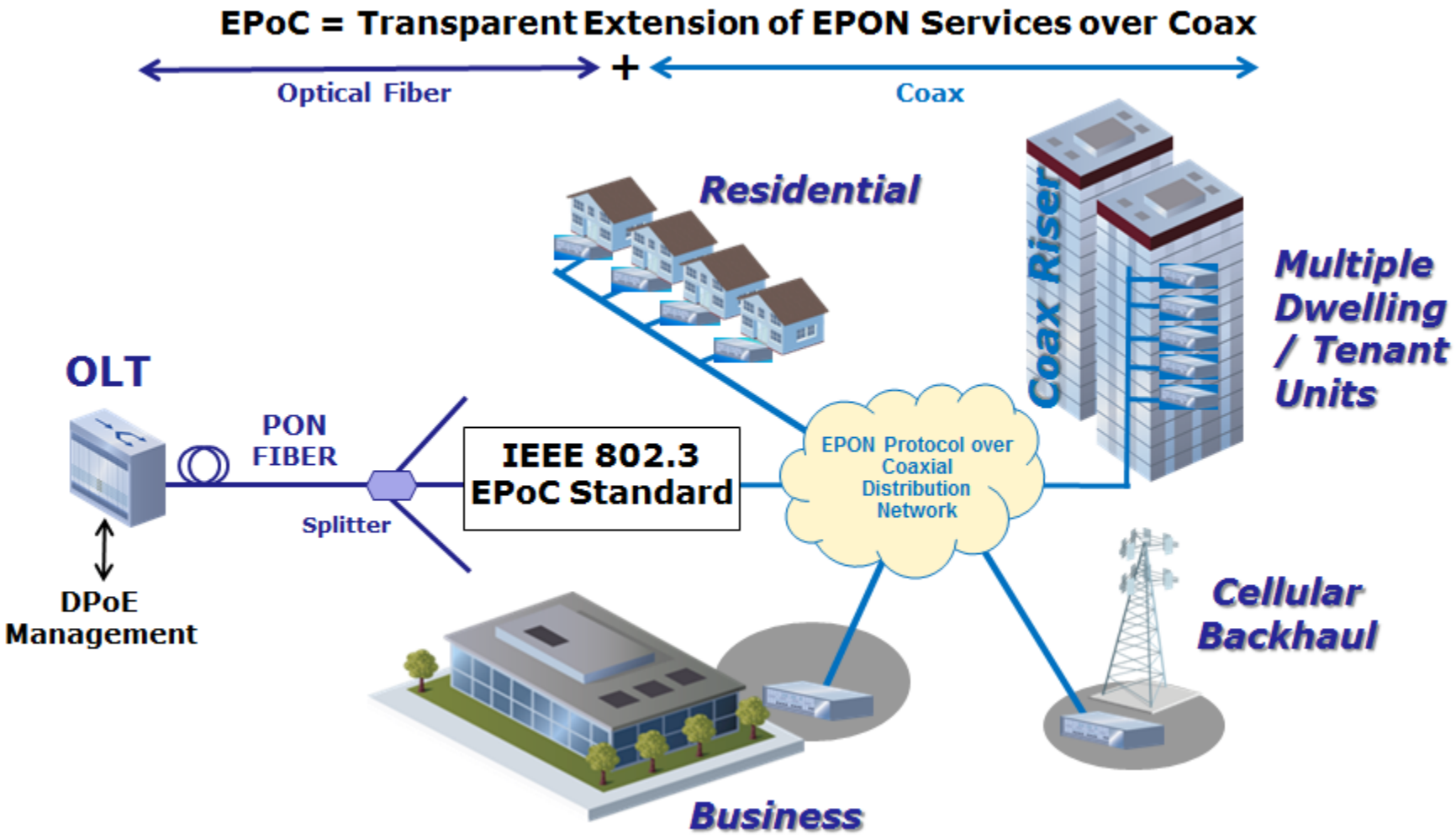
Layer Model and Project Focus



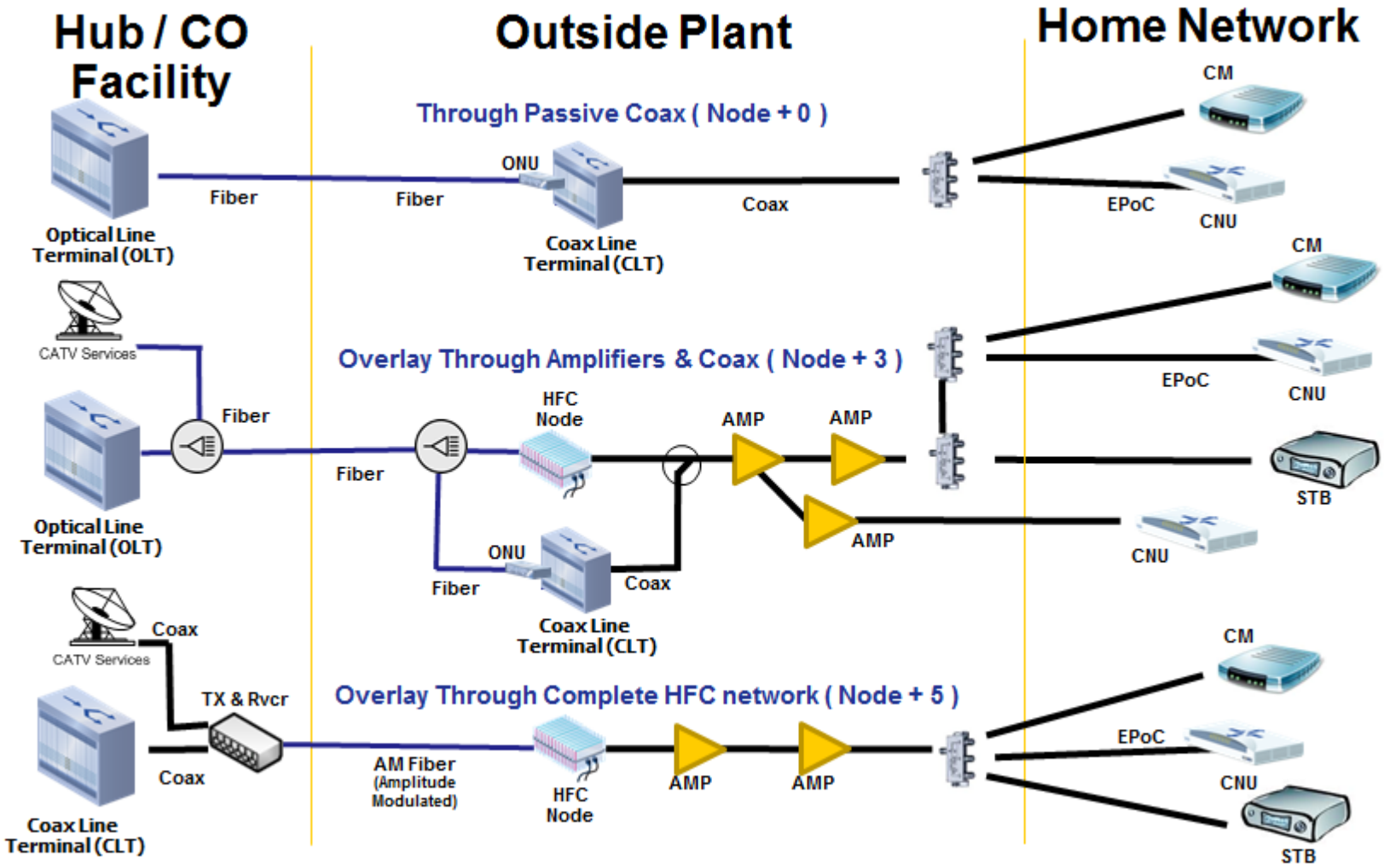
CLT – COAX LINE TERMINAL
CNU – COAX NETWORK UNIT
MDI – MEDIUM DEPENDENT INTERFACE
OAM – OPERATIONS, ADMINISTRATION, & MAINTENANCE

PCS – PHYSICAL CODING SUBLAYER
PHY – PHYSICAL LAYER DEVICE
PMA – PHYSICAL MEDIUM ATTACHMENT
PMD – PHYSICAL MEDIUM DEPENDENT
XGMII – GIGABIT MEDIA INDEPENDENT INTERFACE

EPON / EPoC APPLICATIONS



Common Coaxial Cable Topologies



Project Objectives (1/3)

- Specify a PHY to support subscriber access networks capable of supporting burst mode and continuous mode operation using the EPON protocol and operating on point-to-multipoint RF distribution plants comprised of either amplified or passive coaxial media.
- Maintain compatibility with 1G-EPON and 10G-EPON, as currently defined in IEEE Std. 802.3 with minimal augmentation to MPCP and/or OAM if needed to support the new PHY.
- Define required plant configurations and conditions within an overall coaxial network operating model.

Project Objectives (2/3)

- **Provide a physical layer specification that is capable of:**
  - A baseline data rate of 1 Gb/s at the MAC/PLS service interface when transmitting in 120 MHz, or less, of assigned spectrum under defined baseline plant conditions;
  - A data rate lower than the baseline data rate when transmitting in less than 120 MHz of assigned spectrum or under poorer than defined plant conditions;
  - A data rate higher than the 1Gb/s baseline data rate and up to 10 Gb/s when transmitting in assigned spectrum and in channel conditions that permit.
- **PHY to support symmetric and asymmetric data rate operation.**

Project Objectives (3/3)

- **PHY to support symmetric and asymmetric spectrum assignment for bidirectional transmission.**
- **PHY to support independent configuration of upstream and downstream transmission operating parameters.**
- **PHY to operate in the cable spectrum assigned for its operation without causing harmful interference to any signals or services carried in the remainder of the cable spectrum.**
- **PHY to have:**
  - a downstream frame error ratio better than 10^-6 at the MAC/PLS service interface;
  - an upstream frame error ratio better than 5x10^-5 at the MAC/PLS service interface.

Further Reading

- Approved Project Authorization Request:
  http://www.ieee802.org/3/bn/P802.3bn.pdf
- Approved 5 Criteria Responses:
  http://www.ieee802.org/3/bn/5Criteria.pdf
- Call for Interest presentation:
  http://www.ieee802.org/3/epoc/public/nov11/index.html
- STask Force home page:
  http://www.ieee802.org/3/bn/index.html

Thank You!