EFM Cu Transmission Technology Selection Based on the 5 Criteria

The most important, as we are making an Ethernet 802.3 PHY

(not a DSL)

Agenda

- Set up the rules of this discussion
- Review the 5 Criteria
- List valid questions pertaining to each
- Open Session on use of the 5 Criteria

What Should be Compared

- VDSL
  - Not ADSL+ or “Stretch ADSL”
  - Use Any VDSL, or just EoVDSL?
- According to the Rate/Reach Objective
  - Consider long reach concepts as valid input?
    - Not part of the Objectives

Transmission technologies

- MCM (Multi-carrier Modulation)
  - Discrete Multi-Tone (DMT) - Modulation
  - Uses a multi-set of sub-carriers - QAM
  - Found in ADSL
    - About 7.5M lines installed (Cahners In-Stat, OECD)
    - 8 years to achieve interoperability
- SCM (Single-carrier Modulation)
  - One or two carrier - QAM
  - Used in voice-band modems
    - Hundreds of millions installed
  - Used in Cable modems
    - About 8.5M installed (Cahners In-Stat, OECD)
    - 2 years to get interoperability
  - Used in home networks
    - Millions installed
  - PAM also SCM, Found in G.SHDSL/100BT2/1000BT
    - Many 10s of millions installed

Criteria #1

- Broad Market Potential
  - Broad sets of applicability
  - Multiple vendors and numerous users
  - Balanced costs (LAN versus attached stations)

Criteria #1 Questions:

- Is there a broad market potential?
  - Prove it through numbers and results
- Are there multiple sources for chips, for system vendors, and is there a broad potential for a customer base?
- How are the costs relative to competing technologies? Is there a balance between head end and CPE?
- Are there any cost impediments to succeeding?

Criteria #2

- Compatibility
  - IEEE 802 defines a family of standards. All standards shall be in conformance with the IEEE 802.1 Architecture, Management and Interworking documents as follows: 802. Overview and Architecture, 802.1D, 802.1Q and parts of 802.1f. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with 802.
  - Each standard in the IEEE 802 family of standards shall include a definition of managed objects which are compatible with systems management standards.

Criteria #2 Questions

- Is there existing technology that has been developed into this area that EFM Cu can take experience and information from?
- As Time to Market is a top concern, will existing technologies that interoperate and conform with IEEE standards help achieve this?

Criteria #3

- Distinct Identity
  - Substantially different from other IEEE 802 standards
  - One unique solution per problem (not two solutions to a problem)
  - Easy for the document reader to select the relevant specification

Criteria #3 Questions

- Will this be a distinct standard versus other IEEE standards?
- Will this Transmission technology foster confusion or simplicity when developers go to design a solution to a problem?
- Are there existing documents and work that can be used to foster fast, and complete documentation to facilitate use/acceptance?

Criteria #4

- Technical Feasibility
  - Demonstrated system feasibility
  - Proven technology, reasonable testing
  - Confidence in reliability

Criteria #4 Questions

- Which technology is working in the real world?
- Does one have more real world exposure versus the other? (Number of units and time)
- Is one more theoretical versus a proven technology?
- Has reasonable, real world experience and testing occurred on one more than the other?
- Is there a higher confidence level in one versus the other based on technology comparison?
- Does one have existing EoVDSL implementations?

Criteria #5

- Economic Feasibility
  - Known cost factors, reliable data
  - Reasonable cost for performance
  - Consideration of installation costs

Criteria #5 Questions

- Has one proven the economic feasibility of EFM Cu already?
- Which one has more known cost factors from the real world?
- If one is selected over the other will it throttle down or accelerate market development?
- What are the relative cost strengths and weaknesses of the two? (designs, power, etc.)

Criteria #5 Questions

- How do they cost relative to competing technologies?
- Are there any Intellectual Property issues that should be compared?
- Any real world installation cost data?
- Have markets already selected one over the other?

Using the 5 Criteria Q&A