Distinctions from IEEE802.1 projects

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None

Purpose:

Proposal of a new task group for mobile multi-hop relay networking in IEEE 802.16 systems

Distinctions from IEEE802.1 projects

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Outline

- Comments from 802.1 Chair
- Abstracts of IEEE 802.1
  - IEEE Std 802.1D-2004
  - IEEE Std 802.1Q-2003
  - IEEE P802.1ad/D6.0
- Relationship
- IEEE Std 802.16-2004
- IEEE 802.16mmr project
- Summary

Comments from 802.1 Chair

My/our 802.1 concerns are basically to understand what impact (if any) what you are planning to do will have on existing 802.1 technology (IEEE Std 802.1D Bridges, IEEE Std 802.1Q VLAN Bridges, IEEE Std 802.1ad Provider Bridges). From what I have gleaned so far, a couple of "warning bells" have started ringing in my head:

- It is not clear whether what you are doing will operate below the MAC service boundary, or (like Bridges), provide a relay service at the MAC level.
- If the former, then are you thinking of introducing any peculiarity of operation (for example, as happened with EPON in 802.3 which introduced an asymmetrical transmission property) which results in the characteristics of the MAC changing as seen by a Bridge? In other words, will it be possible for the relayed service to support the Internal Sublayer Service in a Bridge? (Actually, as you have never specified how vanilla 802.16 does this, the same question applies to all of your work, which currently hasn‘t fulfilled its PAR/5C criteria obligation to demonstrate compliance with the Bridging standards, but that is probably another discussion!)
- If the latter, and I see the word “tree” appearing in what I have read, then we have a considerable expertise in making such mechanisms work, and my guess is that you could probably use what we have done already to chieve your ends. However, whatever you do in that space will have to be capable of operating in a manner that doesn't adversely affect the operation of the Bridged LANs that will inevitably be connected to your net.

Abstracts of IEEE 802.1

- IEEE Std 802.1D-2004 (MAC Bridges)
  - An architecture for the interconnection of IEEE 802 Local Area Networks (LANs) below the MAC Service boundary is defined. MAC Bridges, as specified by this standard, allow communications between end stations attached to separate LANs, each with its own separate MAC, to be transparent to logical link control (LLC) and network layer protocols, just as if the stations were attached to the same LAN.
- IEEE Std 802.1Q-2003 (VLAN)
  - This standard defines an architecture for Virtual Bridged LANs, the services provided in Virtual Bridged LANs, and the protocols and algorithms involved in the provision of those services.
- IEEE P802.1ad/D6.0 (Provider Bridges)
  - This amendment enables a service provider to use the architecture and protocols of IEEE Std 802.1Q to offer the equivalent of separate LANs, Bridged Local Area Networks, or Virtual Bridged Local Area Networks to a number of customers, while requiring no cooperation between the customers, and minimal cooperation between each customer and the service provider.

IEEE Std 802.1D-2004

- MAC Bridges interconnect the separate IEEE 802 LANs that compose a Bridged Local Area Network by relaying and filtering frames between the separate MACs of the bridged LANs.

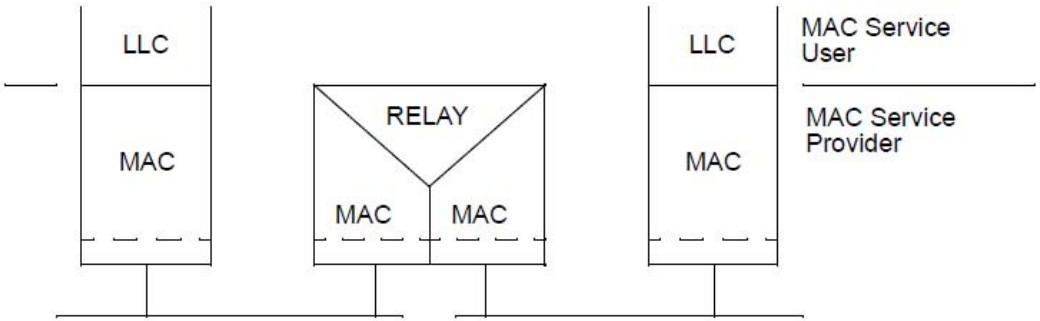


Figure 6-1—Internal organization of the MAC sublayer

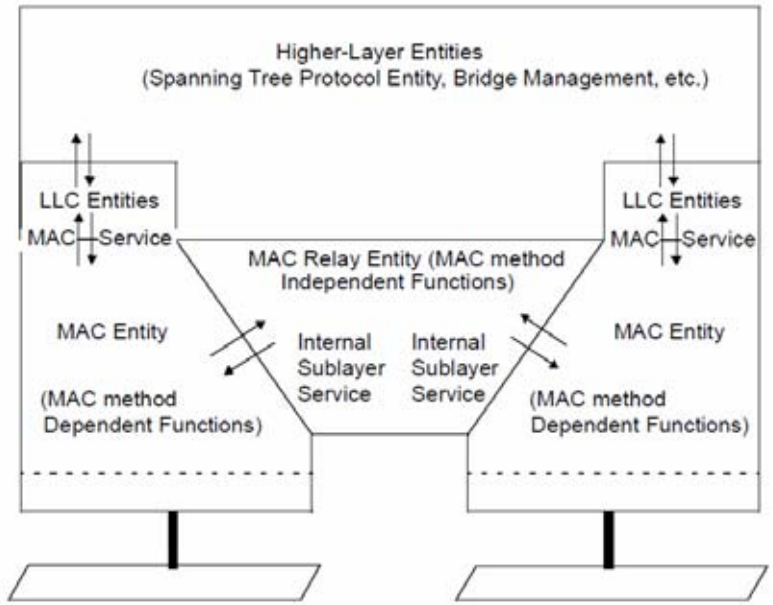


Figure 7-3—Bridge architecture

* Refer to IEEE Std 802.1D-2004 (pp.11, 32)

IEEE Std 802.1Q-2003

- The MAC Service provided to end stations attached to a Virtual Bridged LAN in the connectionless mode MAC Service.
- The Enhanced Internal Sublayer Service (E-ISS) is derived from the Internal Sublayer Service (ISS) by augmenting that specification with elements necessary to the operation of the tagging and untagging functions of the VLAN Bridge.

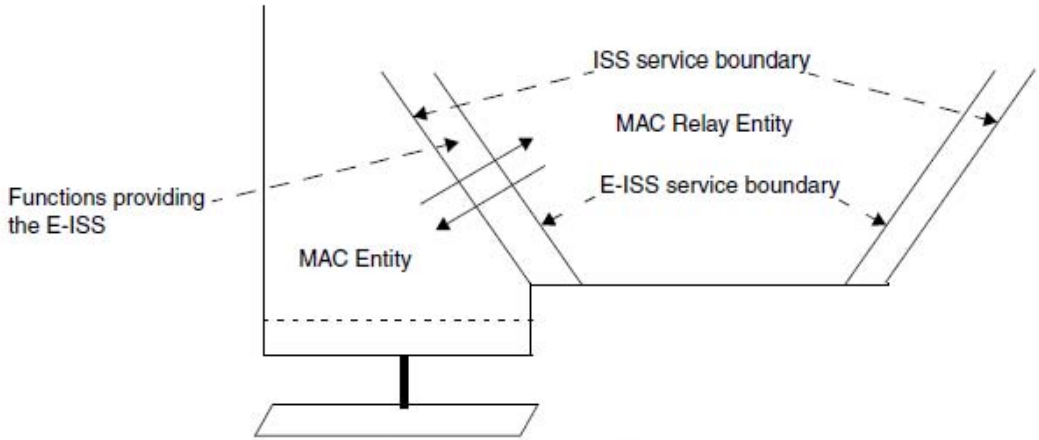


Figure 6-1—Relationships between MAC Entity, ISS, E-ISS, and MAC Relay Entity

* Refer to IEEE Std 802.1Q-2003 (pp.15, 20)

IEEE P802.1ad/D6.0

- Provider Provider Bridges interconnect the separate MACs of the IEEE 802 LANs that compose a Provider Bridged Network, relaying frames to provide connectivity between all the LANs that provide customer interfaces for each service instance. The position of the Provider Bridge S-VLAN component bridging function within the MAC Sublayer is shown in Figure 15-1.

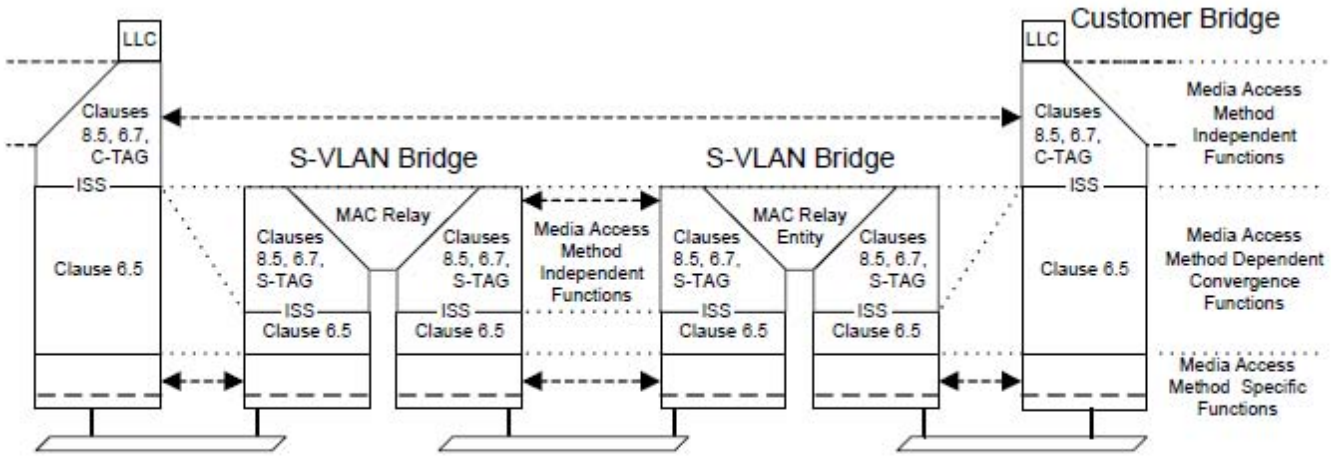
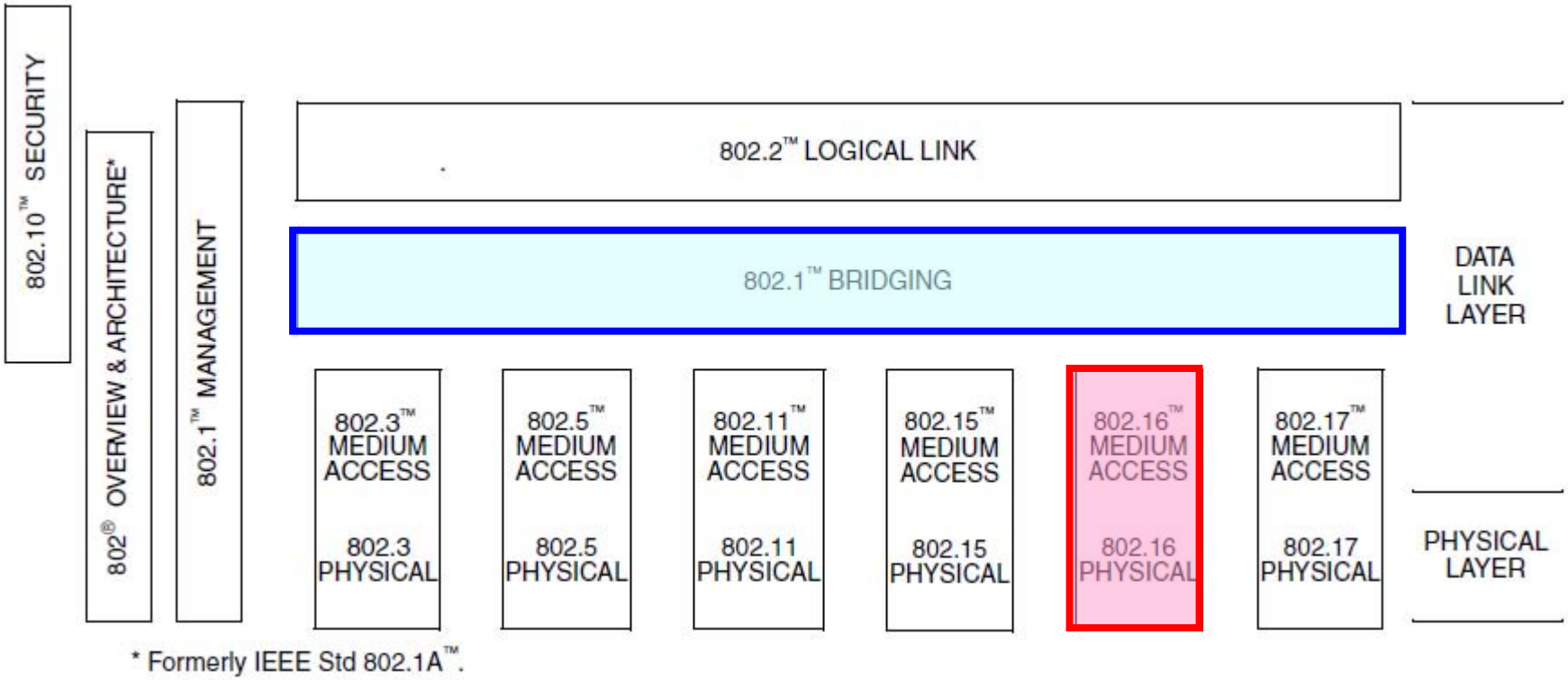


Figure 15-1—Internal organization of the MAC sublayer in a Provider Bridged Network

* Refer to IEEE P802.1ad/D6.0 (pp.45)

Relationship

- The relationship between the IEEE standards is shown below.



* Refer to IEEE Std 802.1Q-2003 (pp.**iii**)

IEEE Std 802.16-2004

- This revised standard specifies the air interface, including the medium access control layer and multiple physical layer specifications, of fixed BWA systems supporting multiple services.

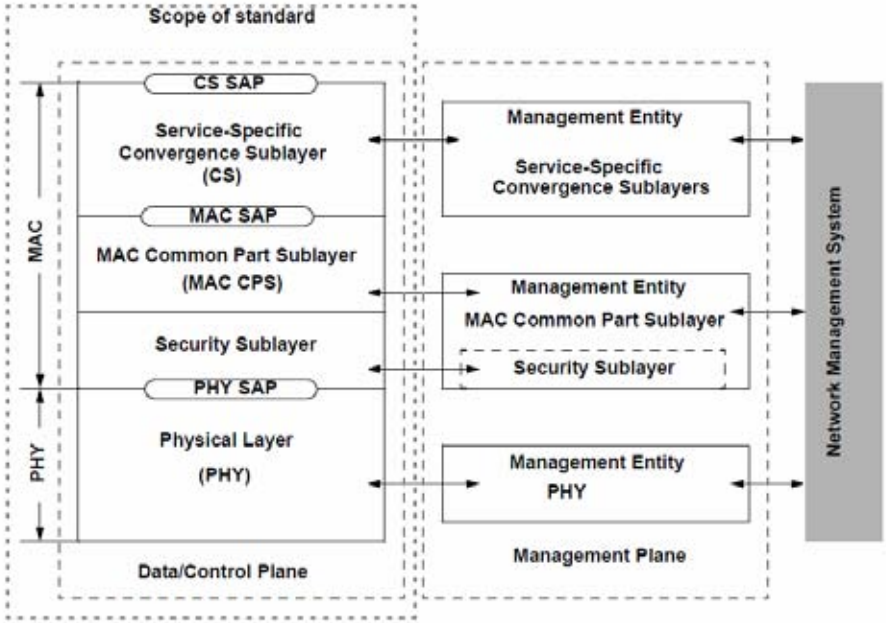


Figure 1—IEEE Std 802.16 protocol layering, showing SAPs

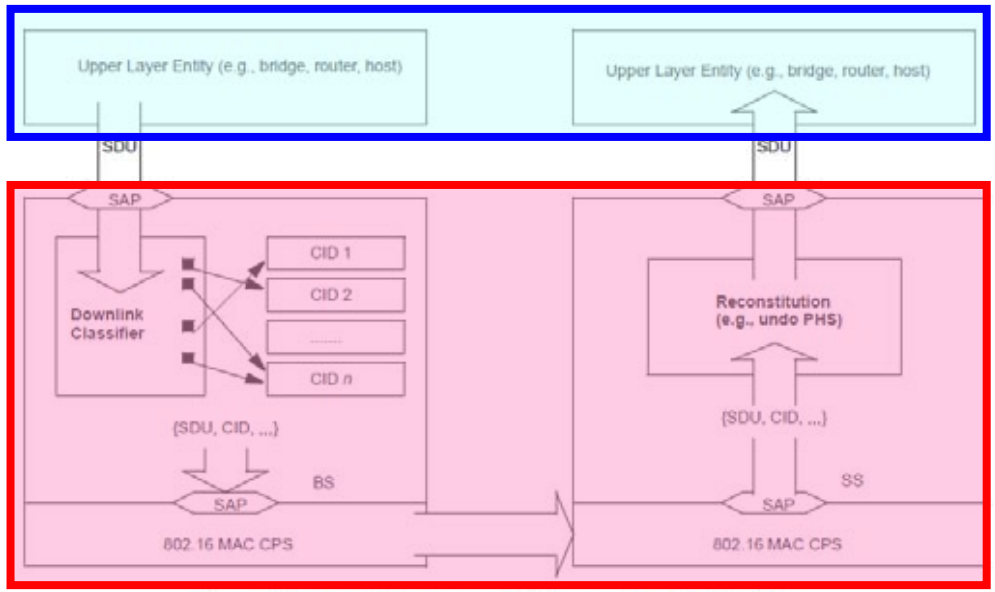


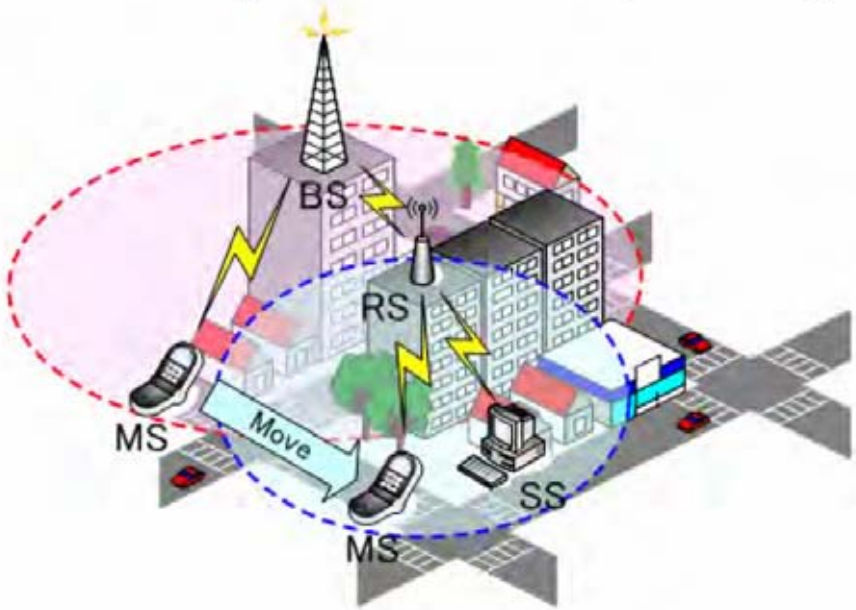
Figure 7—Classification and CID mapping (BS to SS)

* Refer to IEEE Std 802.16-2004 (pp.1, 22)

IEEE 802.16mmr project

Scope of Proposed Relay Project

- Develop Proposed Relay mode for fixed / mobile terminal
  - PHY: Enhance normal frame structure
  - MAC: Add new protocols for the Relay networking



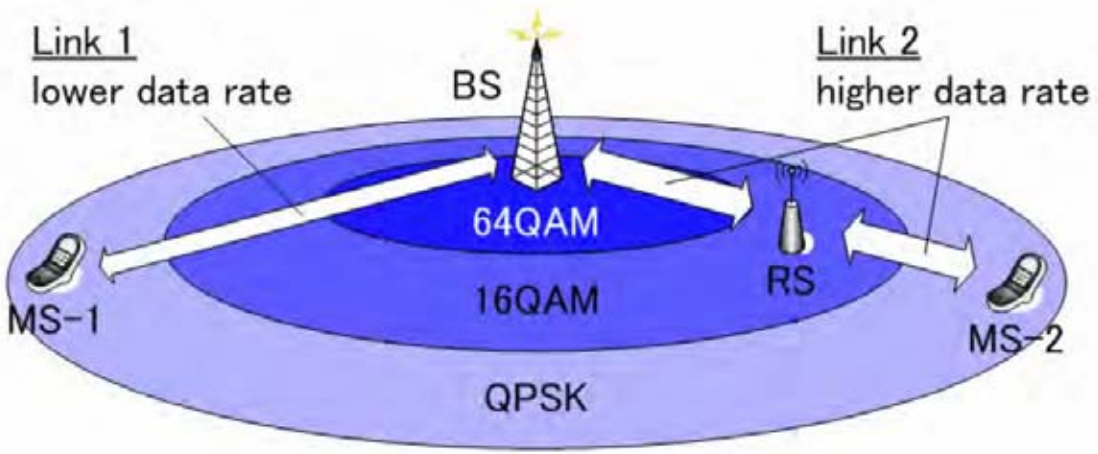
2

* Refer to IEEE C802.16-05/013

IEEE 802.16mmr project (cont'd)

Purpose

- Coverage extension
  - Expansion for coverage area
- Throughput enhancement
  - Higher throughput over multi-hop paths



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* Refer to IEEE C802.16-05/013

Summary

	Purpose	Layer	Impact to the existing standard
802.1D	Interconnection between separate LANs	MAC (upper layer than 16mmr)	No
802.1Q	Virtual Bridged LAN		
802.1ad	Interconnections of the separate MACs for a provider bridged network		
802.16mmr project	●Coverage extension ●Throughput enhancement	MAC and PHY	–