IEEE 802.11 TGs: An Introduction

IEEE 802.16 Presentation Submission Template (Rev. 8.3)

Document Number:

IEEE C80216mmr-05/014

Date Submitted:

2005-09-14

Source:

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Venue:

IEEE 802.16 Session #39, Taipei, TAIWAN

Base Document:

None

Purpose:

Information

IEEE 802.11 TGs: An Introduction

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Objective

- Present the efforts underway in IEEE 802.11 TGs as an example of a network system that benefits from multihop communications.
- Discuss the different ways in which multi-hopping is exploited in TGs.

TGs PAR

- Scope

  To develop an IEEE 802.11 Extended Service Set (ESS) Mesh with an IEEE 802.11 Wireless Distribution System (WDS) using the IEEE 802.11 MAC/PHY layers that supports both broadcast/multicast and unicast delivery over self-configuring multi-hop topologies.

- Purpose

  The IEEE 802.11-1999 (2003 edition) standard provides a four-address frame format for exchanging data packets between APs for the purpose of creating a Wireless Distribution System (WDS), but does not define how to configure or use a WDS. The purpose of the project is to provide a protocol for auto-configuring paths between APs over self-configuring multi-hop topologies in a WDS to support both broadcast/multicast and unicast traffic in an ESS Mesh using the four-address frame format or an extension.

From Project Authorization Request (PAR) for IEEE 802.11s. IEEE 802.11-03/759r22

Core Terms & Definitions (1)

- **WLAN Mesh –** A WLAN Mesh is an IEEE 802.11-based WDS which is part of a DS, consisting of a set of two or more Mesh Points interconnected via IEEE 802.11 links and communicating via the WLAN Mesh Services. A WLAN Mesh may support zero or more entry points (Mesh Portals), automatic topology learning and dynamic path selection (including across multiple hops).

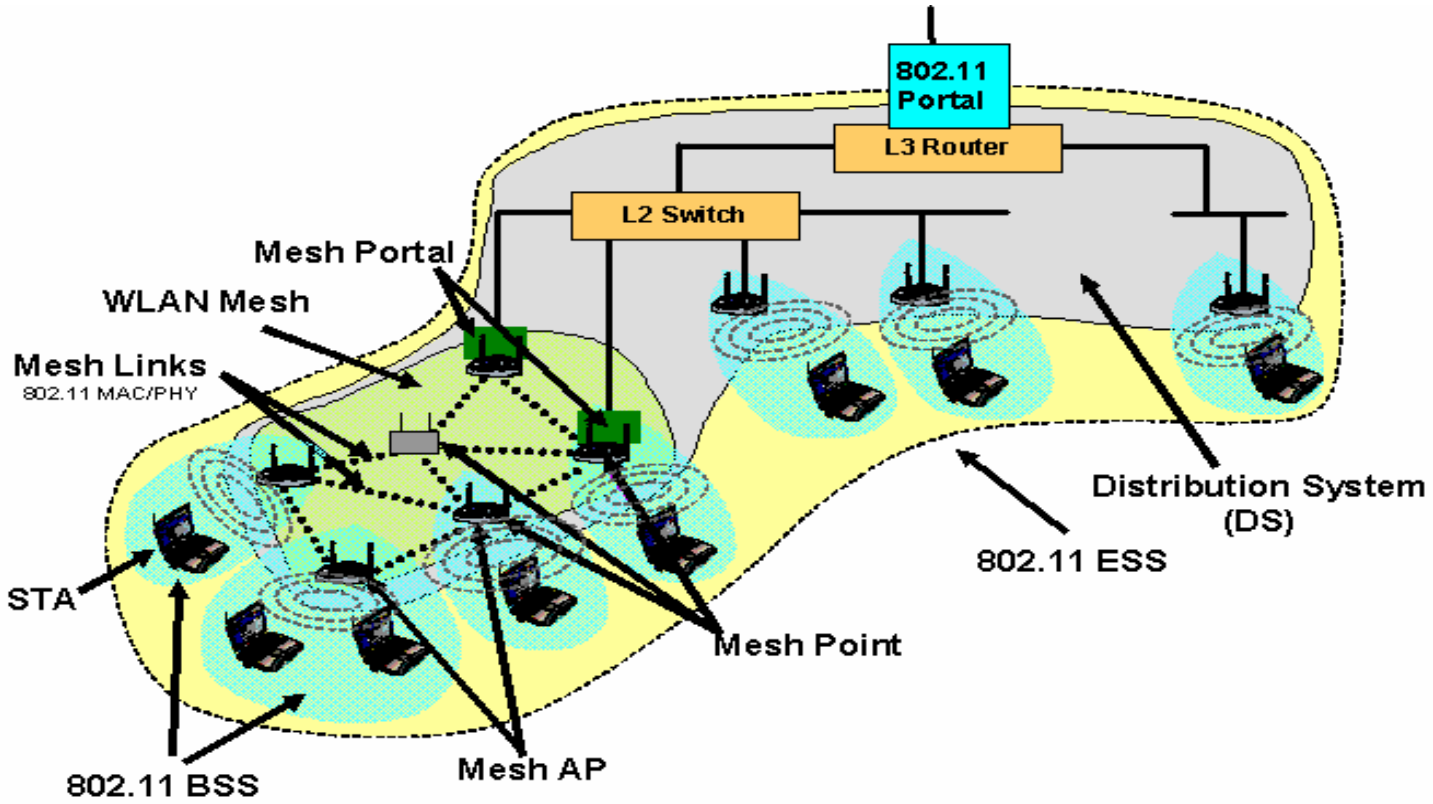
- **Mesh Point** - Any IEEE 802.11 entity that contains an IEEE 802.11–conformant Medium Access Control (MAC) and Physical Layer (PHY) interface to the Wireless Medium (WM), is within a WLAN Mesh, and supports WLAN Mesh Services.

- **Mesh AP** - Any Mesh Point that is also an Access Point.

- **Mesh Portal** - A point at which MSDUs exit and enter a WLAN Mesh to and from other parts of a DS or to and from a non-802.11 network. A Mesh Portal can be collocated with an IEEE 802.11 portal.

From Terms and Definitions for 802.11s. IEEE 802.11-04/1477r4

Core Terms & Definitions (2)



From Draft Terms and Definitions for 802.11s. IEEE P802.11-04/0730d1

Topology Implication

- MAP-to-MAP multihop wireless connectivity to form a wireless backbone.
- Legacy STAs connect one-hop to MAPs. MAPs proxy for the STAs and route their traffic in the WDS.
- Mesh Points (MP) can form multihop connections to MPs, through other MPs.

Benefits from Multi-hopping

- IEEE 802.11 TGs benefits from multi-hopping in multiple ways
  - Multihop within backbone infrastructure (MAP –MAP-Portal)
  - Multihop to backbone infrastructure (MP-MP-Portal)
  - Multihop among client devices (MP-MP-MP)

References

- *Project Authorization Request (PAR) for IEEE 802.11s.*
  Doc # IEEE 802.11-03/759r22

- *Terms and Definitions for 802.11s*. Doc # IEEE 802.11-04/1477r4

- *Draft Terms and Definitions for 802.11s*. Doc # IEEE P802.11-04/0730d1