IEEE 802.11 TGs: An Introduction

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Shyamal Ramachandran	Voice:	+1-407-659-5354
Motorola Inc.	Fax:	+1-407-659-5301
485 N.Keller Road, Suite #250, Maitland FL 32751 USA	E-mail:	Shyamal.Ramachandran@motorola.com

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Information

IEEE 802.11 TGs: An Introduction

Shyamal Ramachandran

Motorola, Inc.

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.

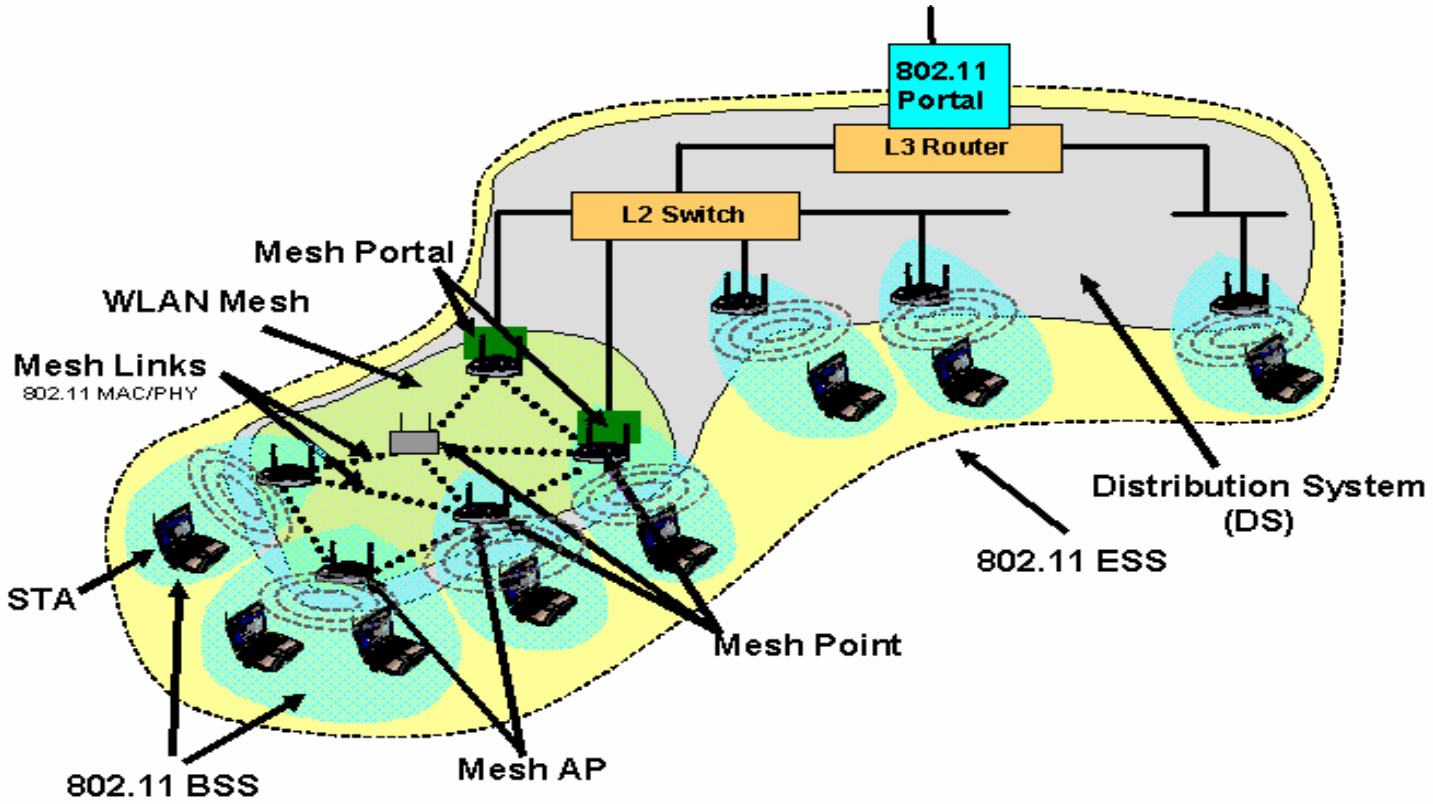
- **Mesh AP** - Any Mesh Point that is also an Access Point.

- **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

rlp4 What is difference between Mesh AP and Mesh Portal?
peterson, 2005/09/12

Core Terms & Definitions (2)



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

rlp2

Are the L2 Switch and the L3 Router really parts of the 802.11 ESS?

peterson, 2005/09/12

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.

rlp5 Everywhere "AP" is used on this slide could "Mesh AP" be used? Would this be more correct?
peterson, 2005/09/12

rlp6 Would is be correct to substitute "WLAN Mesh" in place of "WDS"?
peterson, 2005/09/12

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