

## IEEE 802.11 TGs: An Introduction

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# 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 multihopping 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](#).

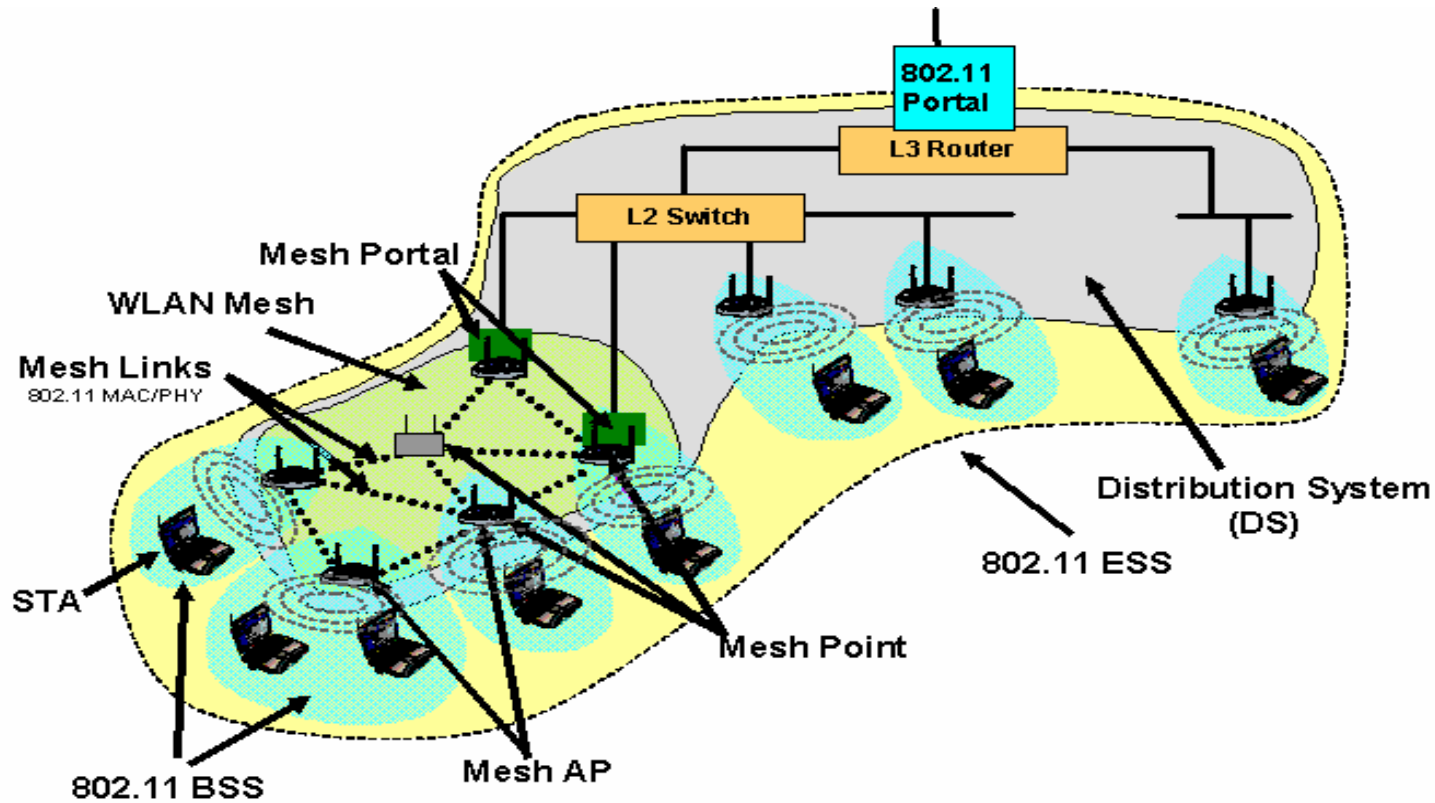
- **Purpose**

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.

# 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.

# Core Terms & Definitions (2)



# 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-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