

Enterprise Mesh Networking and 802.11s

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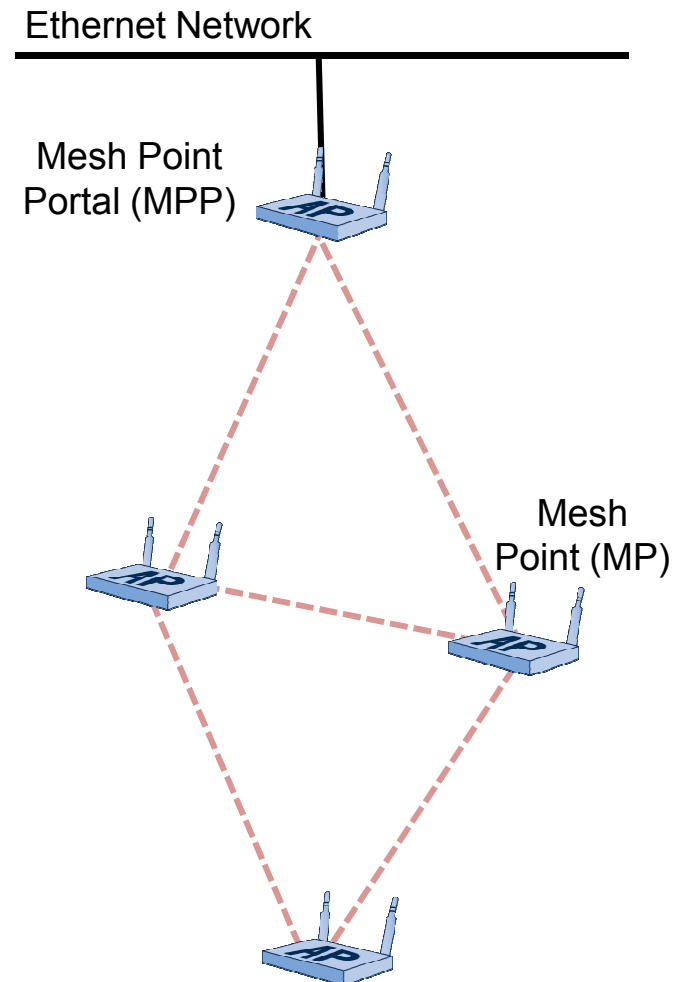
INTEROP[®]

Agenda

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 - Enterprise Mesh: What and Why
 - .11s Overview
 - .11s in the Enterprise
- Not Going to Cover:
 - Viral Mesh: Locust Net, RoofNet (Meraki) etc.
 - Municipal Wireless
 - 1, 2, 3 radio meshes, Bandwidth, Latency

What is Wireless Mesh

- Route traffic wirelessly between nodes on a hop by hop basis
- Requirements of a Mesh:
 - Node to node wireless communication
 - Multiple paths to the destination
- Common Types of Mesh
 - Infrastructure Mesh – for fixed nodes (Muni, Enterprise, etc)
 - Ad-Hoc Mesh – for mobile nodes (Military, emergency, etc)



Why Enterprise Mesh?



Hard to Wire Locations



Parking Lots



Logistics, Construction etc



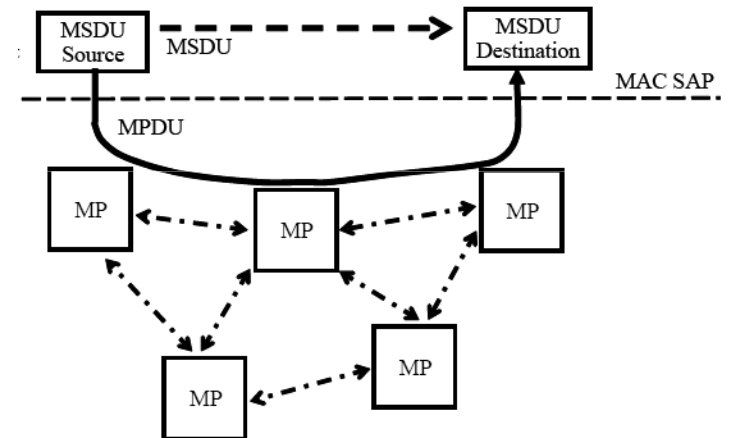
Old/Heritage Structures

802.11s Mesh Standard

- Begun in 2004, expect a standard mid 2010
- Aim to address multiple markets:
 - Ad-Hoc (military, temporary)
 - Home
 - Enterprise
 - Municipal Mesh
- Based on IETF AODV Routing Protocol

802.11s Mesh Datalink

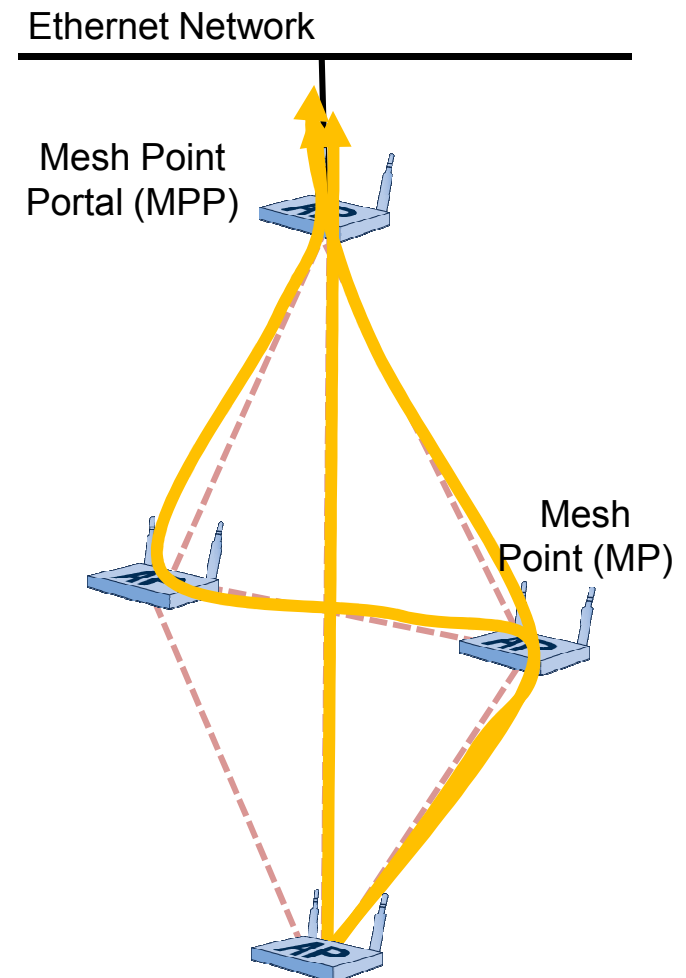
- Runs over 802.11 only
 - Much of 802.11s is implemented in the 802.11 frames
- Creates a single broadcast network
 - All MPs appear to be connected at link layer
- The mesh may have zero or 1 active MPPs
- Only operates in one subnet



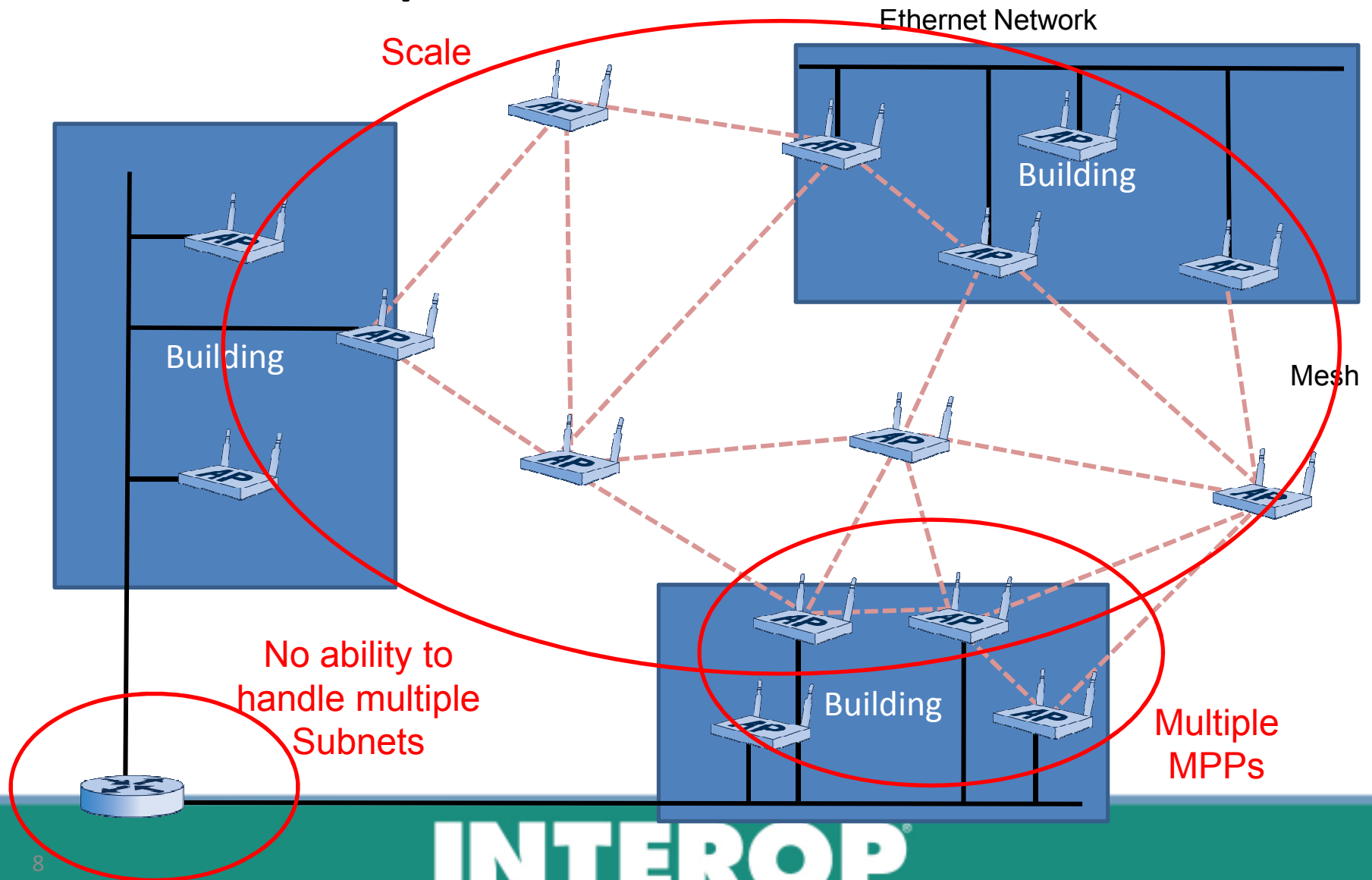
Source: IEEE P802.11s/D2.0, March 2008

802.11s Mesh Routing HWMP

- Layer 2 Routing Protocol
- The key to Mesh routing is deciding the optimal path from source to destination
 - Is 1, 2, or 3 hops faster?
- HWMP is a fairly simple distance vector protocol
 - Airtime link metric
- Works well in smaller scale mesh networks
- No inherent multicast support
- Spec allows for other routing protocols



Enterprise Mesh with .11s



Enterprise Mesh Requirements

- The only way to get mesh today is to go the proprietary path.
- Proprietary approaches should provide:
 - Loop Prevention – Multiple Portals for performance, convenience and resiliency
 - More scalable Link State L2 Routing Protocol
 - Scale to support thousands of nodes
 - The ability to work across L3 boundaries
 - Auto-discovery and negotiation with neighbors
 - Inherent mesh capability without compromises.

