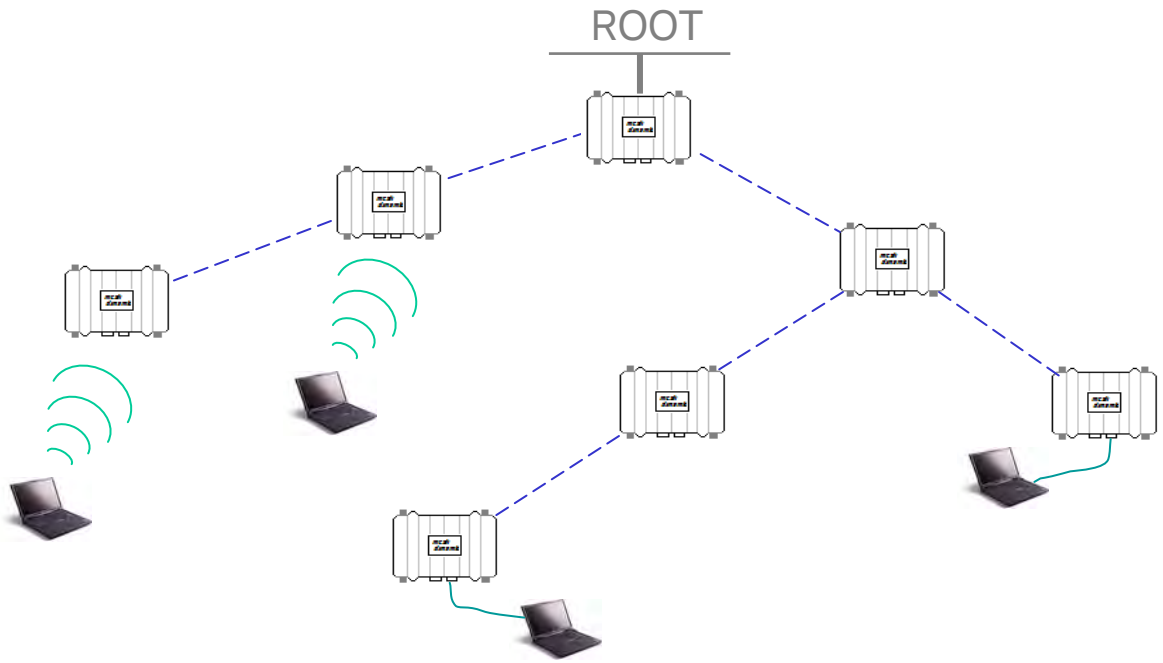
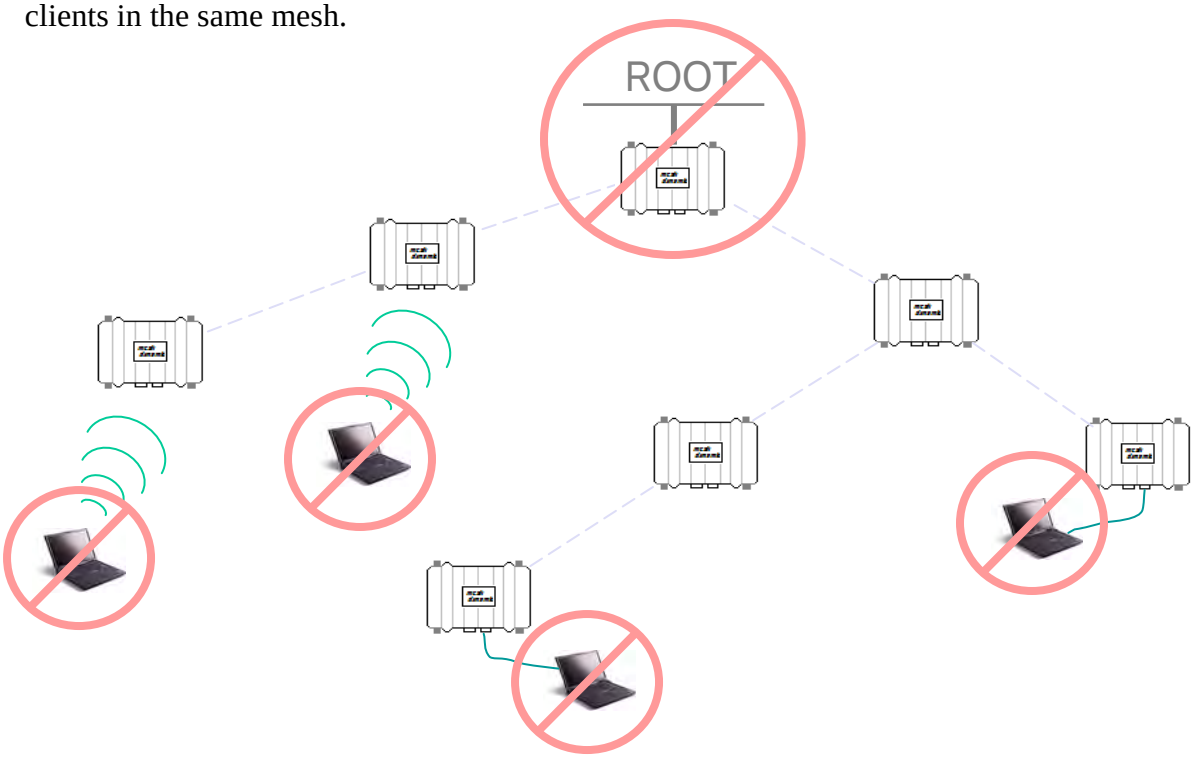
PERSISTENT THIRD-GENERATION MESH

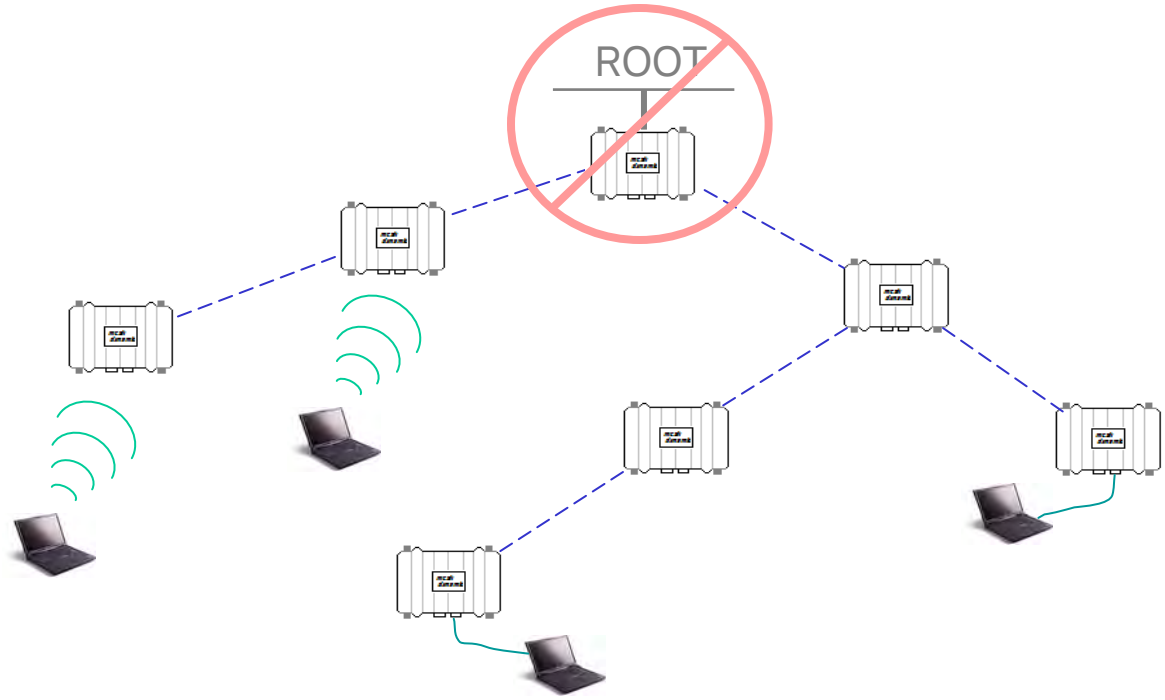
The Persistent Third-Generation Mesh (P3M) technology of the MD4000 and MD1000 product lines enables a node or set of nodes to remain functional without the presence of a wired root node.



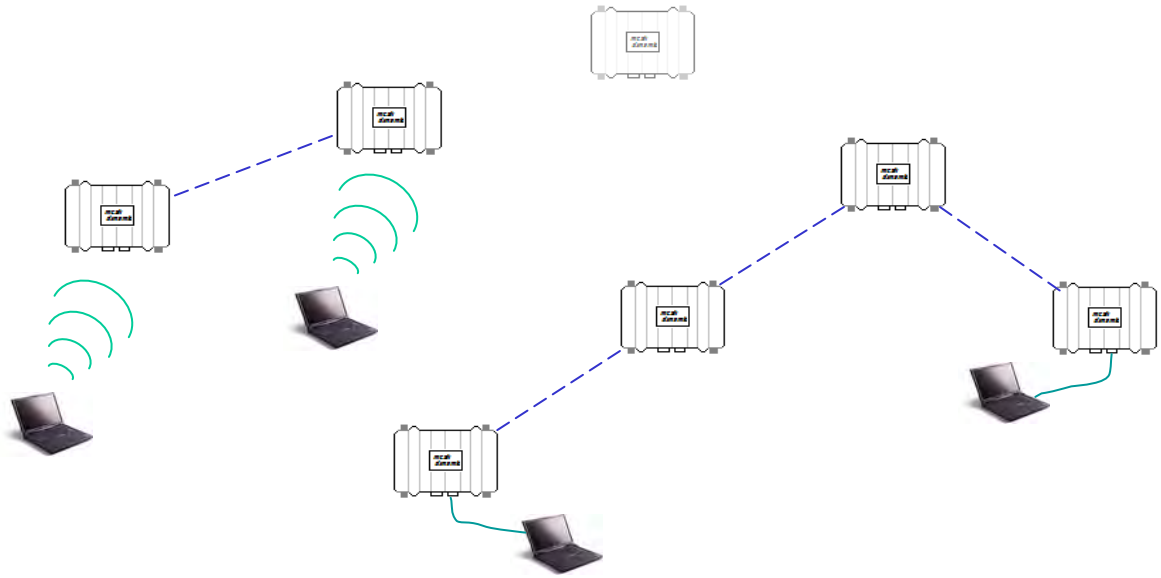
When a standard mesh network loses contact with its root node, all connections within the network are broken. Clients within the mesh can no longer transfer data to and from other clients in the same mesh.



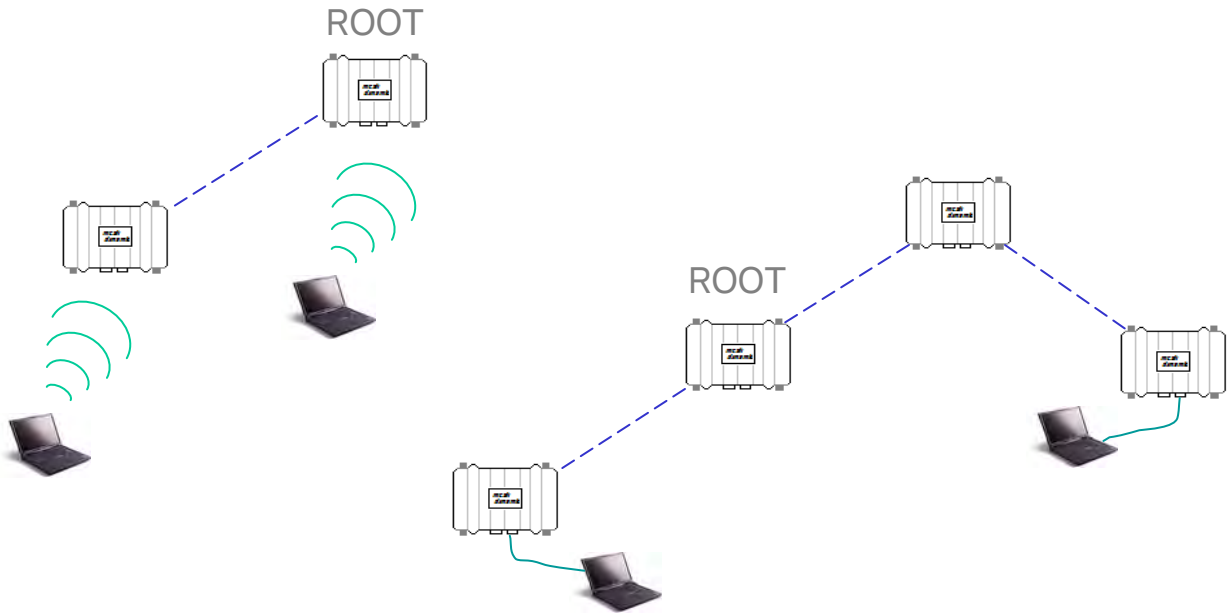
In some applications, it is desirable to retain client-to-client connections throughout the mesh when the presence of a wired root node is lost. P3M technology allows a MeshDynamics mesh network to remain intact in such an event.



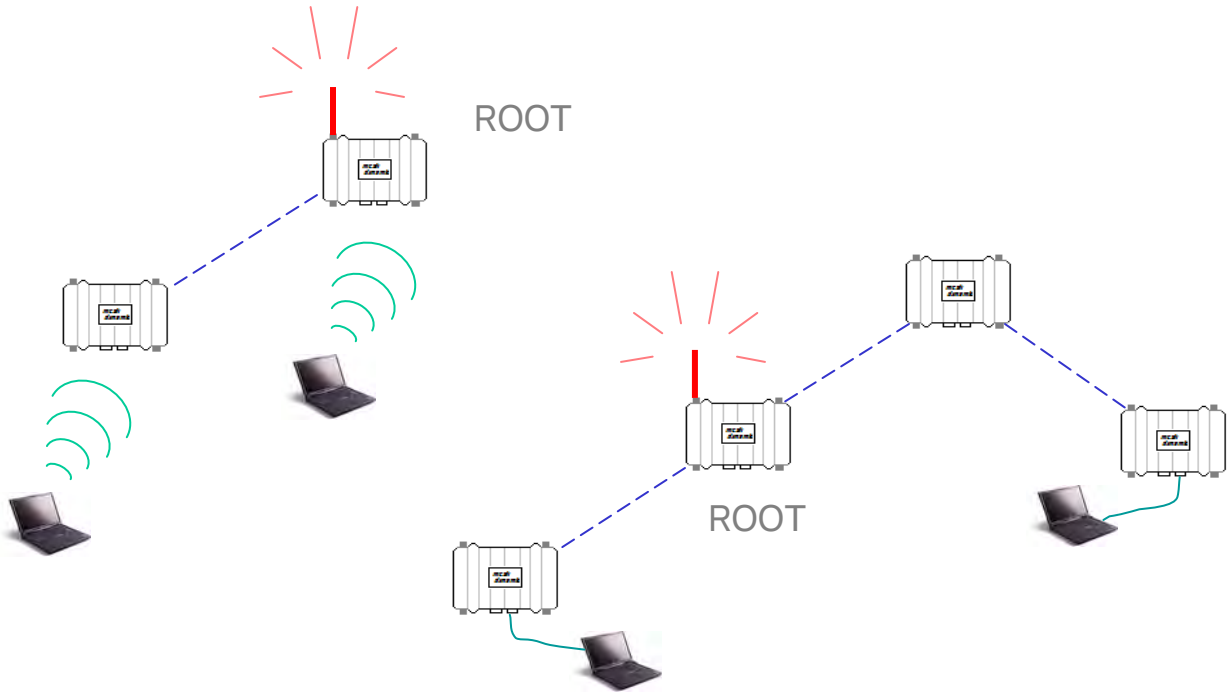
The remaining “branches” or islands of nodes left in the absence of a root node will form their own mesh network. Clients within these individual mesh networks will retain connections with each other.



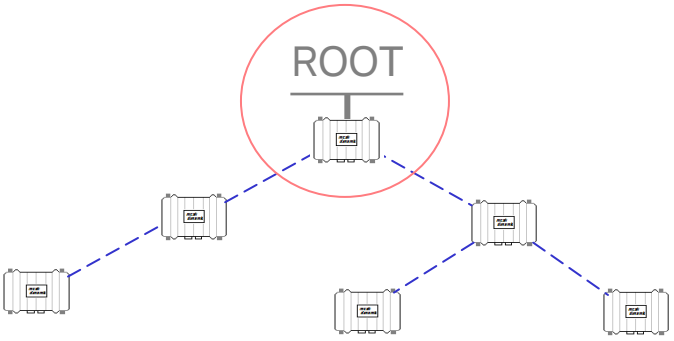
In each of the new “P3M” meshes, a node is arbitrarily designated as the root node for that particular mesh. This node will have the same functionality as a *wired* root node with respect to passing network traffic between its child nodes via its downlink radios.



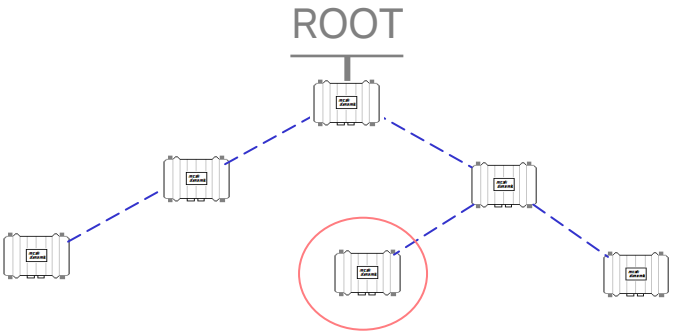
Meanwhile, the uplink of a P3M root node will scan for wired mesh networks, or *other* P3M mesh networks.



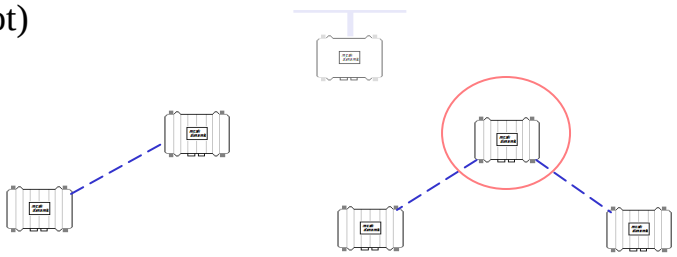
FFR (Fully-Functioning Root)
A node with a *wired network connection*.



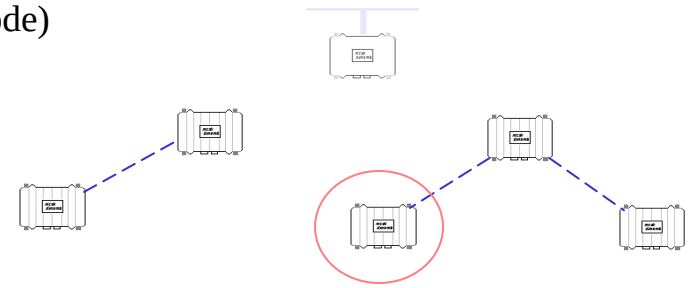
FFN (Fully-Functioning Node)
A node that is part of a mesh which is rooted by an FFR.



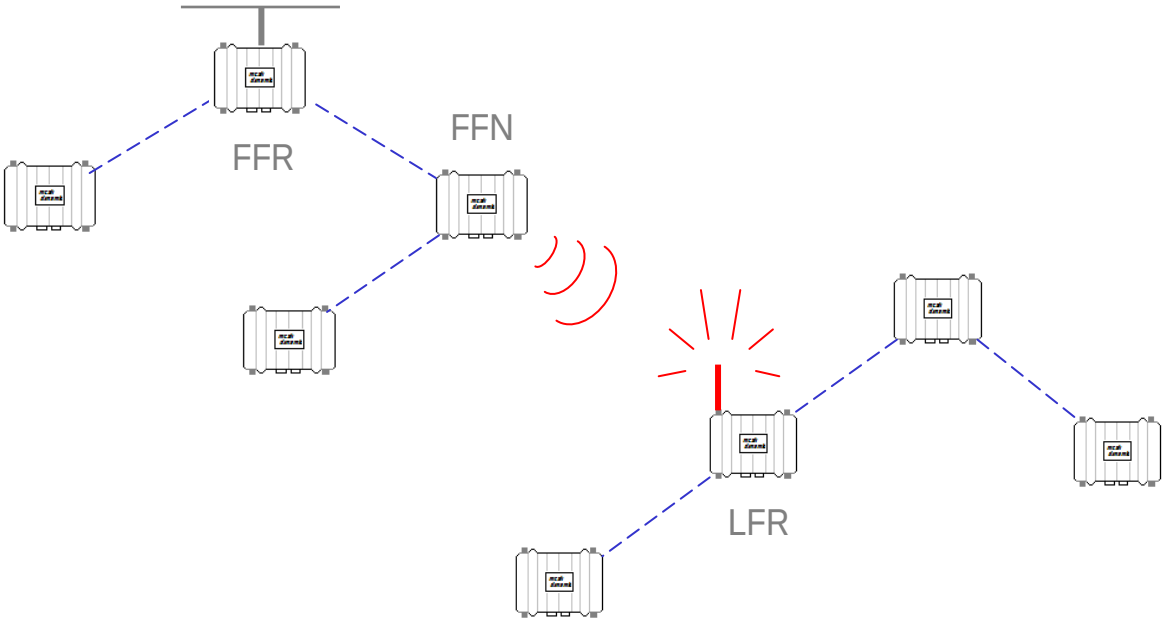
LFR (Limited-Functioning Root)
A node that is rooting a P3M mesh, but does not have an actual wired network connection.

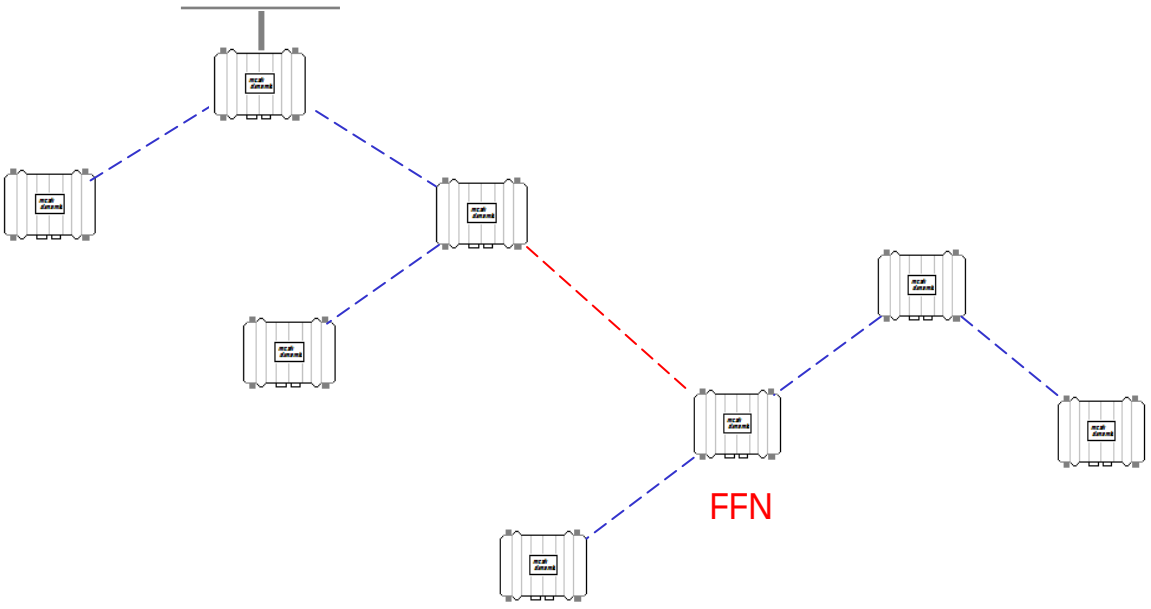


LFR (Limited-Functioning Node)
A node that is part of a mesh which is rooted by an LFR

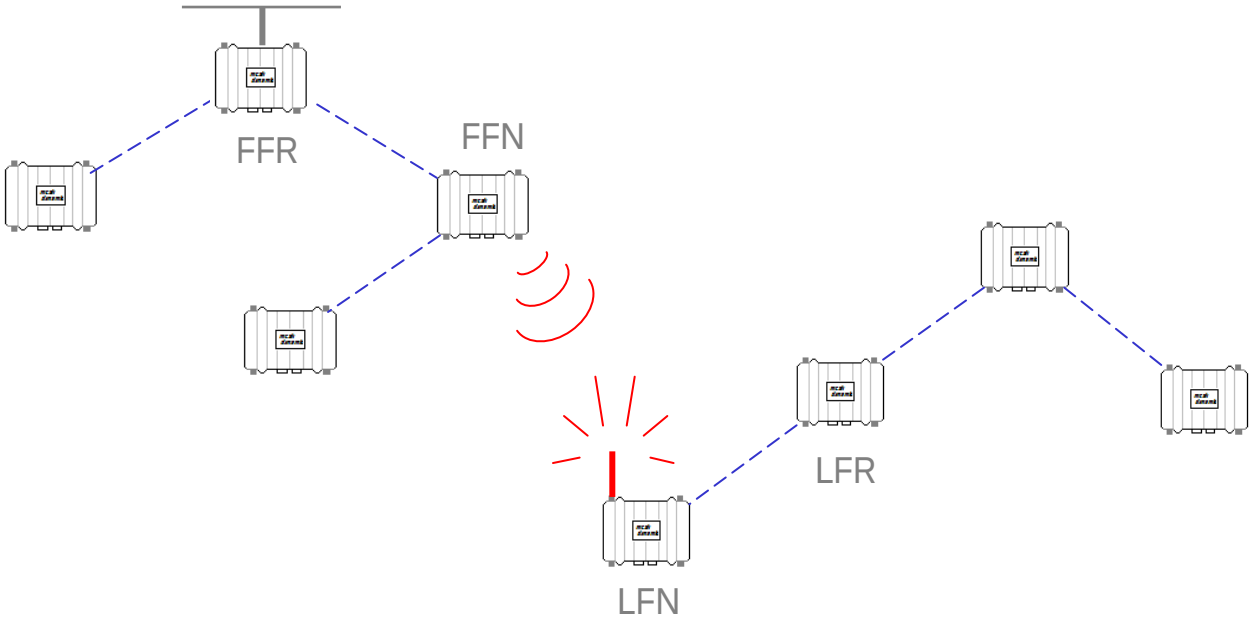


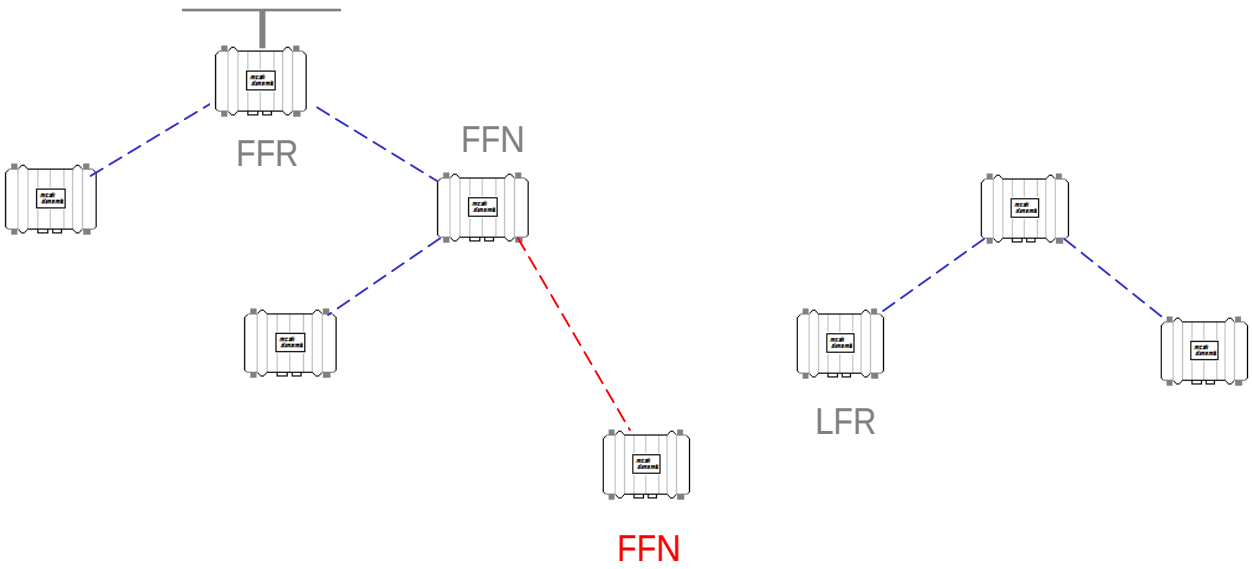
If the uplink of an LFR receives the beacon from an FFR or an FFN, it will associate, becoming an FFN.



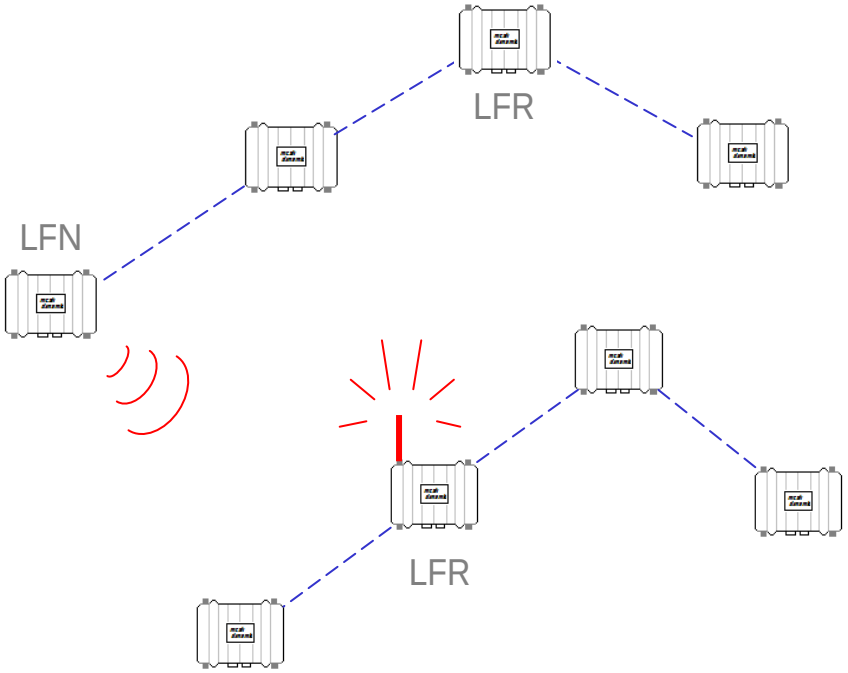


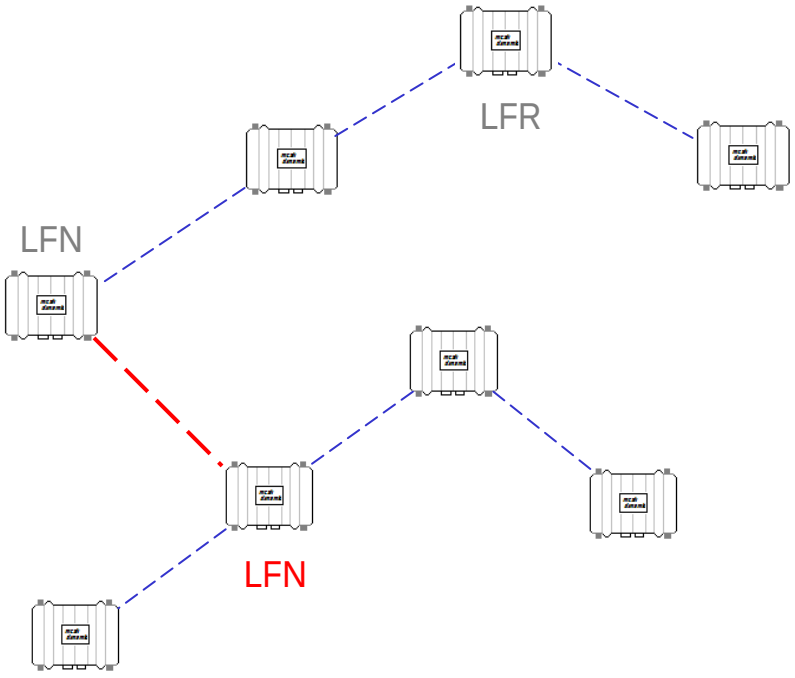
If the uplink of an LFN receives the beacon from an FFR or an FFN, it will associate, becoming an FFN.



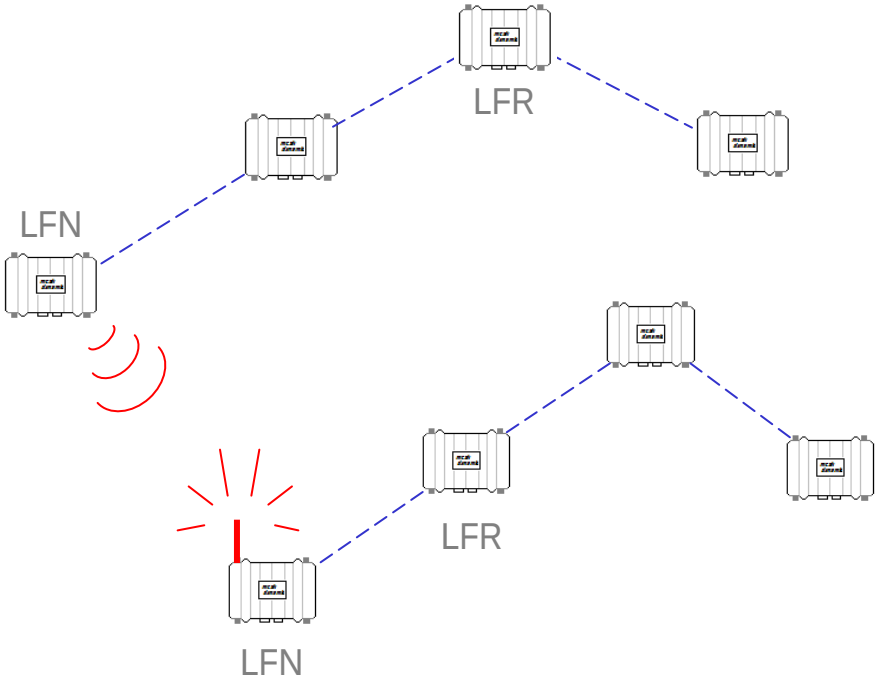


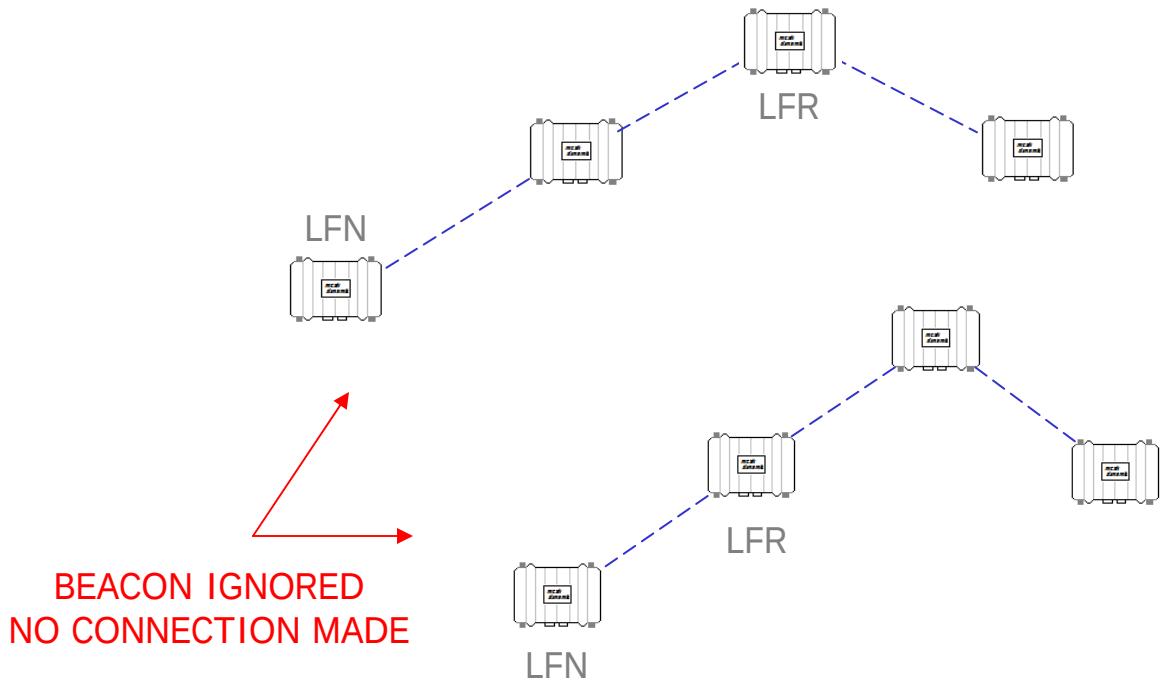
If the uplink of an LFR receives the beacon from an LFR or LFN of a ***different*** P3M mesh network, it will associate, becoming an LFN.





If the uplink of an LFN receives the beacon from an LFR or LFN of a *different* P3M mesh network, it will ignore the beacon and remain part of its own P3M mesh.





Enabling P3M

1) Populate the scan channel lists of the uplink radios with the backhaul channels that will be used in the mesh.

2) Execute the following MeshCommand on the node:

alconfset adhoc <<adhoc_mode=0/1>> <<begin_in_infra=0/1>> <<sectored_usage=0/1>>

An example of this command is as follows: ***alconfset adhoc 1 0 0***

The first digit entered after "alconfset adhoc" must be "1" in order to *enable* P3M.

The second digit represents the initial mode upon boot-up. If "1" is selected, the node will not go into P3M mode until *after* it has a broken network connection from either an FFN, or an FFR. This implies that the node must *first* make a connection with an FFN or an FFR. If there are no FFNs or FFRs initially available upon boot up (only LFNs or LFRs), the node will not make an association.

If "0" is selected for the second digit, the node *will* associate to available LFNs and LFRs upon boot up.

If Dynamic Channel Allocation (DCA) is selected for the node's downlink, selecting "0" for the second digit will negate this. In its place, a *hop-count based* allocation scheme will be used.

If sectored antennas are used for the backhaul, a "1" must be entered for the third digit. If omni-directional antennas are used, a "0" must be entered.

3) Execute the following MeshCommand on the node:

alconfset save

4) Reboot the node.