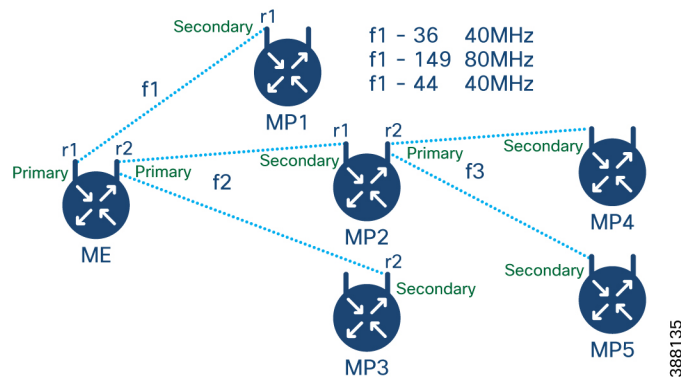# Configure and Validate Fluidmax Topology

Configure and Validate Fluidmax (point to multipoint) Topology

For fixed infrastructure, any wireless interface can be configured to operate in Fluidmax mode to implement point-to-multipoint connections. Each interface uses an independent set of Fluidmax parameters, allowing for great flexibility in the network topologies that can be implemented. As an example, the below image explains two cascaded point-to-multipoint clusters where the ME (Mesh End) node uses both radios in Fluidmax Primary mode to serve several secondary clients (MP1 (Mesh Point), MP2, and MP3) on two different frequencies. For MP2, the first radio operates in Fluidmax secondary mode to connect to the ME, while the second interface is configured as Fluidmax Primary to serve more downstream clients (MP4 and MP5).

Figure 1: Two cascaded Fluidmax Topology

Configure Point to Multipoint Topology from CLI

Use these commands to configure a Fluidmax (point-to-multipoint) topology.

```
Device#configure dot11Radio <interface>
```

Interface - <0-3> dot11Radio interface number

```
Device#configure dot11Radio <interface> {enable | disable}
```

Enable or disable - Set wireless interface admin state to enable or disable at runtime

```
Device#configure dot11Radio <interface> mode {fluidity | fixed | fluidmax } { primary |
secondary }
```

Mode - Operating mode for the specified interface (Fluidity or Fixed or Fluidmax)

Primary | secondary - Fluidmax role for the device, either primary or secondary

```
Device#configure dot11Radio <interface> channel <channel id>
```

Channel - Set the operating channel id <1 – 256>

```
Device#configure dot11Radio <interface> band-width <channel bandwidth>
```

Bandwidth - channel bandwidth in MHz and currently supported values are 20, 40, 80, and 160.

```
Device#wr
```

Example of point to multipoint (Fluidmax) topology configuration:

ME (Mesh End) Configuration

```
Device#configure dot11Radio 1 enable
Device#configure dot11Radio 1 mode fluidmax primary
Device#configure dot11Radio 1 channel 36
Device#configure dot11Radio 1 band-width 40
Device#configure dot11Radio 2 enable
Device#configure dot11Radio 2 mode fluidmax primary
Device#configure dot11Radio 2 channel 149
Device#configure dot11Radio 2 band-width 80
```

MP1 (Mesh point) Configuration

```
Device#configure dot11Radio 1 enable
Device#configure dot11Radio 1 mode fluidmax secondary
Device#configure dot11Radio 1 channel 36
Device#configure dot11Radio 1 band-width 40
```

MP2 Configuration

```
Device#configure dot11Radio 1 enable
Device#configure dot11Radio 1 mode fluidmax secondary
Device#configure dot11Radio 1 channel 149
Device#configure dot11Radio 1 band-width 80
Device#configure dot11Radio 2 enable
Device#configure dot11Radio 2 mode fluidmax primary
Device#configure dot11Radio 2 channel 44
Device#configure dot11Radio 2 band-width 40
```

MP3 Configuration

```
Device#configure dot11Radio 1 enable
Device#configure dot11Radio 1 mode fluidmax secondary
Device#configure dot11Radio 1 channel 149
Device#configure dot11Radio 1 band-width 80
```

MP4 Configuration

```
Device#configure dot11Radio 1 enable
Device#configure dot11Radio 1 mode fluidmax secondary
Device#configure dot11Radio 1 channel 44
Device#configure dot11Radio 1 band-width 40
```

MP5 Configuration

```
Device#configure dot11Radio 1 enable
Device#configure dot11Radio 1 mode fluidmax secondary
Device#configure dot11Radio 1 channel 44
Device#configure dot11Radio 1 band-width 40
```

Cluster ID: This is an ID assigned to an interface when it is set in Fluidmax mode. This ID should be the same for primary and backup primary nodes. It helps in identifying and grouping devices that belong to the same cluster.

Tower ID: This is used to enable or disable the Fluidmax Tower ID for a specified interface.

Note Tower ID is used in configurations where there is a Gateway + Mesh Point (MP) – MP with the same tower ID.

Use these commands to configure the interface, cluster id, and tower id in Fluidmax mode.

```
Fluidmax - Set the interface in Fluidmax mode.
Primary | Secondary - Fluidmax role for the device, either primary or secondary.
Device# configure dot11Radio [1|2] mode fluidmax cluster id fluidmesh
Cluster id - Set Fluidmax Cluster ID assigned to the interface.
Device# configure dot11Radio [1|2] mode fluidmax tower [enable|disable]
Tower – Enable or disable Fluidmax Tower ID for specified interface.
```

Validate Point to Multipoint Topology using CLI

Use this command to validate the point-to-multipoint (Fluidmax) topology configuration.

```
Device# show dot11Radio <interface> config
```

Example:

ME (Mesh End) radio2

```
Device# show dot11Radio 2 config
Interface : enabled
Mode : fluidmax primary
Frequency : 5745 MHz
Channel : 149
…….
Fluidmax Configuration
Tower ID : disabled
Cluster ID : fluidmesh
Automatic scan : enabled
Automatic scan threshold : disabled
```

MP2 (Mesh Point)

```
Device# show dot11Radio 1 config
Interface : enabled
Mode : fluidmax secondary
Frequency : 5745 MHz
Channel : 149
…….
Fluidmax Configuration
Tower ID : disabled
Cluster ID : fluidmesh
Automatic scan : enabled
Automatic scan threshold : disabled
Device# show dot11Radio 2 config
Interface : enabled
Mode : fluidmax primary
Frequency : 5220 MHz
Channel : 44
Channel width : 40
…….
```

```
Fluidmax Configuration
Tower ID : 100
Cluster ID : fluidmesh
Automatic scan : enabled
Automatic scan threshold : disabled
```

MP4 radio1

```
Device# show dot11Radio 1 config
Interface : enabled
Mode : fluidmax secondary
Frequency : 5220 MHz
Channel : 44
Fluidmax Configuration
Tower ID : disabled
Cluster ID : fluidmesh
Automatic scan : enabled
Automatic scan threshold : disabled
```