



IRCM Best Practices

Cisco supports roaming between controllers running different Cisco IOS XE software versions, but in general, it is advisable to use equal code across the controllers in the same mobility group to ensure consistent behavior across the devices.

- **Mobility group connectivity-** Ensure that IP connectivity exists between the management interfaces of all controllers. If a controller in the mobility group is permanently down (for replacement, testing, etc.), it is recommended that you remove it from the mobility configuration of all peers.
- **Seamless and fast roaming-** The mobility group name acts as a discriminator to indicate which controllers share a common cache for fast roaming information (Cisco Centralized Key Management, 802.11r, Proactive Key Caching [PKC], or OKC). It is important to ensure that, if fast roaming is needed between controllers, they share the same mobility group name.
- **Mobility group size -** Do not create unnecessarily large mobility groups. A mobility group should contain only controllers that have APs in the area where a client can physically roam—for example, all controllers with APs in a building. If you have a scenario in which several buildings are separated, they should be broken into several mobility groups. This saves memory and CPU, as controllers do not need to keep large lists of valid clients, rogues, and APs inside the group, which would not interact anyway. The C9800 wireless controller, like AireOS, supports a maximum of 24 members in a single mobility group.
- **Inter-controller Layer 2 versus Layer 3 roaming-** On the Catalyst 9800, inter-controller Layer 2 roaming occurs when the client VLAN ID associated to the SSID, is the same on both controllers. When the client associates to an access point joined to a new controller, the new controller exchanges mobility messages with the original controller, and the client database entry is moved to the new controller. New security context and associations are established if necessary, and the client database entry is updated for the new access point. This process remains transparent to the user.

Inter-controller Layer 3 roaming occurs when the client VLANs associated to the SSID are different on each controller. Layer 3 roaming is similar to Layer 2 roaming in that the controllers exchange mobility messages on the client roam. However, instead of moving the client database entry to the new controller, the original controller marks the client with an “Anchor” entry in its own client database. The database entry is copied to the new controller client database and marked with a “Foreign” entry in the new controller. The roam remains transparent to the wireless client, and the client maintains its original IP address.

On the Catalyst 9800 Wireless Controller, the decision for Layer 2 versus Layer 3 roaming is independent of the client subnet mapped to the client VLAN; only the VLAN ID matters in deciding the type of roam. This is because Catalyst 9800 doesn't require a L3 interface to be configured for each client VLAN. If an inter-controller Layer 2 roaming is desired, then it's user's responsibility to make sure that the network is configured so that the same IP subnet is associated to the same VLAN on both wireless controllers.



Note This is different from AireOS, where Layer 2 roaming happens if the client VLAN and the associated subnet are the same on both wireless controllers.



Note In case of roaming between AireOS and Catalyst 9800, it is always a Layer 3 roam, even when both the controllers are on the same VLAN ID.

- Reduce the need for inter-controller roaming- When implementing AP distribution across controllers in the same mobility group, try to ensure that all access points in the same RF space belong to a single controller. This will reduce the number of intercontroller roams required. A “salt and pepper” scenario (in which APs from different controllers cover the same RF space) is supported, but it is a more expensive process in terms of CPU and protocol exchanges compared to having a single controller per RF space.
- We recommend that you map the WLANs to different VLANs when you are trying to promote IRCM between Catalyst 9800 and AireOS controllers. Ensure that the clients are all DHCP enabled, so that the clients can join the different VLAN/subnet associated to the same SSID.