CCNP BCMSN Notes - Cisco Unified Wireless Network

Autonomous APs can be burdensome to manage in large numbers; a lightweight solution is preferred. *Lightweight Access Points (LAPs)* communicate with a centralized *Wireless LAN Controller (WLC)* through Lightweight Wireless Access Point Protocol (LWAPP) tunnels. The division of layer two functions between a LAP and WLC is referred to as a *split-MAC architecture.* LWAPP tunnels: **   Control messages** - Encrypted control traffic between the WLC and LAPs **   Data** - Cleartext data between wireless clients and the WLC LWAPP traverses UDP ports 12222 and 12223. WLC Functions   Dynamic channel assignment
         Transmit power optimization
         Self-healing wireless coverage
         Flexible client roaming
         Dynamic client load balancing
         RF monitoring
         Security management The Cisco Wireless Control System (WCS) is a server application which can be used to administer WLCs. LAP Operation Bootstrap process: 1. Obtains an IP address via DHCP 2. Learns IP addresses of available WLCs via DHCP option 43 3. Requests to join the first responsive WLC 4. WLC checks the LAP's code version and optionally upgrades and reboots it 5. LAP and WLC form one secured and one unsecured tunnel for management and client traffic, respectively Traffic between any two wireless clients connected to an LAP must pass through the WLC. Roaming When a client roams between LAPs connected to two WLCs in different subnets, the WLCs perform a mobility exchange and build an Ether-IP tunnel to carry the client's layer 3 data; the client does not use a get a new IP address. Ether-IP tunnels operate as IP protocol 97, defined in RFC 3378. The original WLC is the anchor point and the new WLC is the foreign agent. **Mobility Groups** WLCs are arranged in mobility groups to facilitate roaming. Up to 24 WLCs can belong to a single mobility group. A client must reassociate and receive a new IP address when roaming to a new mobility group. WLC Configuration WLC interfaces: **   Management** - Static address used for in-band management **   AP Manager** - Static address on which LWAPP tunnels to the APs are terminated **   Virtual** - A logical interface used to relay DHCP requests from wireless clients; common to a mobility group **   Service port** - Out-of-band debugging interface on 4100 and 4400 series WLCs **   Distribution system port** - Interface facing the wired campus network **   Dynamic** - Automatically created virtual interface(s) for user VLANs Initial WLC configuration is done through a CLI wizard. Pending successful initial configuration, the WLC can be managed through its web interface. LAP Configuration LAPs will automatically obtain a code image and configuration at boot time provided they can communicate with a WLC. LAPs connect to an access switchport (no trunking is required). LAPs can receive power from an external AC adapter or inline via PoE. A LAP can be manually configured with an IP address, or it can pull one automatically via DHCP. WLC addresses can be passed to LAPs via DHCP option 43 (the option payload format varies between models). The running IOS version determines whether an AP is running in autonomous or lightweight mode; a "JX" suffix denotes lightweight operation.