



Build a Test Network

ESS and AP Configuration

Skills Reviewed

There are some typical things you'll need to do with your network:

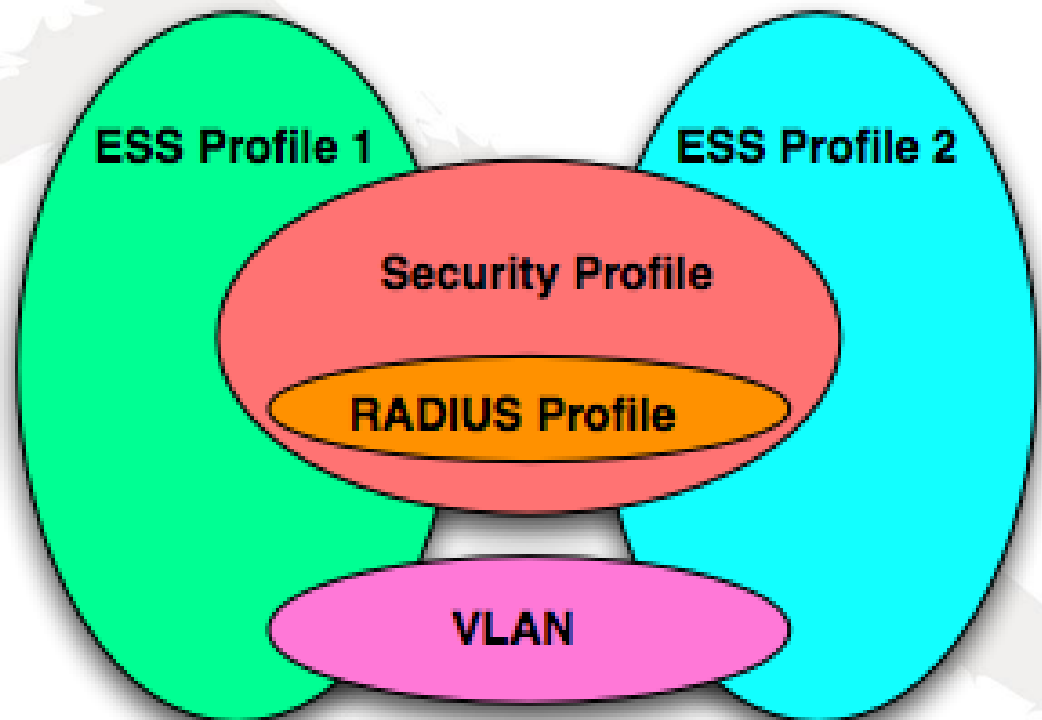
>Create an ESS (wireless network)

- Create a security profile
- Create a VLAN

>Connect wireless clients

ESS Profiles

- > ESS stands for Extended Service Set
 - Network name
- > An ESS profile is a container
 - Multiple profiles can broadcast the same network name
- > There are four main components to an ESS Profile
 - An ESS name
 - A security profile
 - A RADIUS profile (optional)
 - A VLAN (optional)



Virtualization Level

> Virtual Cell

- All APs have same BSSID

> Virtual Port

- Each client sees a unique BSSID
- System controls which AP broadcasts the unique BSSID
- ESS setting and AP Radio setting must match

	VC	VP
AP150	◆	
AP200	◆	◆
AP300		◆
AP1000		◆

Configuring Virtualization - Basic

> Virtualization on by default in ESS

- Enable Virtual Cell **On**
- Virtual Port **On**

ESS Profile - Add

Enable Virtual Cell

On

WMM Support

Off

DTIM Period (number of beacons)

1

Virtual Port

On

Dataplane Mode

Tunneled

> Need to set each Wireless Interface (Radio)

- Virtual Cell **On**
- Channel, RF Band Settings, Channel Width, 802.11n only mode **all match**

Wireless Interface Configuration - Update

Wireless Interface

Wireless Statistics

Antenna Property

Summary Selection

AP ID

4

Ifindex

1

Interface Description

ieee80211-4-1

Administrative Status

Up

Channel

6

Short Preamble

On

RF Band Selection

802.11bgn

Antenna Selection

Left

Transmit Power High(dBm)

20

AP Mode

Normal Mode

Protection Mechanism

WMM-style TX

Protection Mode

Auto

Channel Width

20 MHz

MIMO Mode

2x2

802.11n only mode

Off

Virtual Cell

On

Security Profiles

- > A container of parameters that defines how traffic is handled within an ESS Profile
- > Can define different security methods, cipher suites, and other parameters.
- > Supports multiple authentication and encryption methods within the same WLAN infrastructure
- > Supports the ability to define multiple security profiles that can be assigned to different wireless LANs

The screenshot displays the Meru WLAN Management web interface. The top navigation bar includes 'WLAN Management', 'User: admin', and system information like 'Controller-192.168.1.53' and '4:01:01 AM'. A left sidebar contains a tree view with categories like Monitor, Maintenance, Configuration, Security, Wireless IDS/IPS, Wired, Wireless, QoS, Devices, SNMP, and Certificate Management. The 'Security' category is expanded, showing 'Profile' as the selected option. The main content area is titled 'Security Profile Table - Add' and contains a form for creating a new security profile. The form includes fields for 'Security Profile Name', 'L2 Modes Allowed' (with checkboxes for Clear, 802.1x, Static WEP keys, WPA, WPA PSK, WPA2, WPA2 PSK, MIXED, and MIXED_PSK), 'Data Encrypt' (with checkboxes for WEP64, WEP128, TKIP, CCMP-AES, and CCMP/TKIP), 'Primary RADIUS Profile Name', 'Secondary RADIUS Profile Name', 'WEP Key (Alphanumeric/Hexadecimal)', 'Static WEP Key Index' (with a valid range of 1-4), 'Re-Key Period (seconds)' (with a valid range of 0-65535), 'Captive Portal' (set to Disabled), '802.1X Network Initiation' (set to On), 'Shared Key Authentication' (set to Off), 'Pre-shared Key (Alphanumeric/Hexadecimal)', 'Group Keying Interval (seconds)' (with a valid range of 0-65535), 'Key Rotation' (set to Disabled), 'Backend Auth Server Timeout' (set to 30, with a valid range of 1-65535), 'Reauthentication' (set to On), and 'MAC Filtering' (set to Off). The form concludes with 'OK' and 'Cancel' buttons.

Wireless Authentication Methods

- > None (“clear”)
- > Controller authentication
 - WEP
 - MAC address filtering
 - System-wide ACL; enabled on a per-ESS basis
 - WPA-PSK, WPA2-PSK (WPA Personal)
 - Captive portal local guest users
- > Third-party (e.g. RADIUS) authentication
 - WPA, WPA2 (WPA Enterprise)
 - 802.1x
 - Captive portal

Security Profile Table - Add

Security Profile Name	<input type="text"/> Enter 1-32 chars., Required
L2 Modes Allowed	<input checked="" type="checkbox"/> Clear <input type="checkbox"/> 802.1x <input type="checkbox"/> Static WEP keys <input type="checkbox"/> WPA <input type="checkbox"/> WPA PSK <input type="checkbox"/> WPA2 <input type="checkbox"/> WPA2 PSK <input type="checkbox"/> MIXED <input type="checkbox"/> MIXED_PSK
Data Encrypt	<input type="checkbox"/> WEP64 <input type="checkbox"/> WEP128 <input type="checkbox"/> TKIP <input type="checkbox"/> CCMP-AES <input type="checkbox"/> CCMP/TKIP
Primary RADIUS Profile Name	<input type="text" value="No RADIUS"/>
Secondary RADIUS Profile Name	<input type="text" value="No RADIUS"/>
WEP Key (Alphanumeric/Hexadecimal)	<input type="text"/>
Static WEP Key Index	<input type="text" value="1"/> Valid range: [1-4]
Re-Key Period (seconds)	<input type="text" value="0"/> Valid range: [0-65535]
Captive Portal	<input type="text" value="Disabled"/>

Creating an ESS Profile

- > Configuration Button
- > ESS hyperlink
- > Add button
- > Enter the ESS Profile name and click the “OK” button

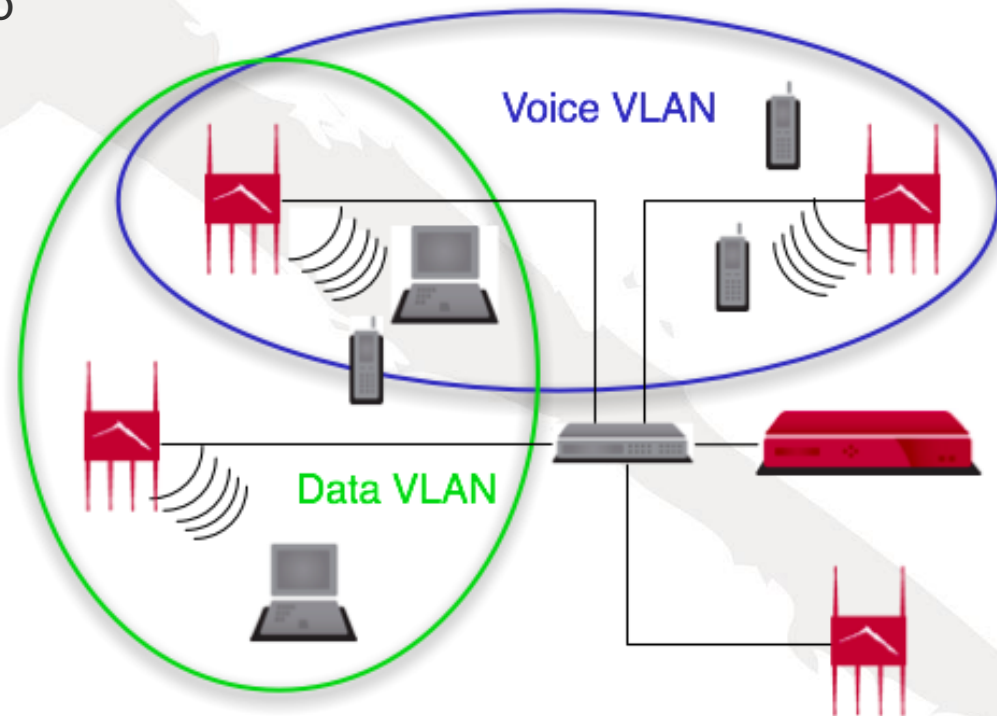
The screenshot shows the Meru WLAN Management interface. The left sidebar contains a tree view with categories like Monitor, Maintenance, Configuration, Security, Wireless IDS/IPS, Wired, Wireless, and Certificate Management. The 'Configuration' button is circled in red. Under the 'Wireless' category, the 'ESS' link is circled in red. The main area displays the 'ESS Profile (1 entry)' table. At the bottom right of the table, the 'Add' button is circled in red.

ESS Profile Name	SSID	Security Profile Name	SSID Broadcast	Tunnel Interface Type
idaho-guest	idaho-guest	default	On	No Tunnel

Note: You'll need to have created your desired Security Profile prior to creating an ESS Profile.

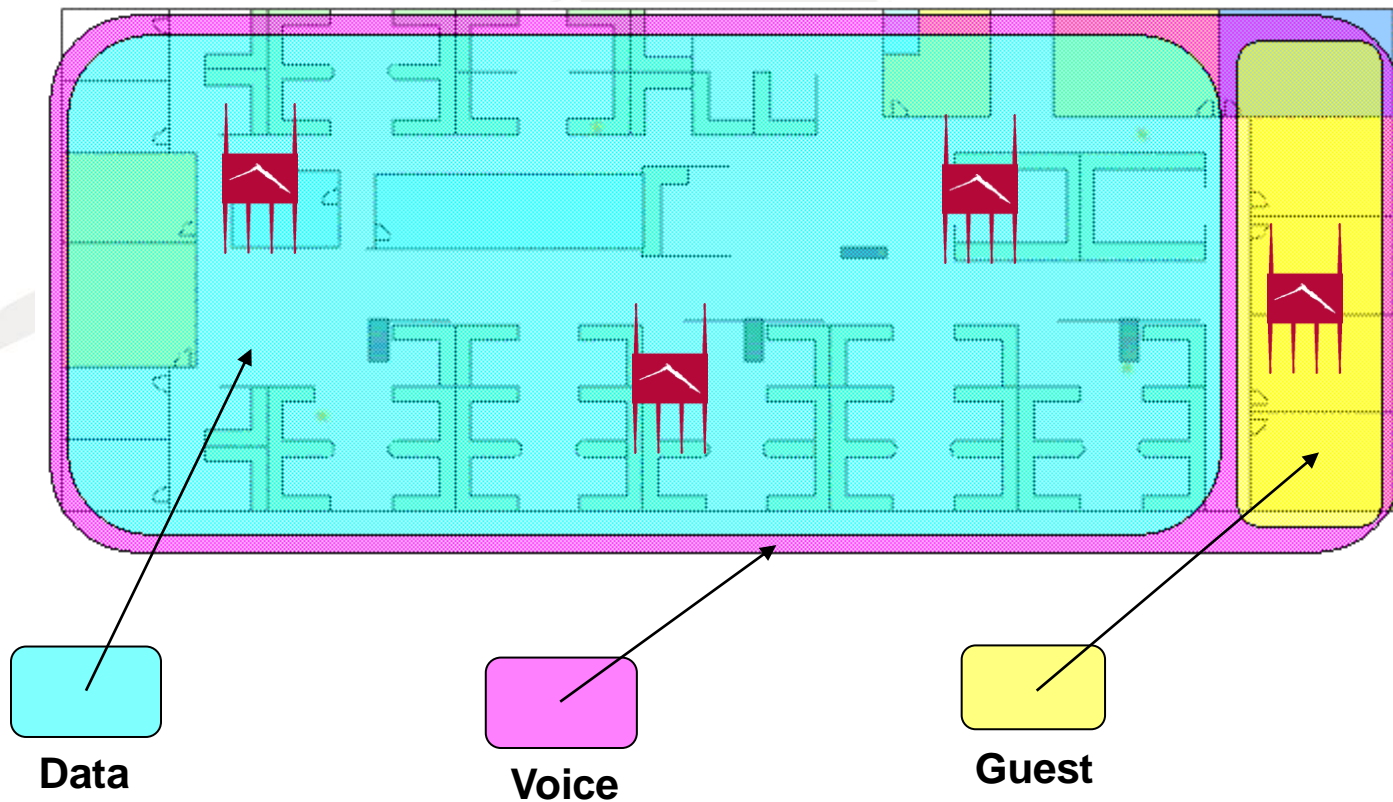
VLANs

- > You can create a one-to-one mapping of ESSID to VLAN or map multiple ESSIDs to one VLAN.
- > VLANs allow you to support multiple independent wireless networks on a single access point.
- > You can create up to 512 VLANs for the WLAN system.
- > Can be assigned dynamically through a RADIUS server.



Distributing ESSes Geographically

- > Distributes ESSes (wireless networks) across AP radios



Configuring ESS Distribution Across APs

> ESS-AP Table

- ESS Profile configuration

ESS-AP Configuration (4 entries)								
ESS Profile		ESS-AP Table		Security Profiles				
<input type="checkbox"/>	ESS Profile	AP ID	AP Name	Interface Index	Channel	Admin State	Max Calls	BSSID
Search:								
<input type="checkbox"/>	helsinki-test	1	AP-1	1	11	Up	0	00:0c:e6:da:8e:02
<input type="checkbox"/>	helsinki-test	1	AP-1	2	36	Up	0	00:0c:e6:ea:57:7a
<input type="checkbox"/>	helsinki-test	2	AP-2	2	36	Up	0	00:0c:e6:ea:57:7a
<input type="checkbox"/>	helsinki-test	2	AP-2	1	11	Up	0	00:0c:e6:da:8e:02

- AP configuration

ESS-AP Configuration (4 entries)								
AP Configuration		ESS-AP Table		Wireless Interface	Wireless Statistics	Ethernet Interface	Ethernet Statistics	Connectivity
<input type="checkbox"/>	ESS Profile	AP ID	AP Name	Interface Index	Channel	Admin State	Max Calls	BSSID
Search:								
<input type="checkbox"/>	helsinki-rad	2	AP-2	2	36	Up	0	00:0c:e6:70:dc:16
<input type="checkbox"/>	helsinki-rad	2	AP-2	1	11	Up	0	00:0c:e6:7e:c1:e7
<input type="checkbox"/>	helsinki-test	2	AP-2	2	36	Up	0	00:0c:e6:ea:57:7a
<input type="checkbox"/>	helsinki-test	2	AP-2	1	11	Up	0	00:0c:e6:da:8e:02

Lab Break

- > Add Wireless network
 - Security profile
 - VLAN
 - ESS

- > L3 AP connectivity
 - Add DNS server configuration