

Items to Know after ECSE Day One Session

15-Jan-18

Vocabulary Word	Description
2.4GHz	Bigger, 3 Channels, ACI, no 40MHz, reasons for being wary
2.4GHz Channels	Only three non-overlapping channels.
4 Addresses	Destination, Source, Transmitter, Receiver, and BSSID in each frame.
4-way Handshake	Part of Encryption process after Authentication - to exchange encryption keys.
5GHz	Smaller, Tons of channels, short range is good, 6dB differences, Why 20MHz vs 40MHz options & SNR
5GHz Channels	More ample spectrum to use if available by regulatory domain.
802.11 a/b/g/n/ac	Know all PHY's and operating frequencies, protection modes.
Access Point	Converts 802.3 to 802.11 and viceversa.
Adjacent Channel Interference	Worse than co-channel interference. When Wi-Fi is in a near-by channel.
Antenna Rule	Cover what you want, don't cover what you don't want - Visualizing Antenna patterns, defining -3dB and -10dB angles.
AP is a Hub	Adding more AP's does not add capacity - all about airtime and CCI/CCC.
AP on a Stick	Helps in determining RF signal propagation characteristics of a facility Data can then be fed into predictive design for accuracy.
AP Vendor Differences	Technologies may have different names depending on the vendor. Vendors have their strenghts and weaknesses.
Association	Green Diamond Review - Association Identifier
Attenuation Areas	All with different characteristics will affect RF signal propagation in every deployments.
Authentication	Before Encryption, backwards in WFA, Open, PSK, 802.1X
Bandwidth	Amount of data that can flow in a given amount of time.
Cable Distances	Better cabling doesn't mean you can go longer distances. 100mts still a limitation.
Capacity	Plan for higher number of devices. You only have 'airtimes' to design around.
Captive Portals	Avoid them if not required. CP problems reflect negatively on Wi-Fi. But may be required for political or marketing reasons.

<i>Cat3, Cat5, Cat5e, Cat6</i>	Cabling infrastructure to be considered. They have requirements including Distance, near-side and far-side cross-talk, etc.
<i>Channel</i>	Range of operating frequencies. 2.4GHz 3 channels, 5GHz, up to 22 in 20MHz depending on regulatory domain. (Country Code)
<i>Client as an AP</i>	Wireless printers becoming on your WLAN? Not a printer, an AP.
<i>Client Capabilities</i>	Must be looked at definition stage if possible.
<i>Co-Channel Contention</i>	Adjacent APs using same channel.
<i>Co-Channel Interference</i>	How to define and measure. Want, Don't Want, Don't Care.
<i>Collision</i>	Happens in Ethernet when two devices access the medium and transmit data at the same time.
<i>Contention</i>	One mechanism to gain access to medium and avoid collisions in Wi-Fi.
<i>Country Codes</i>	Regulatory domains will restrict our designs.
<i>Coverage</i>	Primary signal. First and easiest requirement to meet.
<i>Data Rate</i>	As a requirement - or as quality to ensure modulation.
<i>dB Math</i>	Able to calculate conversions quickly and understand FSPL.
<i>De-Association</i>	Disconnection of a device taken to state 2 of the State Machine.
<i>De-Authentication</i>	Disconnection of a device taken to state 1 of the State Machine.
<i>Device Ratios</i>	Some clients have these, mostly Voice, review 25-30 limit from AVN.
<i>DFS Channels</i>	More channels available, evaluate availability before and look for DFS events on your controllers after deployment.
<i>Directional Antenna</i>	Focusing RF in a specific area. Used in high density deployment facilitating frequency re-use.
<i>Distributed</i>	Vs Centralized, what changes to network infrastructure, where QoS tags added
<i>Encryption</i>	None, TKIP, AES/CCMP.
<i>ESSID</i>	Identifier for multiple BSS' connected to the same distribution system.
<i>Ethernet</i>	System that allows devices to be connected over the wire to transmit data.
<i>FCC Chart</i>	FCC table of frequency allocations.
<i>Free Space Path Loss (FSPL)</i>	Double the distance, one quarter the power. Or -6dB every time you double the distance. How to double distance? +6dB Tx Power!

<i>Green Diamond</i>	Decision matrix and algorithms for associating and roaming are complex.
<i>Hotspot</i>	Devices turned into APs, impact of their presence in your WLAN.
<i>How NICs Work</i>	Ethernet vs Wi-Fi, Antenna, Modulation Filter, Radio Tap Header RECEIVED, yet not SENT.
<i>Hub</i>	Layer 1. Multiport repeater. APs act like hubs in the air.
<i>IPConfig</i>	Windows CLI tool for network interface tasks. Similar to ifconfig in Unix-like systems.
<i>Laminated Cards</i>	Available as cheat sheets for MCS tables, channel planning & more.
<i>LCMI</i>	Least Capable, Most Important Devices and why to design for them.
<i>MCS Chart</i>	How AP's and Clients negotiate a 'box' and move between rates - add in Coding and Guard Intervals
<i>MiFi</i>	Plan for Hotspots and MiFi's in your WLAN, rouges? Allowed devices?
<i>MIMO</i>	Use of multiple radio antennas at transmitters and receivers.
<i>Modulations</i>	BPSK, QPSK, 16-QAM, 64-QAM, 64-QAM, EVM, Why Wi-Fi Goes Slow
<i>Multipath</i>	Multipath when RF bounces. You may have Multipath, but not have Spatial Streams. Different from each other.
<i>Omni Antenna</i>	Omni directional in the horizontal plane. 360 degree coverage in the horizontal plane.
<i>OSI Model</i>	7 layer system for interconnection. Wi-Fi at layer one and lower part of layer 2.
<i>Overlap</i>	About Primary vs Secondary... not percentages. Review 'Fallacy of Overlap' White Paper.
<i>PING</i>	Worse network tool to evaluate the health of a wireless network. Proves connectivity at Layer 3 - not quality of Layer 2
<i>Point to Multi-Point (PtMP)</i>	One-to-many, root and non-root.
<i>Point to Point (PtP)</i>	Connection between two nodes or end points.
<i>Predictive Design</i>	Computer based software to model and simulate an RF environment. Not called a Predictive 'Survey'.
<i>Primary Signal Strength</i>	Coverage is easy. First goal to be met.
<i>Protection Mode</i>	Penalties for Backwards Compatibility - Quite a bit more than people expt. NOT slowing new down to old speeds.
<i>QoS</i>	Relation to The Game - end to end QoS across AP's, WLAN Controllers, Switch Fabric.
<i>Remediation Survey</i>	Done with specific purpose of finding issues in a deployed WLAN.

<i>Retry</i>	Rates, goals, why, difference with CRCs, penalties
<i>RF Interference - Modulated</i>	Wi-Fi as a source of interference.
<i>RF Interference - Unmodulated</i>	Non Wi-Fi devices generating signals in same spectrum space.
<i>RF Path Loss Calculation</i>	FSPL, Inverse Square Law, double the distance one quarter the power.
<i>RF Shadow</i>	Loss of signal due to attenuation along its path.
<i>Roaming</i>	Moving across Basic Service Sets (AP's each with unique BSSID within an Extended Service Set ESS)
<i>Router</i>	Layer 3. Forwarding decisions based on IP address.
<i>RSSI</i>	Power level being received at a receiving radio.
<i>Secondary Signal Strength</i>	Secondary signal for roaming, redundancy, high density, capacity.
<i>SISO</i>	Use of only one radio antenna at transmitter and receiver.
<i>SNR</i>	Where does it come from?
<i>Spatial Streams</i>	MIMO antenna chains transmitting multiple signals simultaneously.
<i>Switch</i>	Layer 2. Forwarding decisions based on MAC address.
<i>TCP/IP</i>	Set of rules that allow hosts to communicate.
<i>The Game</i>	802.11 Contention process, random backoff, CCA thresholds, NAV, DIFS, SIFS, downside of retries