C9800 WIFI Status Map

featuring

Channel Utilization

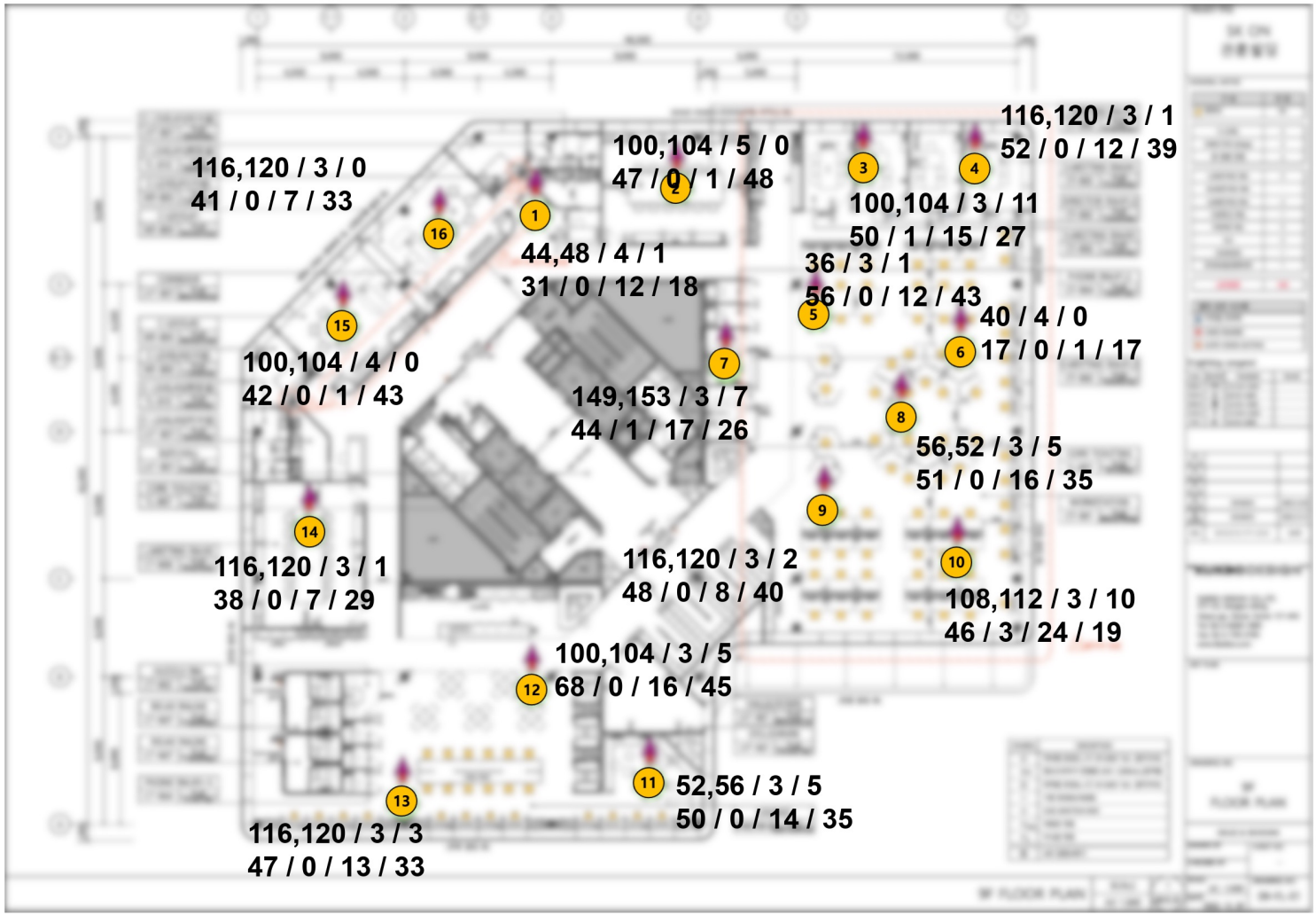
Issue and Request

how could I monitor over 130ea APs at a glance???

- Environment:
  - Office building
  - from 2nd floor to 9th floor
- Devices:
  - Cisco Catlayst 9800 WLC
  - Cisco Catlayst 9115 AP * over 130ea
- Issue:
  - Hugh channel utilization (CU)
- Request
  - Each AP 5Ghz stats as a snapshot including
    1) channel, 2) AP power, 3) number of Client
    4) Channel Utilization (CU), 5) CU of Radio RX, 6) CU of Radio TX, 7) interference
  - Show these stats in the floor map

Map

9F 20230530_1434.log.db



Average

```
20230530_1434.log.db
POWER CLIENT  CU    RX    TX   INF
2 (3.2, 3.6, 33.0, 0.0, 12.0, 20.1)
3 (3.3, 4.3, 45.4, 0.3, 13.1, 32.1)
4 (2.9, 5.0, 48.9, 0.5, 13.8, 33.6)
5 (3.1, 4.8, 51.8, 0.5, 14.7, 34.4)
6 (3.3, 5.3, 51.4, 0.8, 14.7, 35.1)
7 (2.8, 5.6, 50.1, 0.5, 14.5, 34.0)
8 (2.8, 6.2, 49.4, 0.6, 15.2, 33.7)
9 (3.3, 3.3, 45.5, 0.3, 11.0, 33.1)
```

How to Monitor

- Cisco WLC or DNA center has every information.
- But, the operator must check one AP by one AP…… it takes too much time!

- So, it's very easy to get <show tech wireless> which includes every information about WLC and APs.
- <show tech wireless> is like the snapshot!

- Also, don't forget this formula:
  - Channel Utilization = RX + TX + interference

show information (1)

```
------------------ show ap dot11 5ghz load-info ------------------

AP Name                          Radio MAC       Slot  Channel Utilization (%)  Clients
-------------------------------------------------------------------------------------
ABC_Def123_17F_AP7               0845.d179.1f80     1                       0        0
ABC_Def123_17F_AP3               0845.d17a.29a0     1                       0        0
ABC_Def123_17F_AP2               0845.d17a.7500     1                       0        0
ABC_Def123_17F_AP5               0845.d17a.80a0     1                       0        0
ABC_Def123_17F_AP6               0845.d17a.8420     1                       0        0
ABC_Def123_17F_AP1               0845.d17a.8500     1                       0        0
XXX_1234456789012_AP2            2481.3b68.3000     1                       1        0
XXX_1234456789012_AP3            2481.3b69.9b60     1                       4        0
XXX_1234456789012_AP1            2481.3b6b.5c20     1                       4        0
XXX_XX_4F_AP4                    345d.a8bb.00c0     1                      52        0
XXX_XX_8F_AP7                    345d.a8bc.3500     1                      61        1
```

CH / AP Power / Client

CU / RX / TX / Intereference

```
------------------ show ap dot11 5ghz summary ------------------

AP Name                          Mac Address     Slot    Admin State    Oper State    Width    Txpwr           Channel
-------------------------------------------------------------------------------------------------------------------------
ABC_Def123_17F_AP7               0845.d179.1f80  1       Enabled        Up            40       *4/8 (14 dBm)   (108,112)*
ABC_Def123_17F_AP3               0845.d17a.29a0  1       Enabled        Up            40       *4/8 (14 dBm)   (64,60)*
ABC_Def123_17F_AP2               0845.d17a.7500  1       Enabled        Up            40       *4/8 (14 dBm)   (149,153)*
ABC_Def123_17F_AP5               0845.d17a.80a0  1       Enabled        Up            40       *4/8 (14 dBm)   (116,120)*
ABC_Def123_17F_AP6               0845.d17a.8420  1       Enabled        Up            40       *4/8 (14 dBm)   (52,56)*
ABC_Def123_17F_AP1               0845.d17a.8500  1       Enabled        Up            40       *4/8 (14 dBm)   (64,60)*
XXX_1234456789012_AP2            2481.3b68.3000  1       Enabled        Up            40       *3/8 (14 dBm)   (116,120)*
XXX_1234456789012_AP3            2481.3b69.9b60  1       Enabled        Up            40       *3/8 (16 dBm)   (36,40)*
XXX_1234456789012_AP1            2481.3b6b.5c20  1       Enabled        Up            40       *3/8 (14 dBm)   (100,104)*
XXX_XX_4F_AP4                    345d.a8bb.00c0  1       Enabled        Up            40       *2/8 (14 dBm)   (36,40)*
XXX_XX_8F_AP7                    345d.a8bc.3500  1       Enabled        Up            40       *2/8 (14 dBm)   (36,40)*
```

show information (2)

```
------------------ show ap auto-rf dot11 5ghz ------------------


#####################################################################

Number of Slots                                  : 3
AP Name                                          : ABC_Def123_17F_AP7
~~~~
  Load Information
    Load Profile                                 : Passed
    Receive Utilization                          : 0%
    Transmit Utilization                         : 0%
    Channel Utilization                          : 0%
    Attached Clients                             : 0 clients
~~~~
```

CH / AP Power / Client

CU / RX / TX / Intereference

Intereference = CU – RX - TX

Pre-Requirement for code

- Place <show tech wireless> files under <show_tech_wireless>.
- Place the floor map on the same folder.
- Place <location.text> file on the same folder. <location.text> has the x, y point of each AP on the floor map.

Structure

- 210-WIFI_status_db_insert.py
  - defa780_line_number_get.py : get the line number of <show> command from <show tech>
  - defa782_file_maker.py : Make the files such as _ap.text, _load_info.text / _summary.text
  - defa784_file_maker.py : Make _ap2.text file from _ap.text
  - defa786_db_insert.py : Insert the data into sqlite3 database from _ap2.text, _load_info.text, and _summary.text

- 220_average_after_210.py : Calculate the average from database.

- 230_map_draw_after_210.py : Draw the map.