Band Steering User manual(With CcspWifiAgent) - RDKB

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Introduction

Band Steering is a solution ensures that clients are connected to the best radio. Dual Band supported Gateway can transmit SSIDs in both 2.4GHz and 5GHz frequency band. Enabling and disabling of Band Steering can be done through dmcli command line utility.

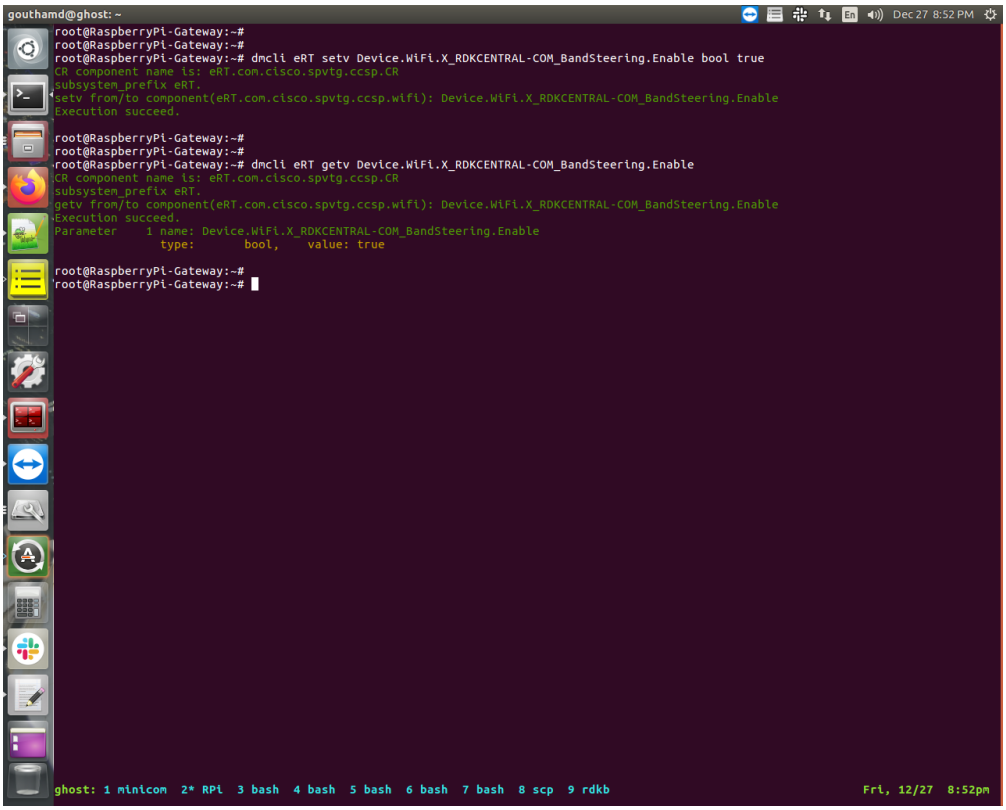
Environment Setup

Band Steering feature requires dual band capability i.e device should be able to broadcast SSID in both 2.4GHz and 5GHz frequency. Also this feature will be of use and applicable only to 5GHz capable device. Older 2.4 GHz-only capable devices cannot benefit from this feature. Still older 2.4GHz-only clients can connect and operate on 2.4GHz frequency only.

Executing System

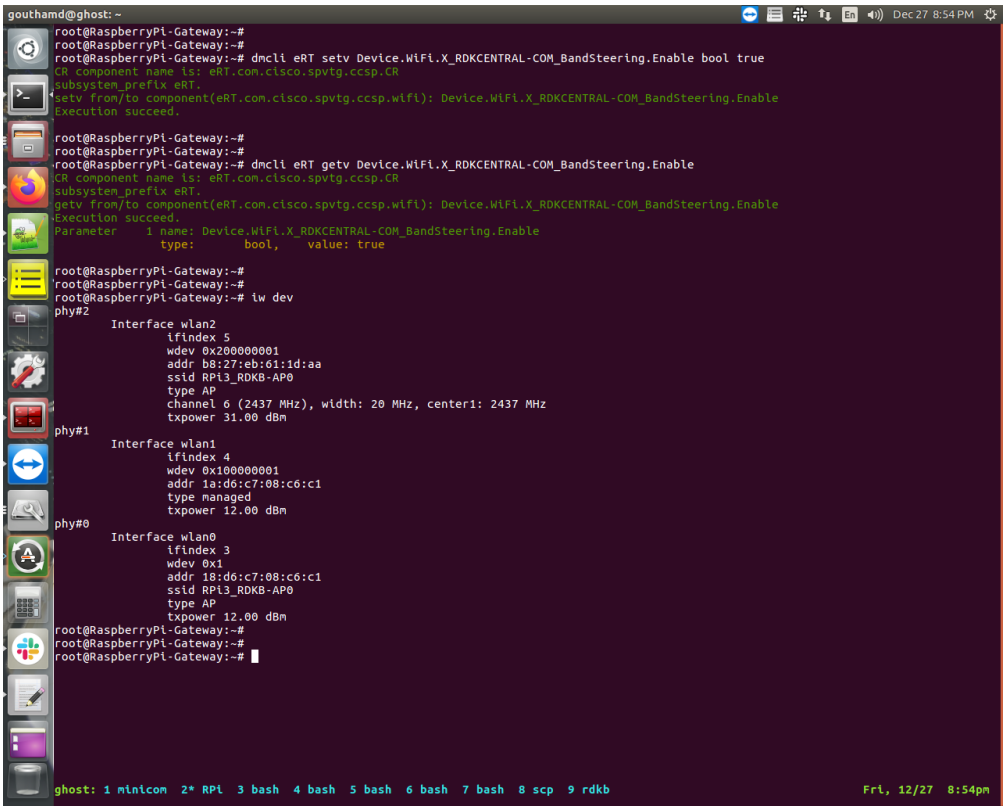
Band Steering by default will be disabled. The user can enabled it using dmcli command as shown below.

Enabling Band Steering Example:



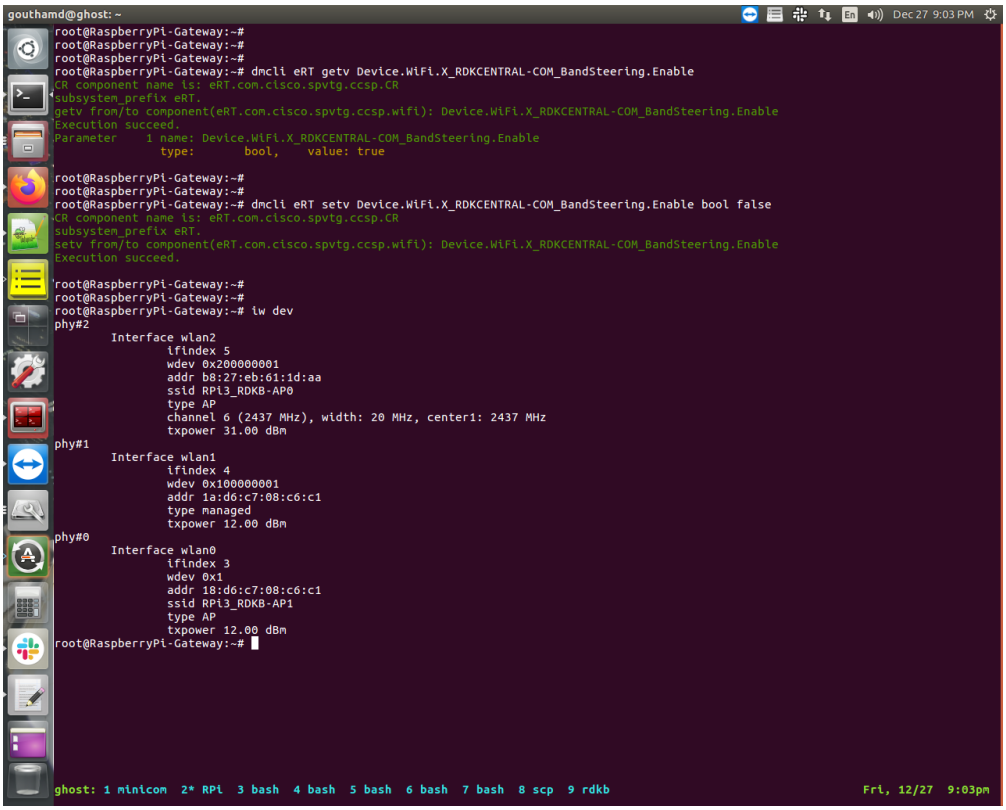
After enabling of Band Steering, the SSID broadcasted by the two interfaces are same. A 5GHz capable client will normally connect to a 5GHz client and older 2.4GHz client will connect to 2.4GHz frequency band.

Both Bands having same SSID:



Disabling of Band Steering will reset all previously made configuration on the 5GHz band. Band Steering can be disabled by the below command.

Disabling Band Steering Example:



Setting the Threshold value Example:

```
root@RaspberryPi-Gateway:~# dmcli eRT getv Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.1.
CR component name is: eRT.com.cisco.spvtg.ccsp.CR
subsystem_prefix eRT.
getv from/to component(eRT.com.cisco.spvtg.ccsp.wifi): Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.1.
Execution succeed.
Parameter    1 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.1.UtilizationThreshold
              type:        int,    value: 0
Parameter    2 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.1.RSSIThreshold
              type:        int,    value: -100
Parameter    3 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.1.PhyRateThreshold
              type:        int,    value: 0
Parameter    4 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.1.OverloadInactiveTime
              type:        int,    value: 0
Parameter    5 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.1.IdleInactiveTime
              type:        int,    value: 0

root@RaspberryPi-Gateway:~# dmcli eRT getv Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.2.
CR component name is: eRT.com.cisco.spvtg.ccsp.CR
subsystem_prefix eRT.
getv from/to component(eRT.com.cisco.spvtg.ccsp.wifi): Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.2.
Execution succeed.
Parameter    1 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.2.UtilizationThreshold
              type:        int,    value: 0
Parameter    2 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.2.RSSIThreshold
              type:        int,    value: -100
Parameter    3 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.2.PhyRateThreshold
              type:        int,    value: 0
Parameter    4 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.2.OverloadInactiveTime
              type:        int,    value: 0
Parameter    5 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.2.IdleInactiveTime
              type:        int,    value: 0

root@RaspberryPi-Gateway:~# dmcli eRT setv Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.2.RSSIThreshold int -25
CR component name is: eRT.com.cisco.spvtg.ccsp.CR
subsystem_prefix eRT.
setv from/to component(eRT.com.cisco.spvtg.ccsp.wifi): Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.2.RSSIThreshold
Execution succeed.

root@RaspberryPi-Gateway:~# dmcli eRT setv Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.1.RSSIThreshold int -25
CR component name is: eRT.com.cisco.spvtg.ccsp.CR
subsystem_prefix eRT.
setv from/to component(eRT.com.cisco.spvtg.ccsp.wifi): Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.1.RSSIThreshold
Execution succeed.
```

```
root@RaspberryPi-Gateway:~# dmcli eRT getv Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.1.
CR component name is: eRT.com.cisco.spvtg.ccsp.CR
subsystem_prefix eRT.
getv from/to component(eRT.com.cisco.spvtg.ccsp.wifi): Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.1.
Execution succeed.
Parameter    1 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.1.UtilizationThreshold
              type:        int,    value: 0
Parameter    2 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.1.RSSIThreshold
              type:        int,    value: -25
Parameter    3 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.1.PhyRateThreshold
              type:        int,    value: 0
Parameter    4 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.1.OverloadInactiveTime
              type:        int,    value: 0
Parameter    5 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.1.IdleInactiveTime
              type:        int,    value: 0

root@RaspberryPi-Gateway:~# dmcli eRT getv Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.2.
CR component name is: eRT.com.cisco.spvtg.ccsp.CR
subsystem_prefix eRT.
getv from/to component(eRT.com.cisco.spvtg.ccsp.wifi): Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.2.
Execution succeed.
Parameter    1 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.2.UtilizationThreshold
              type:        int,    value: 0
Parameter    2 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.2.RSSIThreshold
              type:        int,    value: -25
Parameter    3 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.2.PhyRateThreshold
              type:        int,    value: 0
Parameter    4 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.2.OverloadInactiveTime
              type:        int,    value: 0
Parameter    5 name: Device.WiFi.X_RDKCENTRAL-COM_BandSteering.BandSetting.2.IdleInactiveTime
              type:        int,    value: 0
```

Client connected to 5GHz initially Example:

```
root@RaspberryPi-Gateway:~# iw dev wlan0 station dump
Station <Mac Address> (on wlan0)
        inactive time:  3520 ms
        signal:         -21 dBm
```

Client after switching to 2.4GHz when RSSI signal goes above -25dBm Example:

```
root@RaspberryPi-Gateway:~# iw dev wlan2 station dump
Station <Mac Address> (on wlan2)
        inactive time:  6000 ms
        rx bytes:       39519
        rx packets:     280
        tx bytes:       58423
        tx packets:     267
        tx failed:      0
        signal:         -50 [-50] dBm
        tx bitrate:     72.2 MBit/s
        rx bitrate:     1.0 MBit/s
        authorized:     yes
        authenticated:  yes
        associated:     yes
        WMM/WME:        yes
        TDLS peer:      yes
        DTIM period:    2
        beacon interval:100
        short slot time:yes
        connected time: 197 seconds
```

Client association and disassociation event capture:

```
root@RaspberryPi-Gateway:~# iw event -f
wlan0: del station <Mac addr>
wlan0: del station <Mac addr>
wlan0: del station <Mac addr>
wlan1: new station <Mac addr>
wlan1: del station <Mac addr>
wlan0: new station <Mac addr>
wlan1: new station <Mac addr>
wlan0: new station <Mac addr>
```

Troubleshooting

- ### Error Messages

  If enabling of the Band Steering fails, then both the band will have different SSIDs, still Wifi would operate and wireless clients can connect to them.

- ### Special Considerations

  Device should be dual band capable to support Band Steering functionality.

Support

Contact	Organization	Phone	Email	Role
Rajkumar Narayanan	L&T Technology Service Ltd.	NIL	rajkumar.narayanan@ltts.com	Program manager