



# NXC5500/2500

Version 4.21

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## Application Note

### Smart Client Steering

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## Smart Client Steering Introduction

- What is Smart Client Steering?

Due to the Bring Your Own Device (BYOD) trend, more and more access points (APs) are being deployed to meet the connectivity requirements of handheld devices. However, the 2.4 GHz frequency band which is commonly used by handheld devices is often congested. Gadgets running on the 2.4 GHz frequency typically experience interference from Bluetooth devices, electronics such as microwave ovens, and cordless phones, as well as co-channel interference from other APs, considering there are only three non-overlapping channels available for the IEEE 802.11 b/g/n wireless standards. The Band Select function enables devices with dual-band capability (2.4 GHz and 5 GHz) to move to a less congested AP that is operating on 5 GHz. Thus, the 5 GHz channel becomes an alternative choice for providing Wi-Fi service. The Band Select function provides a better wireless experience for users.

While more and more clients support the 5 GHz frequency, wireless resource optimization becomes more and more important. To avoid the legacy clients from occupying the wireless resource, ZyXEL provides some features to improve the wireless network.

- This technology helps:
  - Optimize wireless spectrum usage
  - Improve user experience

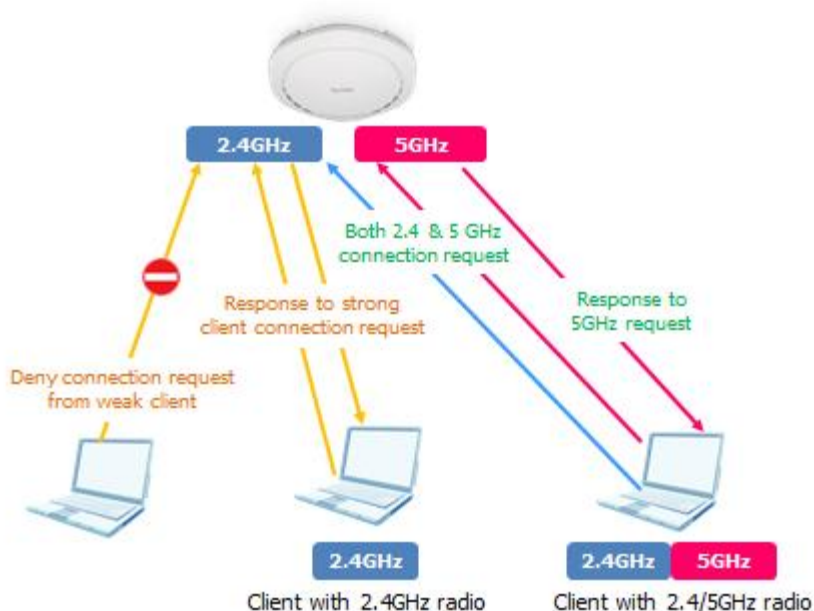
## Terminologies of Smart Client Steering

- Client Band Select
  - ✧ Band Select allows devices with dual-band capability (2.4 GHz and 5 GHz) to move to a less congested AP operating on 5 GHz. Thus, the 5 GHz channel utilization is further enhanced when providing Wi-Fi service.

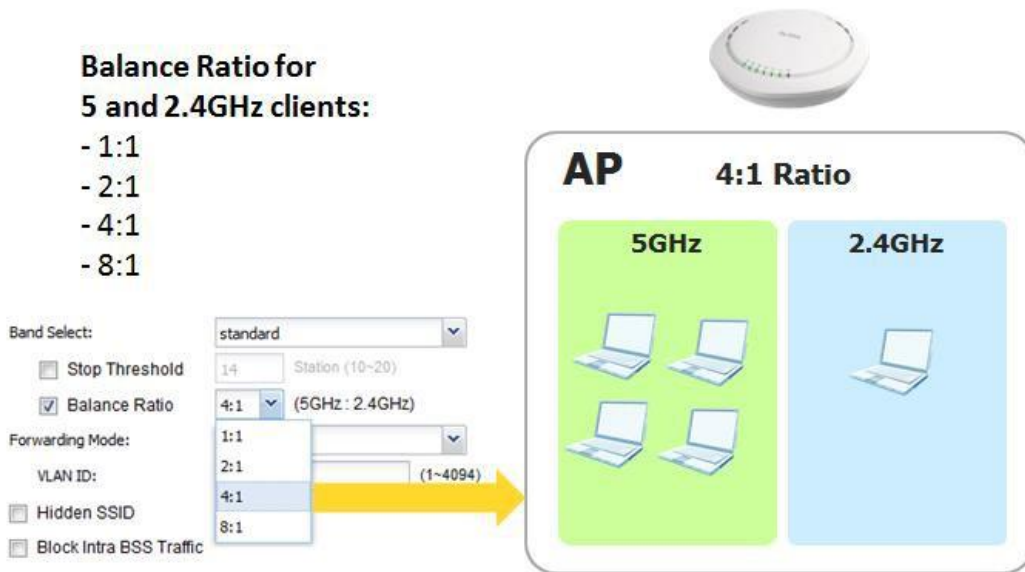
- **Client Band Balancing**
  - ✧ Today there are more and more 5 GHz capable clients. This function helps to prevent situations such as 5 GHz radio overload and 2.4 GHz radio underload, thus provides a well-balanced spectrum utilization.
  
- **RSSI Threshold**
  - ✧ RSSI is an indication of the power level being received by the access point. Thus, the higher the RSSI number, the stronger the signal. With the RSSI threshold settings, users can specify a signal strength level to prevent poor signal clients from affecting the wireless network.

## How Does It Work?

- Features with band select and client signal thresholds
- Monitor the capabilities of each wireless client and direct the clients to the best radio on the best AP by using the band select and signal thresholds.



- Smart Client Steering supports the Client Band Balancing feature which detects dual-radio clients and distributes clients across the 2.4 and 5 GHz band APs based on two independent configurable parameters - Stop Threshold & Balance Ratio.



## Configuration

- Band Select / Band Balance

Web GUI Setting Path: Configuration > Object > AP Profile > SSID

**Edit SSID Profile Test-5G**

Create new Object ▾

Profile Name: Test-5G

SSID: Test-5G

Security Profile: Amber ▾

MAC Filtering Profile: disable ▾

Layer-2 Isolation Profile: disable ▾

QoS: WMM ▾

Rate Limiting (Per Station Traffic Rate)

Downlink: 0 mbps (0~160, 0 is unlimited)

Uplink: 0 mbps (0~160, 0 is unlimited)

Band Select: standard ▾

Stop Threshold 15 Station (10~20)

Balance Ratio 4:1 (5GHz : 2.4GHz)

Forwarding Mode: Local bridge ▾

VLAN ID: 1 (1~4094)

Hidden SSID

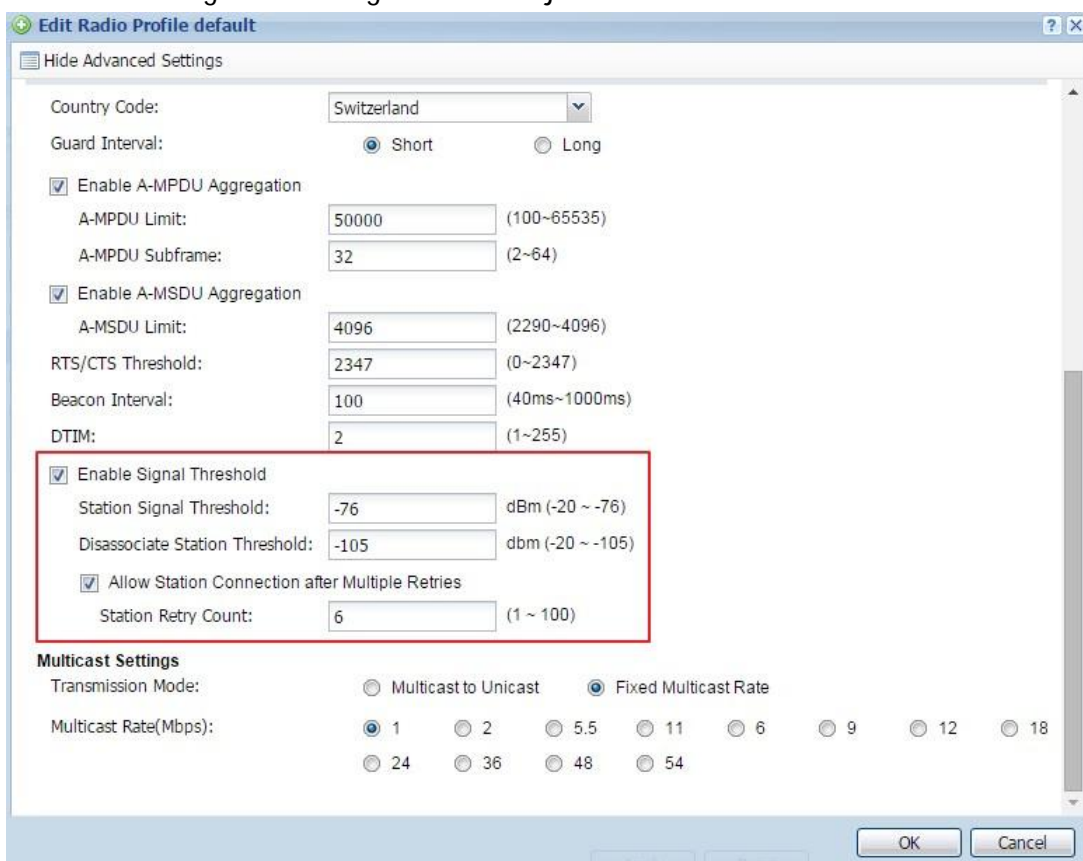
Block Intra BSS Traffic

OK Cancel

- ✧ Stop Threshold:  
Select this option and set the threshold number of the connected wireless clients with the Band Select feature disabled.
- ✧ Balance Ratio:  
Select this option and set a ratio of the wireless clients using the 5 GHz band to the wireless clients using the 2.4 GHz band.
- ✧ Notice:  
*The ideal ratio is to make full use of the two radios. The current status depends on the client's wireless card behavior. For example, more and more dual-band capable clients has 5 GHz set as the default preference. This feature will impact the actual ratio that you set in the Band Select-Balance Ratio option.*

■ RSSI Threshold

Web GUI Setting Path: Configuration > Object > AP Profile > Radio



✧ Station Signal Threshold

Set the minimum client signal strength. A wireless client is allowed to connect to the AP only when its signal strength is stronger than the specified threshold.

The parameter -20 dBm is the strongest signal you can require and -76 dBm is the weakest.

✧ Disassociate Station Threshold

Set the minimum kick-off signal strength. When a wireless client's signal strength is lower than the specified threshold, the NXC disconnects the wireless client from the AP.

The parameter -20 dBm is the strongest signal you can require and -90 dBm is the weakest.

✧ Allow Station Connection after Multiple Retries

Select this option to allow a wireless client to try to associate with the AP again after it is disconnected due to weak signal strength.

✧ Notice

*This feature detects the wireless signal from the AP. It means the strength calculation is based on the signal sent from the client and received by the AP. Since the AP is more sensitive than the wireless client, it can usually hear from a further distance than the client.*