



NXC5500/2500

Version 4.20

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Application Note

Band Select

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Introduction

- What is Band Select?

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 2.4GHz frequency band commonly used by handheld devices is often congested. Gadgets running on 2.4GHz frequency typically experience interference from bluetooth devices, microwave ovens, and cordless phones, as well as co-channel interference from other APs considering there are only three non-overlapping channels available for 802.11 b/g/n wireless standards. Band Select enables devices with dual-band capability (2.4GHz and 5GHz) to move to a less congested AP operating 5GHz. Thus, 5GHz channel becomes a good choice when providing Wi-Fi service. The Band Select function provides better wireless experience for users.

This technology helps:

- Client devices employ 5GHz band first
- Maximize a client's wireless capability
- Improve a user's wireless experience

Terminologies of Band Select

- 5GHz-capable client

A wireless device equipped with an NIC card that supports both 2.4GHz and 5GHz

- Standard Mode

Typically, 5GHz-capable clients connect to APs on 5GHz band first. But if the client, by default, tries to connect to 2.4GHz band channels first, Standard Mode lets the device accept a 2.4GHz connection even if it has 5GHz

capability

- Force Mode

5GHz-capable clients can ONLY connect to APs on 5GHz band

How Does It Work?

- The AP collects data from 5GHz-capable clients via a 2.4GHz probe request. Clients with dual-band capability are then connected to the 5GHz band
- In STANDARD Mode, if a 5GHz-capable client sends more than eight 2.4GHz probe requests or three authentication requests within 5 seconds, the AP accepts the client's connection to the 2.4GHz band
- In STANDARD Mode 2.4GHz-only clients typically connect to the AP within an evaluation period, which means sending eight 2.4GHz probe requests or three authentication requests within 5 seconds. The 2.4GHz-only client is able to connect to the Wi-Fi after the said requests have been sent or after 5 seconds
- In FORCE Mode, if a client is determined to be 5GHz-capable, it can ONLY connect to the 5GHz band
- In FORCE Mode 2.4GHz-only clients typically connect to the AP within an evaluation period, which means sending eight 2.4GHz probe requests or three authentication requests within 120 seconds

Application Limits

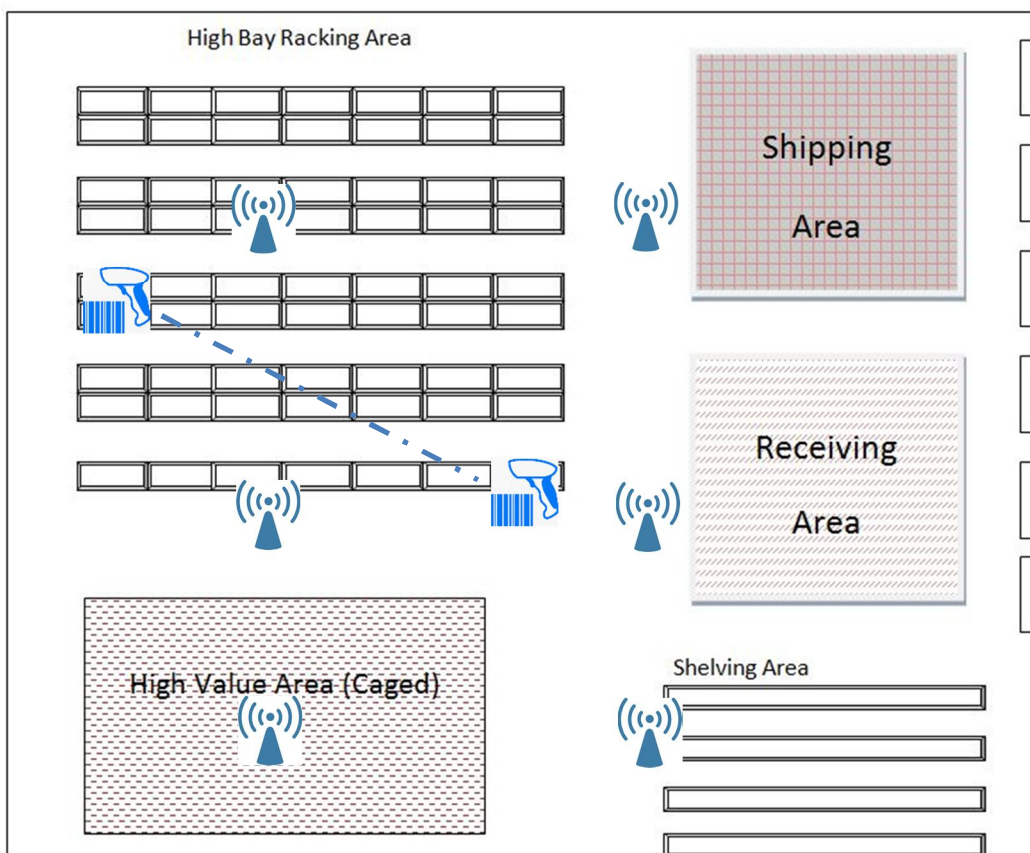
- Due to the time required in determining whether or not a client supports 5GHz band, clients are placed on hold for a few minutes, which impacts the client's roaming ability. Consequently, Band Select may potentially cause interruptions for time-sensitive applications, such as voice and video

applications, because of roaming delays

- If most clients in a deployment scenario do not have dual-band support, disable the Band Select function to avoid wireless connectivity issues

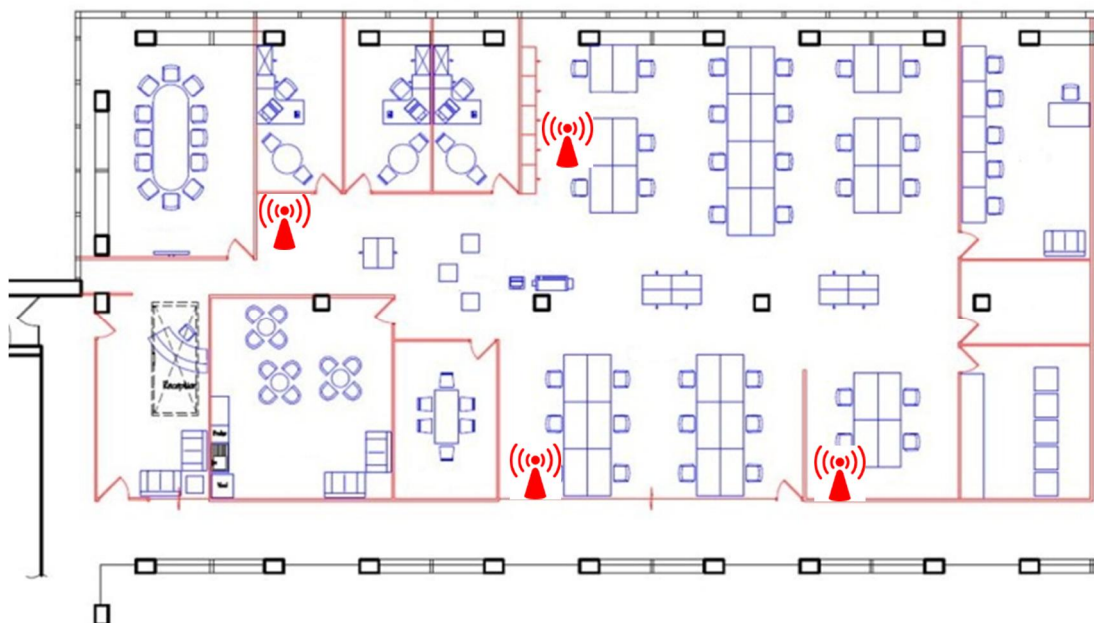
Scenario



1. Roaming scenario - Wireless Barcode Scanner Application in a Warehouse



It is recommended for the Band Select function to be DISABLED in this scenario as staff members may be moving around the warehouse while using the wireless barcode scanner. The barcode scanner needs to roam from one AP to another frequently and enabling Band Select may cause its wireless disconnections while roaming.

2. Typical office scenario - Handheld Device Application in Office



Today, more and more handheld devices are 5GHz capable. In this office scenario, clients usually have fixed locations without the need to be moved around, and the applications are not time-sensitive. Generally, the clients are  able to tolerate short disconnections on mobile devices. Thus, Band Select  should be enabled to effectively increase the AP's band utilization.

Standard Mode or Force Mode for the Band Select function can be applied accordingly. Note that Force Mode may prevent 2.4GHz-only clients from connecting to the Wi-Fi network for a period of time.

Configuration

Goal: To enable or disable Band Select function on NXC2500/5500

Setting Path:

CONFIGURATION > Object > AP Profile > SSID > Edit: Band Select field

