Countries and Regulations

Information About Country Codes

Controllers and access points are designed for use in many countries with varying regulatory requirements. The radios within the access points are assigned to a specific regulatory domain at the factory (such as -E for Europe), but the country code enables you to specify a particular country of operation (such as FR for France or ES for Spain). Configuring a country code ensures that each radio's broadcast frequency bands, interfaces, channels, and transmit power levels are compliant with country-specific regulations.

Information About Japanese Country Codes

Country codes define the channels that can be used legally in each country. These country codes are available for Japan:

- J2: Allows only -P radios to join the controller
- J4: Allows 2.4G JPQU and 5G PQU to join the controller.

Prerequisites for Configuring Country Codes

- Generally, you should configure one country code per device; you configure one code that matches the physical location of the device and its access points. You can configure up to 200 country codes per device. This multiple-country support enables you to manage access points in various countries from a single device.
- When the multiple-country feature is used, all the devices that are going to join the same RF group must be configured with the same set of countries, configured in the same order.
- Access points are capable of using all the available legal frequencies. However, access points are assigned to the frequencies that are supported in their relevant domains.

- The country list configured on the RF group leader determines which channels the members will operate on. This list is independent of which countries have been configured on the RF group members.
- For devices in the Japan regulatory domain, you should have one or more Japan country codes (JP, J2, or J3) configured on your device at the time you last booted your device.
- For devices in the Japan regulatory domain, you should have one or more Japan country codes (J2, or J4) configured on your device at the time you last booted your device.
- For devices in the Japan regulatory domain, you must have at least one access point with a -J regulatory domain joined to your device.
- You cannot delete any country code using the configuration command **wireless country country-code** if the specified country was configured using the **ap country list** command and vice-versa.

Configuring Country Codes (GUI)

Procedure

Step 1 Choose **Configuration** > **Wireless** > **Access Points** > **Country**.

Step 2 On the **Country** page, select the check box for each country where your access points are installed. If you selected more than one check box, a message is displayed indicating that RRM channels and power levels are limited to common channels and power levels.

Step 3 Click **Apply**.

Configuring Country Codes (CLI)

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device# enable`	Enters privileged EXEC mode.
Step 2	**show wireless country supported** **Example:** `Device# show wireless country supported`	Displays a list of all the available country codes.
Step 3	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.

	Command or Action	Purpose
Step 4	**ap dot11** { **24ghz** | **5ghz** | **6ghz** } **shutdown** **Example:** `Device(config)# ap dot11 5ghz shutdown`	Disables the 802.11b/g network, if you use 24ghz. Disables the 802.11a network, if you use 5ghz. Disables the 802.11 6GHz network, if you use 6ghz.
Step 5	**ap country** *country_code* **Example:** `Device(config)# ap country IN`	Configures country code on the controller, so that access points joining controller matches the country code and its corresponding regulatory domain codes for the AP. **Note** More than one country code can be configured.
Step 6	**wireless country** *country_code* **Example:** `Device(config)# wireless country IN`	Configures 200 country codes per device. **Note** This CLI is applicable for deployments having more than 20 countries.
Step 7	**exit** **Example:** `Device(config)# exit`	Returns to privileged EXEC mode.
Step 8	**show wireless country configured** **Example:** `Device# show wireless country configured`	Displays the configured countries.
Step 9	**show wireless country channels** **Example:** `Device# show wireless country channels`	Displays the list of available channels for the country codes configured on your device. **Note** Perform Steps 9 through 17 only if you have configured multiple country codes in Step 6.
Step 10	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 11	**no ap dot11** { **24ghz** | **5ghz** | **6ghz** } **shutdown** **Example:** `Device(config)# no ap dot11 5ghz shutdown`	Enables the 802.11b/g network, if you use 24ghz. Enables the 802.11a network, if you use 5ghz. Enables the 802.11 6-GHz network, if you use 6ghz.
Step 12	**end** **Example:**	Returns to privileged EXEC mode.

	Command or Action	Purpose
	`Device(config)# end`	
Step 13	**ap name** *cisco-ap* **shutdown** **Example:** `Device# ap name AP02 shutdown`	Disables the access point. **Note** Ensure that you disable only the access point for which you are configuring country codes.
Step 14	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 15	**ap name** *cisco-ap* **country** *country_code* **Example:** `Device# ap name AP02 country US`	Assigns each access point with a country code from the controller country code list. **Note** • Ensure that the country code that you choose is compatible with the regulatory domain of at least one of the access point's radios. • Disable the access point before changing country code.
Step 16	**end** **Example:** `Device(config)# end`	Returns to privileged EXEC mode.
Step 17	**ap name** *cisco-ap* **no shutdown** **Example:** `Device# ap name AP02 no shutdown`	Enables the access point.

Configuration Examples for Configuring Country Codes

Viewing Channel List for Country Codes

This example shows how to display the list of available channels for the country codes on your device:

```
Device# show wireless country channels

Configured Country.....................: US - United States
KEY: * = Channel is legal in this country and may be configured manually.
     A = Channel is the Auto-RF default in this country.
     . = Channel is not legal in this country.
     C = Channel has been configured for use by Auto-RF.
     x = Channel is available to be configured for use by Auto-RF.
  (-,-) = (indoor, outdoor) regulatory domain allowed by this country.
-----------------:+-+-+-+-+-+-+-+-+-+-+-+-+-+-
802.11bg         :
Channels         :                 1 1 1 1 1
```

```
                  1 2 3 4 5 6 7 8 9 0 1 2 3 4
-----------------:+-+-+-+-+-+-+-+-+-+-+-+-+-+-
(-A ,-AB ) US    : A * * * * A * * * * A . . .
Auto-RF          : . . . . . . . . . . . . . .
-----------------:+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-
802.11a          :                        1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Channels         :3 3 3 4 4 4 4 4 5 5 6 6 0 0 0 1 1 2 2 2 3 3 4 4 5 5 6 6
                  4 6 8 0 2 4 6 8 2 6 0 4 0 4 8 2 6 0 4 8 2 6 0 9 3 7 1 5
-----------------:+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-
(-A ,-AB ) US    : . A . A . A . A A A A A * * * * * . . . * * * A A A A*
Auto-RF          : . . . . . . . . . . . . . . . . . . . . . . . . . . . .
-----------------:+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-
4.9GHz 802.11a   :
Channels         :                  1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2
                  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
-----------------:+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-
US (-A ,-AB )    : * * * * * * * * * * * * * * * * * * * A * * * * * A
Auto-RF          : . . . . . . . . . . . . . . . . . . . . . . . . . .
```

Information About Regulatory Compliance Domain

Controllers and access points (AP) are designed for use in many countries with varying regulatory requirements. Country code enables to specify a particular country of operation (such as FR for France or ES for Spain). Configuring a country code ensures that each radio's broadcast frequency bands, interfaces, channels, and transmit power levels are compliant with country-specific regulations.

This feature helps to reduce the number of regulatory domains by modifying the existing pre-provision domains workflow to determine the regulatory domain at runtime for each country code. A new Rest of World (RoW) domain has been introduced and merged to include the nine pre-existing domains. Every AP can determine its own regulatory domain from one of these domains, with the regulated power table and the allowed radio channels.

Note The transmission power value in the TPC IE of the beacon can differ from that of the transmission power value of the AP displayed in the **show controllers dot11radio** command, by a maximum difference of 2 dB. The maximum deviation allowed in TPC IE of beacon is 2 dB.

Global Country-Level Domains

For detailed information about the power table and supported channels of countries in the global domain for 2.4-GHz, 5-GHz, 6-GHz, and Rest of World domains, see Cisco Catalyst 9100AX Access Points Technical Reference.