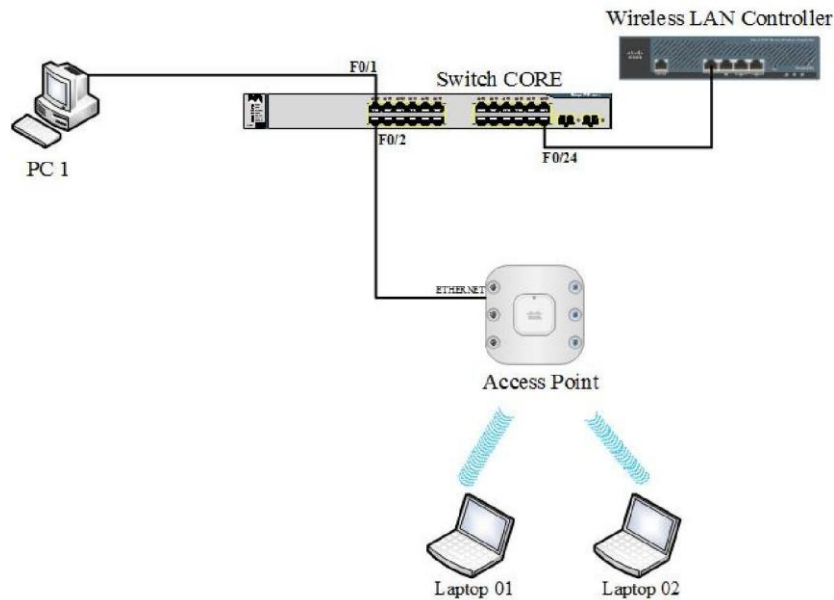


LAB - CẤU HÌNH CISCO WLC 2504

I. Sơ đồ



II. Mô tả

Bài lab gồm một PC, một Access Point, một Switch và một WLC

Đặt IP theo sơ đồ sau:

Tên thiết bị	Địa chỉ IP
WLC	192.168.1.100/24
AP	192.168.1.1/24
PC	192.168.1.2/24
Interface Vlan 1	192.168.1.10/24

II. Yêu cầu

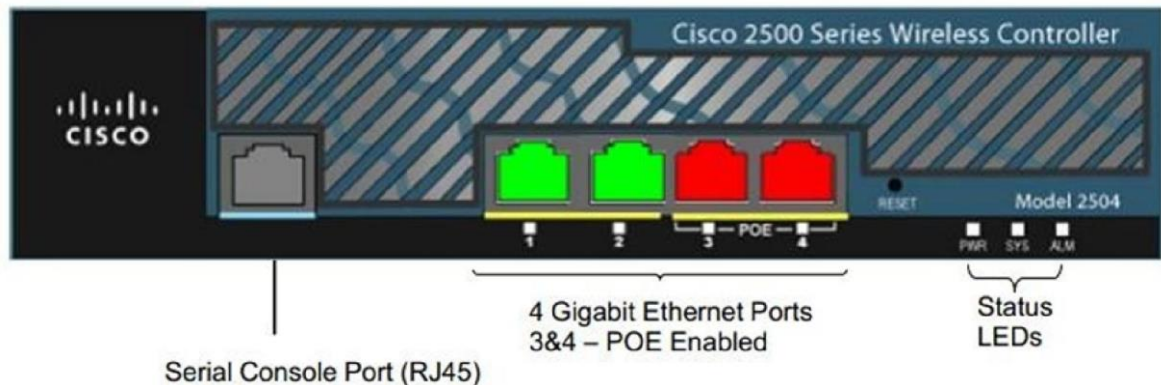
1. Giới thiệu Cisco WLC 2504 và Factory Default WLC dùng CLI
2. Kiểm tra IP, kích hoạt dịch vụ SSH và WebPage trên WLC
3. Kích hoạt dịch vụ DHCP Server trên WLC
4. Hiệu chỉnh thời gian trên WLC
5. Cấu hình Lightweight AP register tới WLC
6. Khắc phục AP không register tới WLC
- 6.1. Lỗi Regulator Domain Mismatch

6.2. Lỗi Time Mismatch

7. Thiết lập SSID

IV. Cấu hình

Yêu cầu 1: Giới thiệu Cisco WLC 2504 và Factory Default WLC dùng CLI.



Cisco WLC 2504 gồm: một cổng Console, 4 cổng Gigabit Ethernet, 3 đèn led báo trạng thái

Factory Default WLC dùng CLI:

Trong quá trình khởi động của WLC 2504, ta nhấn phím ESC để truy cập “Boot Loader Menu”.

```
WLCNG Boot Loader Version 1.0.16 (Built on Feb 28 2011 at 13:14:54
by cisco)
Board Revision 0.0 (SN: PSZ17040646, Type: AIR-CT2504-K9) (P)

Verifying boot loader integrity... OK.

OCTEON CN5230C-SCP pass 2.0, Core clock: 750 MHz, DDR clock: 330 MHz
(660 Mhz datarate)
CPU Cores: 4
DRAM: 1024 MB
Flash: 32 MB
Clearing DRAM.....done
Network: octeth0', octeth1, octeth2, octeth3
  ' - Active interface
  E - Environment MAC address override
CF Bus 0 (IDE): OK
IDE device 0:
  - Model: 1GB CompactFlash Card Firm: CF B612J Ser#:
C371100275A1Yj8CFJ1U
  - Type: Hard Disk
  - Capacity: 977.4 MB = 0.9 GB (2001888 x 512)
```

Press <ESC> now to access the Boot Menu...

Boot Loader Menu

- 1.Run primary image (7.4.121.0) – Active
- 2.Run backup image (7.4.110.0)
- 3.Change active boot image
- 4.Clear configuration
- 5.Format FLASH Drive
- 6.Manually update images

Enter selection: 4

Khởi tạo các thông số cơ bản

```
Would you like to terminate autoinstall? [yes]: <enter>
AUTO-INSTALL: starting now...
rc = 0
System Name [Cisco_a4:02:44] (31 characters max): WCL2504
AUTO-INSTALL: no interfaces registered.
AUTO-INSTALL: process terminated -- no configuration loaded
Enter Administrative User Name (24 characters max): vnpro
Enter Administrative Password (3 to 24 characters): vnpro@123
Re-enter Administrative Password                : vnpro@123
Enable Link Aggregation (LAG) [yes][NO]: no
Management Interface IP Address: 192.168.1.100
Management Interface Netmask: 255.255.255.0
Management Interface Default Router: 192.168.1.10
Management Interface VLAN Identifier (0 = untagged): 0
Management Interface Port Num [1 to 4]: 1
Management Interface DHCP Server IP Address: 192.168.1.101
Virtual Gateway IP Address: 1.1.1.1
Multicast IP Address: 239.1.1.1
Mobility/RF Group Name: vnpro
Network Name (SSID): vnpro
Configure DHCP Bridging Mode [yes][NO]: no
Allow Static IP Addresses [YES][no]: yes
Configure a RADIUS Server now? [YES][no]: no
Warning! The default WLAN security policy requires a RADIUS server.
Please see documentation for more details.
Enter Country Code list (enter 'help' for a list of countries) [US]:
<enter>
Enable 802.11b Network [YES][no]: yes
Enable 802.11a Network [YES][no]: yes
Enable 802.11g Network [YES][no]: yes
Enable Auto-RF [YES][no]: yes
Configure a NTP server now? [YES][no]: no
Configure the system time now? [YES][no]: yes
Enter the date in MM/DD/YY format:
```

Enter the time in HH:MM:SS format:
Configuration correct? If yes, system will save it and reset.
[yes][NO]: yes

Configuration saved!
Resetting system with new configuration...
Configuration saved!
Resetting system

Đăng nhập vào WLC2504

User:vnpro
Password:vnpro@123
(Cisco Controller) >

Kiểm tra thông tin WLC 2504

(Cisco Controller) > ? //dùng ? để xem tất cả các lệnh

clear	Clear selected configuration elements.
config	Configure switch options and settings.
debug	Manages system debug options.
eping	Send Ethernet-over-IP echo packets to a specified mobility peer IP address.
help	Help
license	Manage Software License
linktest	Perform a link test to a specified MAC address.
logout	Exit this session. Any unsaved changes are lost.
mping	Send Mobility echo packets to a specified mobility peer IP address.
ping	Send ICMP echo packets to a specified IP address.
reset	Reset options.
save	Save switch configurations.
show	Display switch options and settings.
test	Test trigger commands
transfer	Transfer a file to or from the switch.

(Cisco Controller) >

Yêu cầu 2: Kiểm tra IP, kích hoạt dịch vụ SSH và WebPage trên WLC

Kiểm tra IP của WLC

(Cisco Controller)> show interface summary
Number of Interfaces..... 2
Interface Name Port Vlan Id IP Address Type Ap Mgr Guest

management 1 untagged 192.168.1.1 Static Yes No
virtualN/A N/A 1.1.1.1 Static No No
(Cisco Controller) >

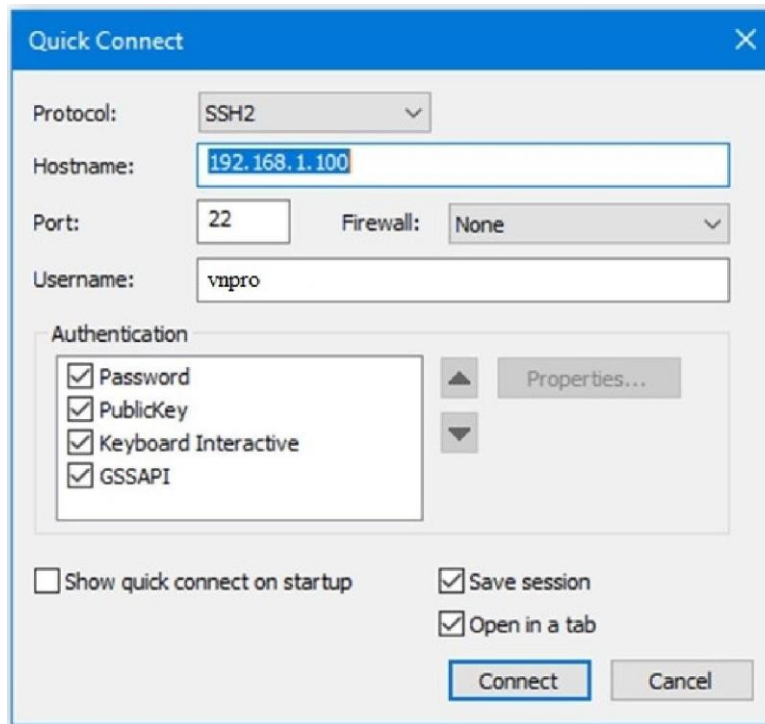
Kiểm tra IP cổng quản lý

(Cisco Controller)> show interface detailed management

Kiểm tra kết nối từ WLC tới các thiết bị khác.

```
(Cisco Controller) > ping 192.168.1.10
```

Kích hoạt dịch vụ SSH trên WLC.



SSH được kích hoạt mặc định trên WLC sau khi Factory Default thiết bị thành công.

Đăng nhập vào WLC

```
(Cisco Controller)>  
User: vnpro  
Password:vnpro@123  
(Cisco Controller) >
```

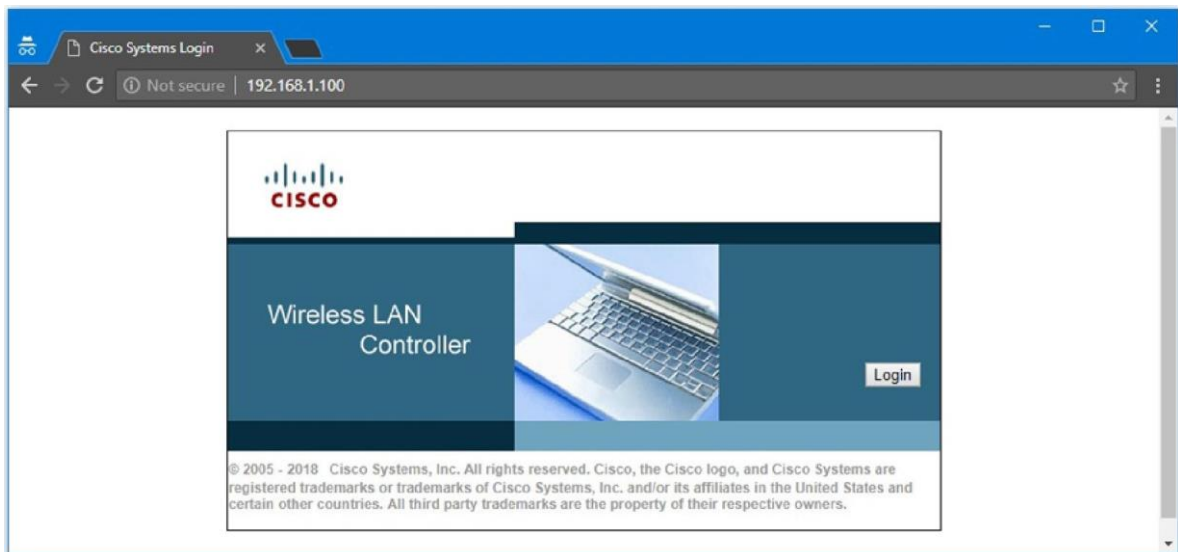
Kích hoạt dịch vụ WebPage trên WLC

Kích hoạt dịch vụ web cho để cho phép đăng nhập vào Cisco WLC 2504 bằng giao diện GUI

```
(Cisco Controller) > config network webmode enable  
(Cisco Controller) > config network secureweb enable
```

Kiểm tra kết nối từ PC tới Cisco WLC 2504.

```
C:\PC> ping 192.168.1.100
```

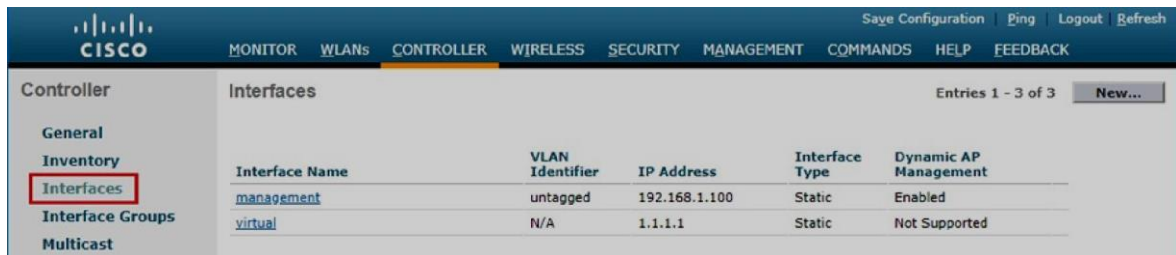


Click vào nút Login rồi khai báo thông tin xác thực.



Yêu cầu 3: Kích hoạt dịch vụ DHCP Server trên WLC.

Kiểm tra thông tin địa chỉ cổng management trên WLC: CONTROLLER → Interfaces

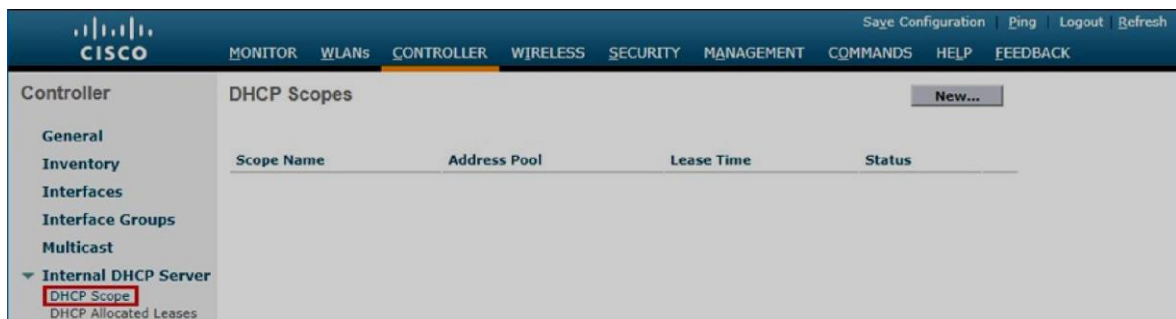


The screenshot shows the Cisco WLC Controller configuration page for Interfaces. The left sidebar has 'Interfaces' highlighted. The main area shows a table of interfaces:

Interface Name	VLAN Identifier	IP Address	Interface Type	Dynamic AP Management
management	untagged	192.168.1.100	Static	Enabled
virtual	N/A	1.1.1.1	Static	Not Supported

Entries 1 - 3 of 3 [New...](#)

Cấu hình DHCP Server trên WLC: CONTROLLER > Internal DHCP Server → DHCP Scope → New...

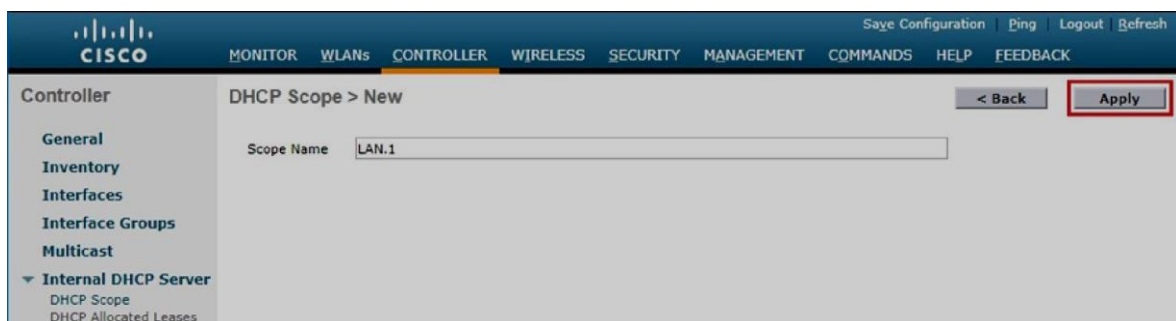


The screenshot shows the Cisco WLC Controller configuration page for DHCP Scopes. The left sidebar has 'Internal DHCP Server' > 'DHCP Scope' highlighted. The main area shows a table of DHCP scopes:

Scope Name	Address Pool	Lease Time	Status
------------	--------------	------------	--------

[New...](#)

Khai báo Scope Name rồi click Apply.



The screenshot shows the 'DHCP Scope > New' form. The 'Scope Name' field is filled with 'LAN.1'. The 'Apply' button is highlighted with a red box.

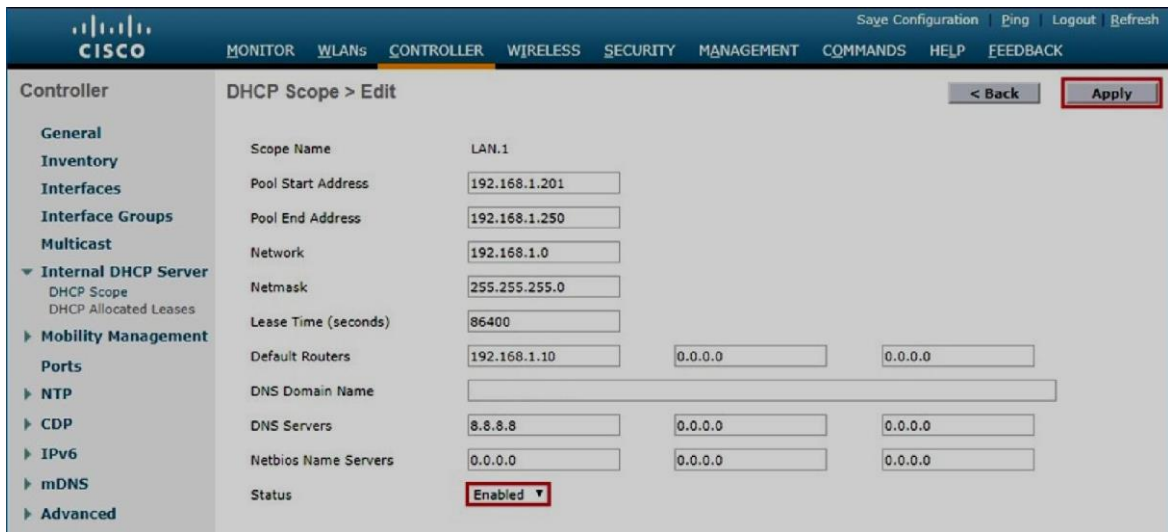
Click vào link Scope Name vừa khởi tạo, khai báo các tham số rồi click Apply



The screenshot shows the Cisco WLC Controller configuration page for DHCP Scopes after creating a new scope. The 'LAN.1' link in the 'Scope Name' column is highlighted with a red box.

Scope Name	Address Pool	Lease Time	Status
LAN.1	0.0.0.0 - 0.0.0.0	1 d	Disabled

Khai báo các tham số và bật tính năng DHCP Scope



The screenshot shows the Cisco Controller web interface for configuring a DHCP Scope. The left sidebar lists various configuration categories, with 'Internal DHCP Server' expanded. The main area is titled 'DHCP Scope > Edit'. It contains several input fields for configuring the scope, including Scope Name, Pool Start/End Address, Network, Netmask, Lease Time, Default Routers, DNS Domain Name, DNS Servers, and Netbios Name Servers. The 'Status' is set to 'Enabled'. The 'Apply' button is highlighted with a red box.

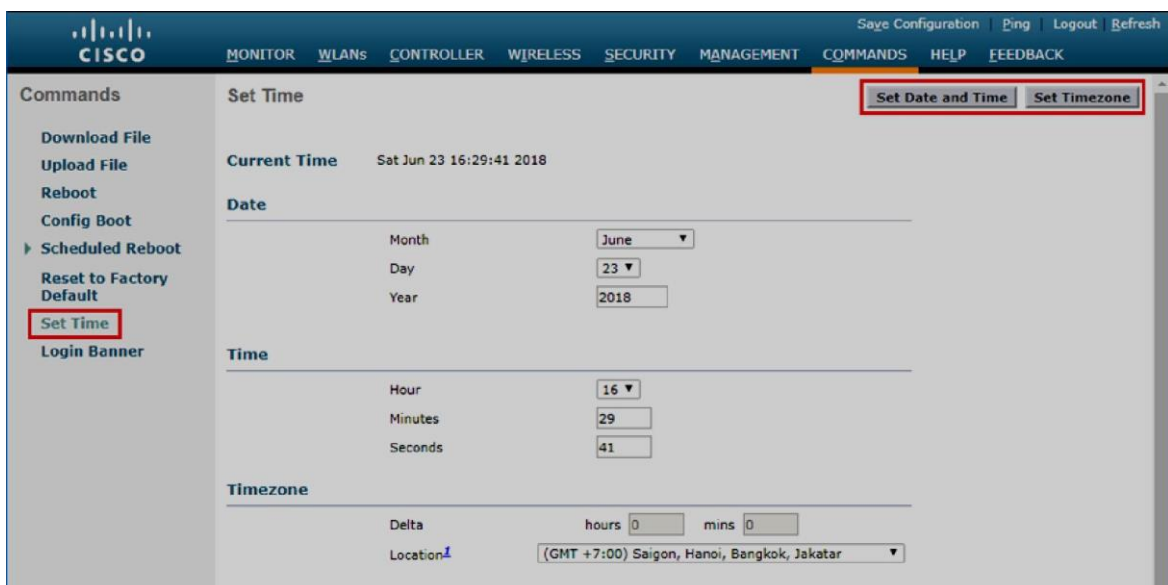
Lưu lại cấu hình



The screenshot shows the Cisco Controller web interface for the 'DHCP Scopes' page. The 'Save Configuration' button is highlighted with a red box. The table below lists the configured DHCP scopes.

Scope Name	Address Pool	Lease Time	Status
LAN.1	192.168.1.201 - 192.168.1.250	1 d	Enabled

Yêu cầu 4: Hiệu chỉnh thời gian trên WLC.



The screenshot shows the Cisco Controller web interface for the 'Set Time' page. The 'Set Date and Time' and 'Set Timezone' buttons are highlighted with red boxes. The page displays the current time and date, and allows for manual configuration of the date and time.

Current Time: Sat Jun 23 16:29:41 2018

Date:

- Month: June
- Day: 23
- Year: 2018

Time:

- Hour: 16
- Minutes: 29
- Seconds: 41

Timezone:

- Delta: hours 0 mins 0
- Location: (GMT +7:00) Saigon, Hanoi, Bangkok, Jakarta

Để các AP có thể register thành công tới WLC, ta cần hiệu chỉnh thời gian trên WLC và các AP đồng nhất với nhau.

Hiệu chỉnh thời gian trên WLC: COMMANDS → Set Time → Set Date and Time

Yêu cầu 5: Cấu hình Lightweight AP register tới WLC.

Cấu hình cho thiết bị các AP (Access Point) để được quản lý tập trung bởi WLC. Có 2 cách để có thể truy cập và cấu hình thiết bị AP:

- Sử dụng DHCP và WLC để gán IP cho thiết bị AP
- Gán IP tĩnh cho thiết bị AP

Di chuyển từ User mode sang Privilege mode, xóa cấu hình.

```
AP> enable
Password: Cisco
AP#
AP# clear lwapp private-config
AP# reload
Proceed with reload? [confirm]
```

Đặt tên và đặt ip address cho AP

```
AP# lwapp ap hostname AP1130
AP1130# lwapp ap ip address 192.168.1.1 255.255.255.0
AP1130# lwapp ap ip default-gateway 192.168.1.100
AP1130# lwapp ap controller ip address 192.168.1.100
```

Kiểm tra IP, kiểm tra kết nối từ AP đến WLC

```
AP1130# show capwap ip config
AP1130# ping 192.168.1.100
```

Để kiểm tra WAP đang ở chế độ Standalone hay Lightweight, ta có thể thực hiện câu lệnh **show version**.

- Nếu IOS name W7 thì hiện nay AP đang hoạt động ở chế độ Standalone.
- Nếu IOS name W8 thì hiện nay AP đang hoạt động ở chế độ Lightweight.

```
AP1130# show version
Cisco IOS Software, C1140 Software (C1140-RCVK9W8-M), Version
12.4(21a)JX, RELEASE SOFTWARE
```

AP kết nối vào Port 3-4 (có hỗ trợ PoE) của WLC thì AP tự động kết nối tới WLC, tải hệ điều hành IOS từ WLC xuống và tự động khởi động lại

Sau khi AP khởi động thành công sẽ có Username/Password mặc định là Cisco/Cisco và Enable Password mặc định cũng là Cisco.

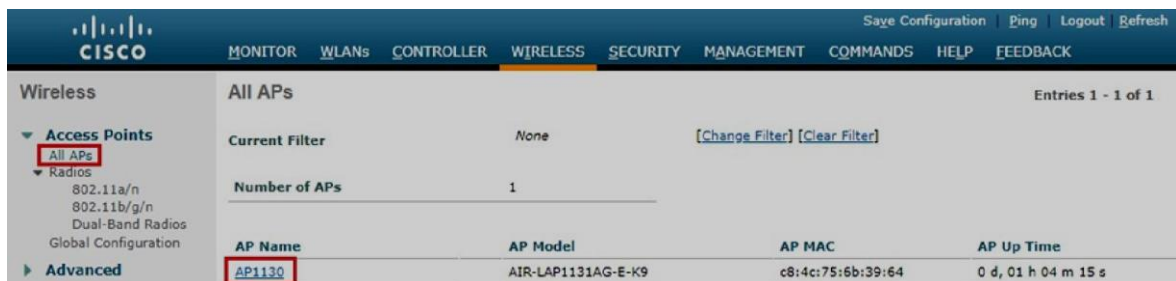
```
Press RETURN to get started.
User Access Verification
```

```
Username: Cisco
Password: Cisco
AP>
AP> enable
Password: Cisco
AP#
```

Hiệu chỉnh thời gian trên AP khớp với WLC.

```
AP# show clock
```

Lúc này, tại giao diện WLC, ta có thể cấu hình AP bằng cách truy cập vào đường dẫn WIRELESS → Access Points → All Aps.



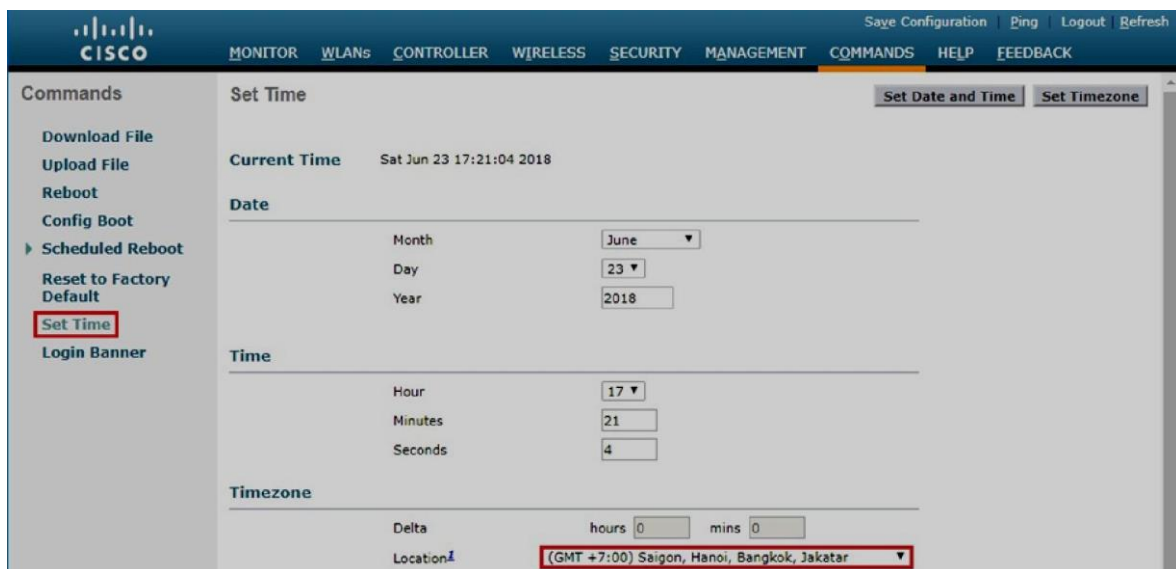
The screenshot shows the Cisco WLC Wireless Management interface. The 'Wireless' tab is selected, and the 'All Aps' view is active. A table lists the APs, with 'AP1130' highlighted. The table has columns for AP Name, AP Model, AP MAC, and AP Up Time.

AP Name	AP Model	AP MAC	AP Up Time
AP1130	AIR-LAP1131AG-E-K9	c8:4c:75:6b:39:64	0 d, 01 h 04 m 15 s

Yêu cầu 6: Khắc phục AP không register tới WLC.

6.1. Khắc phục sự cố Regulator Domain Mismatch giữa AP và WLC

Do trước đó hiệu chỉnh múi giờ trên WLC là +7 Saigon (Viet Nam) nên ta cần phải hiệu chỉnh lại Regulatory Domain trên WLC là “Vietnam”.

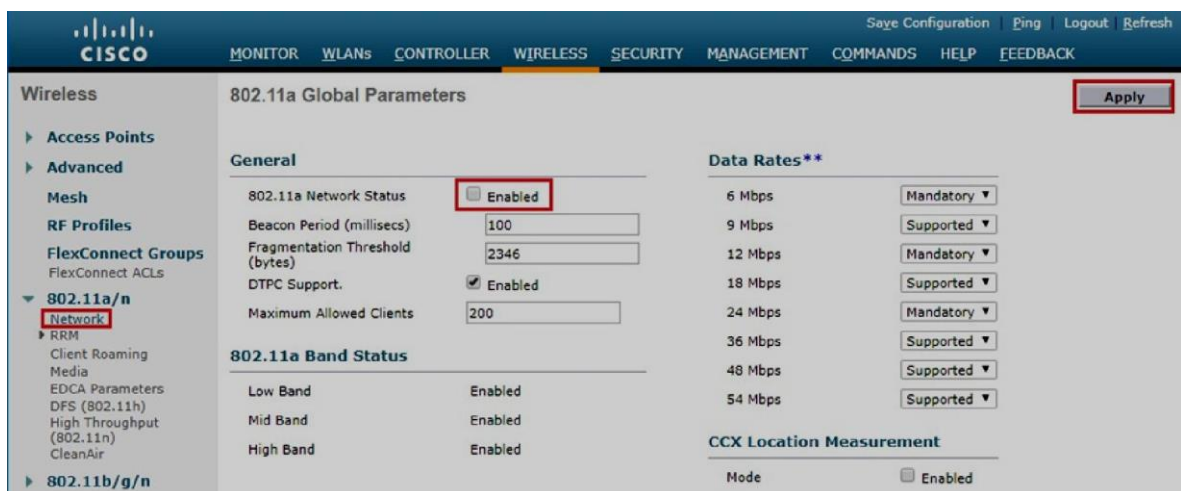


The screenshot shows the Cisco WLC Commands interface. The 'Set Time' command is selected. The 'Date' section shows the current date as June 23, 2018. The 'Time' section shows the current time as 17:21:04. The 'Timezone' section shows the current timezone as (GMT +7:00) Saigon, Hanoi, Bangkok, Jakarta.

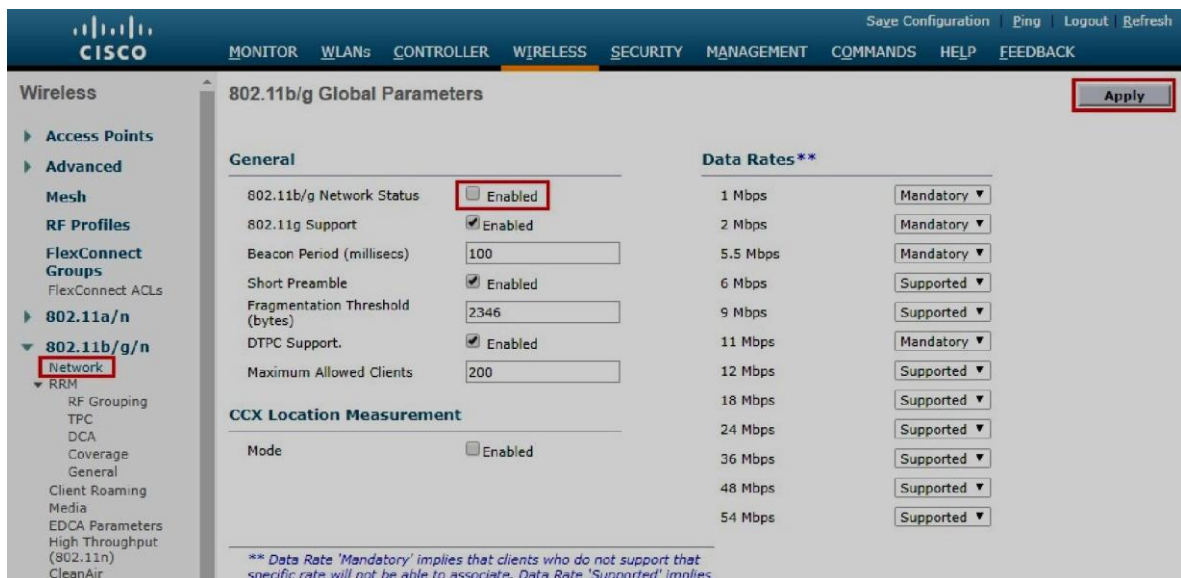
Tham khảo danh sách “Cisco Aironet 1130AG Series Regulatory Domains”

Part Number	Description	Regulatory Domain
AIR-AP1131AG-x-K9 Cisco IOS Software	802.11a/g Non-modular IOS AP; Integrated Antennas	x= A=FCC C=Chin E=ETSI I=Israel J=TELEC (Japan) K=Korea N=North America (Excluding FCC) P=Japan2 S=Singapore T=Taiwan
AIR-LAP1131AG-x-K9 LWAPP	802.11a/g Non-modular LWAPP AP; Integrated Antennas	x= A=FCC C=Chin E=ETSI I=Israel J=TELEC(Japan) K=Korea N=North America (Excluding FCC) P=Japan2 S=Singapore T=Taiwan

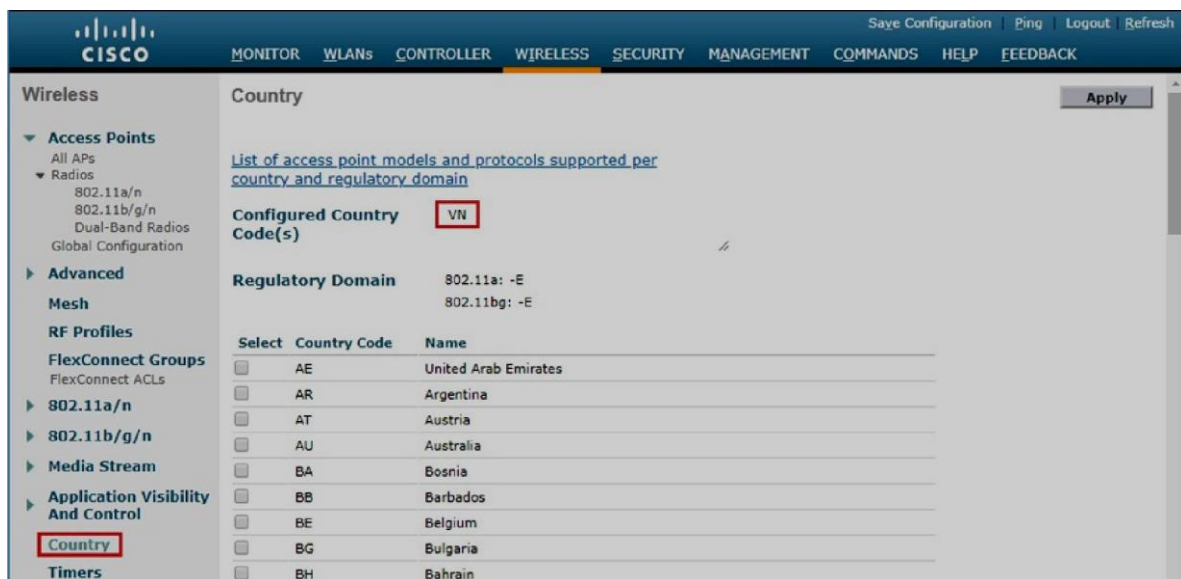
Disable 802.11b & 802.11a networks trước khi hiệu chỉnh Regulatory Domain



The screenshot shows the Cisco Wireless configuration interface. The left sidebar lists navigation options: Access Points, Advanced, Mesh, RF Profiles, FlexConnect Groups, FlexConnect ACLs, 802.11a/n (selected), 802.11b/g/n, Client Roaming, Media, EDCA Parameters, DFS (802.11h), High Throughput (802.11n), and CleanAir. The main content area is titled '802.11a Global Parameters' and includes an 'Apply' button. It is divided into three sections: General, 802.11a Band Status, and Data Rates. In the General section, the '802.11a Network Status' checkbox is checked and highlighted with a red box. Other parameters include Beacon Period (100), Fragmentation Threshold (2346), DTPC Support (checked), and Maximum Allowed Clients (200). The 802.11a Band Status section shows Low Band, Mid Band, and High Band all set to 'Enabled'. The Data Rates section lists rates from 6 Mbps to 54 Mbps with dropdown menus for their status (Mandatory or Supported). The CCX Location Measurement section at the bottom has a 'Mode' dropdown and an 'Enabled' checkbox.



The screenshot shows the Cisco Wireless configuration page for 802.11b/g Global Parameters. The left sidebar lists various configuration options, with 'Network' under '802.11b/g/n' highlighted. The main area is divided into 'General' and 'Data Rates' sections. In the 'General' section, the '802.11b/g Network Status' checkbox is checked and highlighted with a red box. The 'Data Rates' section lists various data rates from 1 Mbps to 54 Mbps, each with a dropdown menu set to 'Mandatory' or 'Supported'. An 'Apply' button is visible in the top right corner.



The screenshot shows the Cisco Wireless configuration page for Country. The left sidebar lists various configuration options, with 'Country' under 'Application Visibility And Control' highlighted. The main area is divided into 'Country' and 'Regulatory Domain' sections. In the 'Country' section, the 'Configured Country Code(s)' field is set to 'VN' and highlighted with a red box. The 'Regulatory Domain' section shows a list of countries with their corresponding codes and names. An 'Apply' button is visible in the top right corner.

Thiết lập Country Code trong suốt quá trình “Factory Default WLC thông qua giao diện dòng lệnh CLI”.

Enter Country Code list (enter 'help' for a list of countries) [US]:
<enter>

Xác định Regulatory Domain phù hợp: Wireless → Country → List of access point models and protocols supported per contry and regulatory domain.

Wireless

Country

[List of access point models and protocols supported per country and regulatory domain](#)

Configured Country Code(s) VN

Regulatory Domain 802.11a: -E 802.11bg: -E

Select	Country Code	Name
☐	AE	United Arab Emirates
☐	AR	Argentina
☐	AT	Austria
☐	AU	Australia
☐	BA	Bosnia
☐	BB	Barbados
☐	BE	Belgium
☐	BG	Bulgaria
☐	BH	Bahrain
☐	BN	Brunei
☐	BO	Bolivia
☐	BR	Brazil

Sau khi hiệu chỉnh Regulatory Domain hoàn tất, AP1130 đã có thể register thành công tới WLC 2504: Wireless → Access Points → All Aps.

Country	Regulatory Domain	Access Point Platform	Certified Products
Vietnam	-E	Controller-based	AIR-CAP702I AIR-CAP702W AIR-CAP1702 AIR-CAP2702 AIR-CAP3702 AIR-RM3000AC
Importer must obtain approvals			
Vietnam	-S	Controller-based	AIR-AP1815W AIR-AP1832 AIR-AP1810W AIR-OEAP1810 AIR-AP1800I AIR-AP1800S AIR-AP1815I AIR-AP1815T AIR-AP1852 AIR-AP1815M AIR-AP2802I AIR-AP2802E AIR-AP3802I AIR-AP3802E AIR-AP3802P AIR-RM3010L
Importer must obtain approvals			
Vietnam	-S	Outdoor & Industrial	AIR-AP1562E AIR-CAP1532I AIR-AP1542D AIR-AP1542I AIR-AP1562D AIR-AP1562I AIR-CAP1532E AIR-AP1572IC AIR-AP1572EC AIR-AP1572EAC IW3702-2E-x-K9 IW3702-4E-x-K9
Importer must obtain approvals			
Vietnam	-E	Standalone	AIR-SAP702I



[MONITOR](#)
[WLANs](#)
[CONTROLLER](#)
[WIRELESS](#)
[SECURITY](#)
[MANAGEMENT](#)
[COMMANDS](#)
[HELP](#)
[FEEDBACK](#)

[Save Configuration](#)
[Ping](#)
[Logout](#)
[Refresh](#)

Wireless

Access Points

All APs

Radios

802.11a/n

802.11b/g/n

Dual-Band Radios

Global Configuration

Advanced

All APs

Entries 1 - 1 of 1

Current Filter

None

[Change Filter]

[Clear Filter]

Number of APs

1

AP Name	AP Model	AP MAC	AP Up Time
AP1130	AIR-LAP1131AG-E-K9	c8:4c:75:6b:39:64	0 d, 00 h 58 m 27 s

AP1130 đang kết nối tới Port3 của WLC và phiên bản Version của AP1130



[MONITOR](#)
[WLANS](#)
[CONTROLLER](#)
[WIRELESS](#)
[SECURITY](#)
[MANAGEMENT](#)
[COMMANDS](#)
[HELP](#)
[FEEDBACK](#)

[Save Configuration](#)
[Ping](#)
[Logout](#)
[Refresh](#)

Wireless

Access Points

All APs

Radios

802.11a/n

802.11b/g/n

Dual-Band Radios

Global Configuration

Admin Status	Operational Status	Port	AP Mode	Certificate Type	OEAP	Primary SW version	Backup SW version
Enabled	REG	3	Local	MIC	No	7.4.121.0	0.0.0.0

6.2. Khắc phục sự cố Time Mismatch giữa AP và WLC

```
(Cisco Controller) > debug capwap errors enable
```

```
*spamApTask4: Aug 26 10:55:00.119: #DTLS-3-HANDSHAKE_FAILURE:
openssl_dtls.c:681 Failed to complete DTLS handshake with peer
192.168.3.212 for AP c8:4c:75:6b:39:64
```

MONITOR
WLANS
CONTROLLER
WIRELESS
SECURITY
MANAGEMENT
COMMANDS
HELP
FEEDBACK

Sage Configuration
Ping
Logout
Refresh

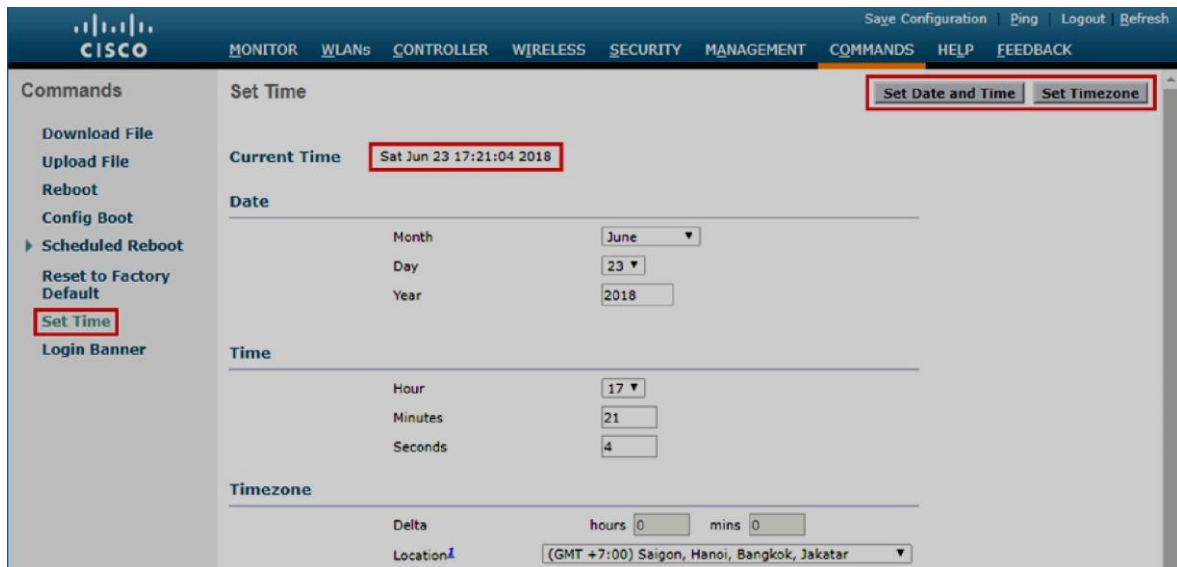
Management

- Summary
- SNMP
- HTTP-HTTPS
- Telnet-SSH
- Serial Port
- Local Management Users
- User Sessions
- Logs
 - Config
 - Message logs
- Mgmt Via Wireless
- Software Activation
- Tech Support

Message Logs

```
*spamApTask3: Aug 26 10:56:34.589: #LWAPP-3-RD_ERR9: spam_lrad.c:11159 APs
00:3a:98:c1:14:80 country code changed from () to (VN )
*spamApTask3: Aug 26 10:56:34.589: #LWAPP-3-RD_ERR7: spam_lrad.c:10491 The system
detects an invalid country code () for AP 00:3a:98:c1:14:80
*spamApTask3: Aug 26 10:56:34.589: #LWAPP-3-RD_ERR9: spam_lrad.c:11159 APs
00:3a:98:c1:14:80 country code changed from () to (VN )
*spamApTask3: Aug 26 10:56:34.589: #LWAPP-3-RD_ERR7: spam_lrad.c:10491 The system
detects an invalid country code () for AP 00:3a:98:c1:14:80
*spamApTask4: Aug 26 10:55:00.119: #DTLS-3-HANDSHAKE_FAILURE: openssl_dtls.c:681 Failed
to complete DTLS handshake with peer 192.168.3.212 for AP c8:4c:75:6b:39:64
*spamApTask4: Jan 01 02:55:27.583: #DTLS-3-HANDSHAKE_FAILURE: openssl_dtls.c:681 Failed to
complete DTLS handshake with peer 192.168.3.212 for AP c8:4c:75:6b:39:64
*spamApTask3: Jan 01 02:53:54.536: #DTLS-3-HANDSHAKE_FAILURE: openssl_dtls.c:681 Failed to
complete DTLS handshake with peer 192.168.3.212 for AP c8:4c:75:6b:39:64
*spamApTask3: Jan 01 02:52:49.579: #DTLS-3-HANDSHAKE_FAILURE: openssl_dtls.c:681 Failed to
complete DTLS handshake with peer 192.168.3.212 for AP c8:4c:75:6b:39:64
*spamApTask4: Jan 01 02:51:15.903: #DTLS-3-HANDSHAKE_FAILURE: openssl_dtls.c:681 Failed to
complete DTLS handshake with peer 192.168.3.212 for AP c8:4c:75:6b:39:64
*spamApTask4: Jan 01 02:50:10.947: #DTLS-3-HANDSHAKE_FAILURE: openssl_dtls.c:681 Failed to
complete DTLS handshake with peer 192.168.3.212 for AP c8:4c:75:6b:39:64
*spamApTask3: Jan 01 02:48:37.895: #DTLS-3-HANDSHAKE_FAILURE: openssl_dtls.c:681 Failed to
complete DTLS handshake with peer 192.168.3.212 for AP c8:4c:75:6b:39:64
*spamApTask3: Jan 01 02:47:32.939: #DTLS-3-HANDSHAKE_FAILURE: openssl_dtls.c:681 Failed to
complete DTLS handshake with peer 192.168.3.212 for AP c8:4c:75:6b:39:64
*spamApTask4: Jan 01 02:45:59.888: #DTLS-3-HANDSHAKE_FAILURE: openssl_dtls.c:681 Failed to
complete DTLS handshake with peer 192.168.3.212 for AP c8:4c:75:6b:39:64
*spamApTask4: Jan 01 02:44:54.931: #DTLS-3-HANDSHAKE_FAILURE: openssl_dtls.c:681 Failed to
complete DTLS handshake with peer 192.168.3.212 for AP c8:4c:75:6b:39:64
*spamApTask3: Jan 01 02:43:21.882: #DTLS-3-HANDSHAKE_FAILURE: openssl_dtls.c:681 Failed to
complete DTLS handshake with peer 192.168.3.212 for AP c8:4c:75:6b:39:64
```

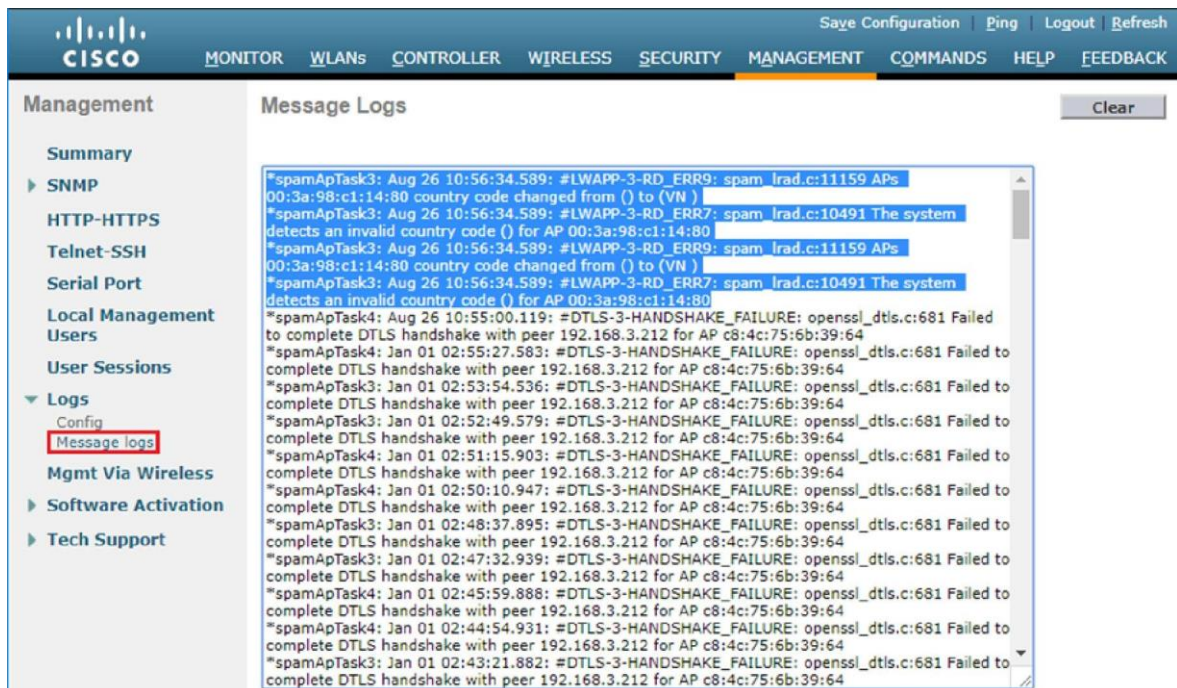
Khắc phục là chỉnh lại thời gian trên WLC



The screenshot shows the Cisco WLC configuration page for setting the time. The 'Set Time' tab is selected. The 'Current Time' is displayed as 'Sat Jun 23 17:21:04 2018'. The 'Date' section has dropdowns for 'Month' (June), 'Day' (23), and 'Year' (2018). The 'Time' section has dropdowns for 'Hour' (17), 'Minutes' (21), and 'Seconds' (4). The 'Timezone' section shows 'Delta' as 'hours 0 mins 0' and 'Location' as '(GMT +7:00) Saigon, Hanoi, Bangkok, Jakarta'.

Thiết lập thời gian trên WLC trong suốt quá trình “Factory Default WLC thông qua giao diện dòng lệnh CLI”.

Configure a NTP server now? [YES][no]: no
Configure the system time now? [YES][no]: yes
Enter the date in MM/DD/YY format: 06/23/18
Enter the time in HH:MM:SS format: 11:30:00



The screenshot shows the Cisco WLC configuration page for viewing message logs. The 'Message Logs' tab is selected. The logs display various system messages, including DTLS handshake failures and country code changes. The logs are filtered by 'Config' and 'Message logs'.

Kiểm tra log sự kiện LAP register thành công tới WLC

Yêu cầu 7: Thiết lập SSID



WLANs

WLANs

Current Filter: None [Change Filter] [Clear Filter]

Create New [Go]

WLAN ID	Type	Profile Name	WLAN SSID	Admin Status	Security
1	WLAN	SSID	SSID	Enabled	[WPA2][A]



WLANs

WLANs > New

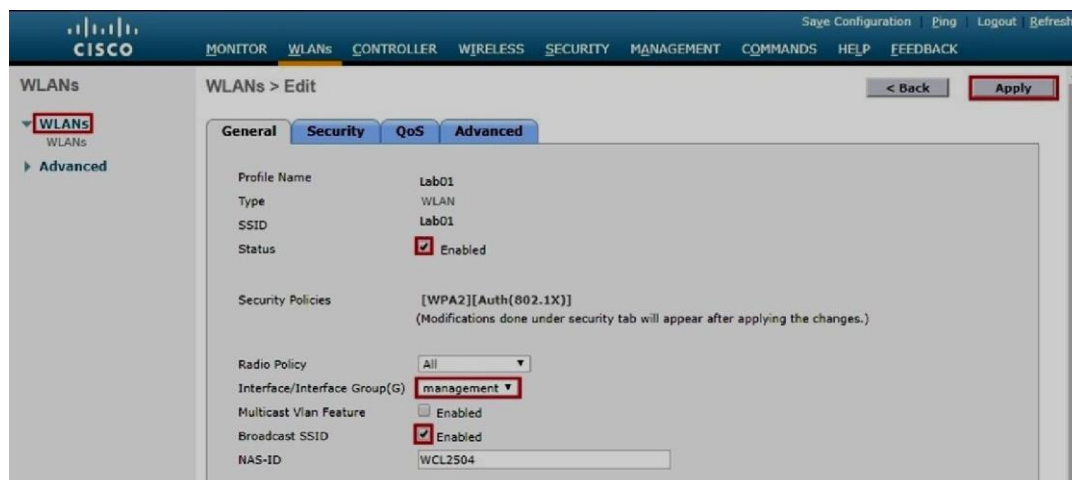
Type: WLAN

Profile Name: Lab01

SSID: Lab01

ID: 2

[Back] [Apply]



WLANs

WLANs > Edit

General Security QoS Advanced

Profile Name: Lab01

Type: WLAN

SSID: Lab01

Status: ☒ Enabled

Security Policies: [WPA2][Auth(802.1X)]
(Modifications done under security tab will appear after applying the changes.)

Radio Policy: All

Interface/Interface Group(G): management

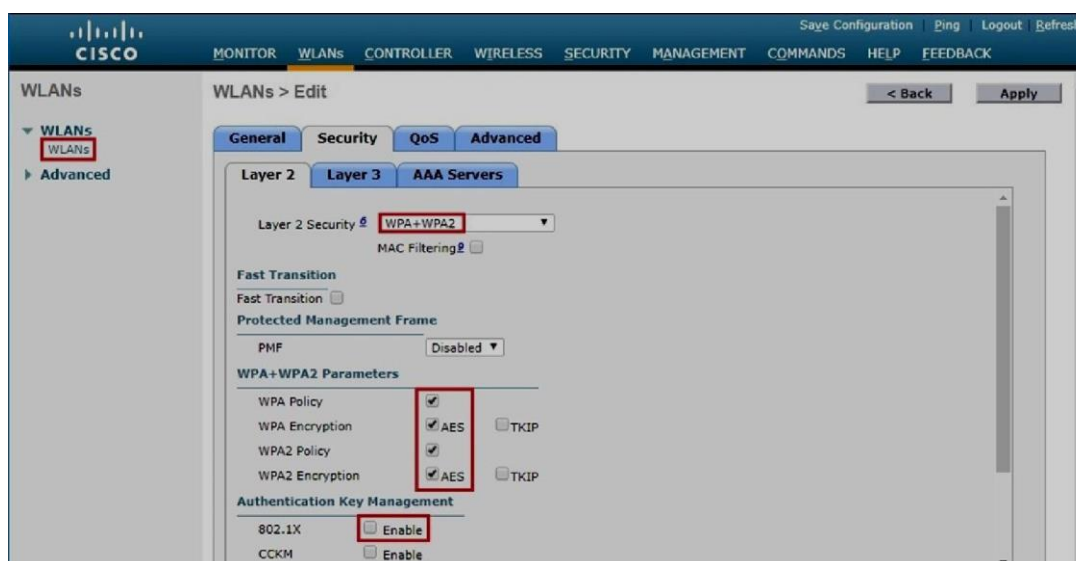
Multicast Vlan Feature: ☐ Enabled

Broadcast SSID: ☒ Enabled

NAS-ID: WCL2504

[Back] [Apply]

Thiết lập Password cho phân đoạn mạng WLAN



WLANs

WLANs > Edit

General Security QoS Advanced

Layer 2 Layer 3 AAA Servers

Layer 2 Security: WPA+WPA2

MAC Filtering: ☐

Fast Transition: ☐

Protected Management Frame: ☐

PMF: Disabled

WPA+WPA2 Parameters

WPA Policy: ☒

WPA Encryption: ☒ AES ☐ TKIP

WPA2 Policy: ☒

WPA2 Encryption: ☒ AES ☐ TKIP

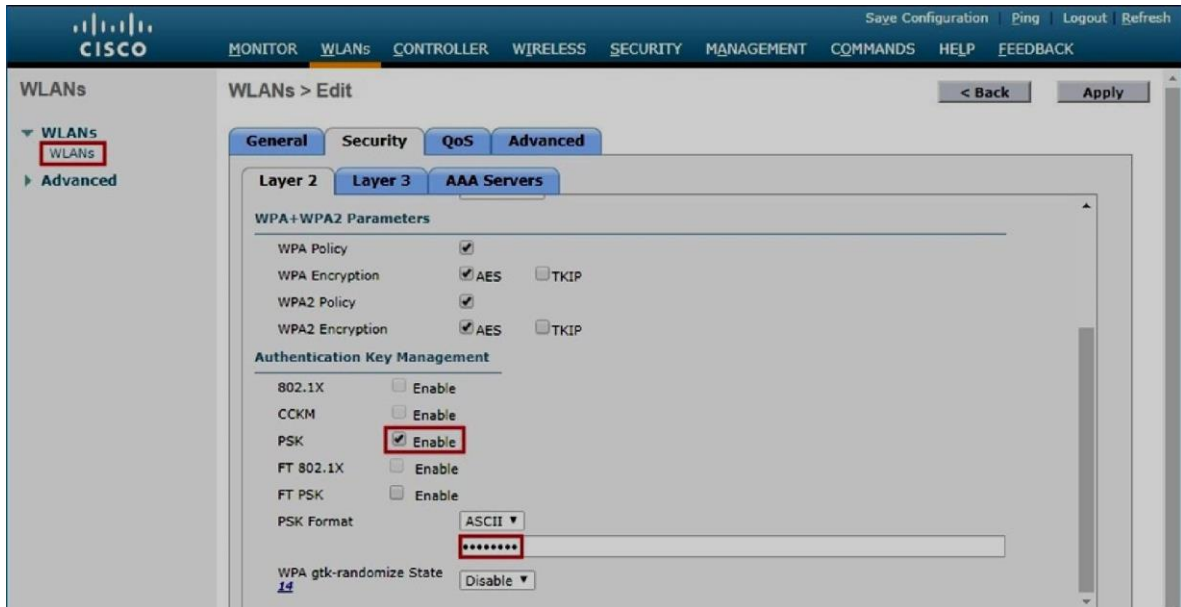
Authentication Key Management

802.1X: ☐ Enable

CCKM: ☐ Enable

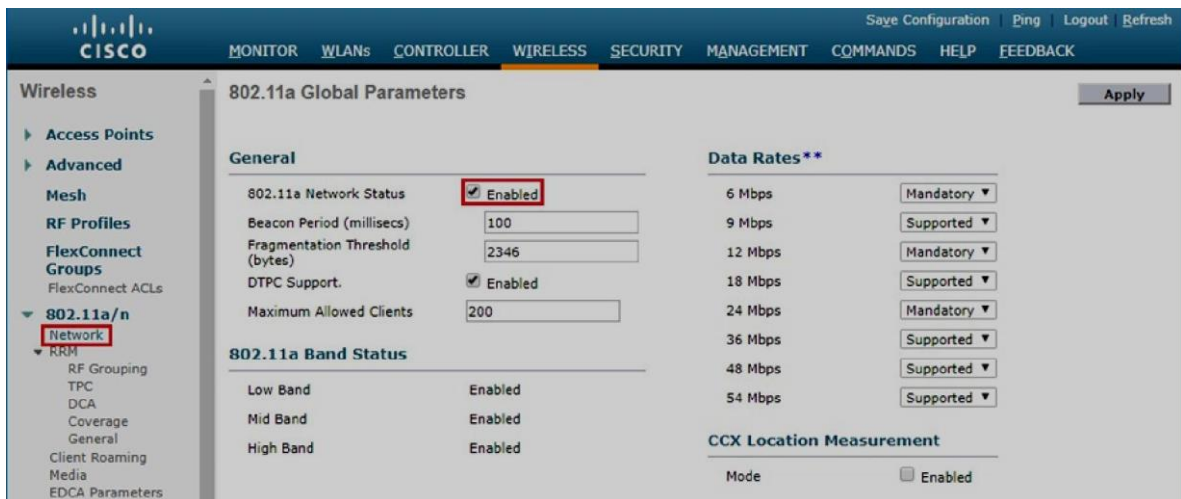
[Back] [Apply]

Password Wifi: Cisco@123



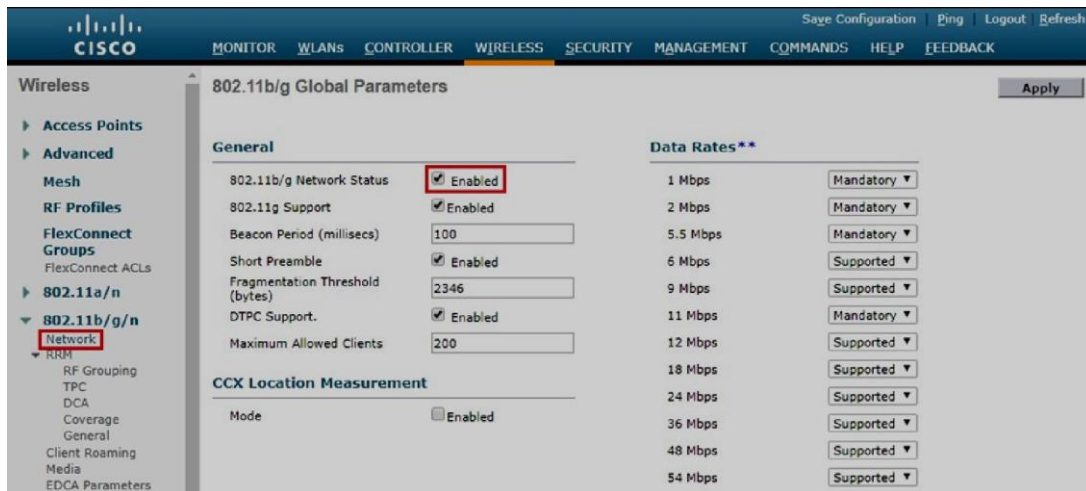
The screenshot shows the Cisco WLAN configuration interface. The left sidebar has 'WLANs' selected. The main area is titled 'WLANs > Edit' and has tabs for 'General', 'Security', 'QoS', and 'Advanced'. Under the 'Security' tab, there are sub-tabs for 'Layer 2', 'Layer 3', and 'AAA Servers'. The 'WPA+WPA2 Parameters' section shows 'WPA Policy' and 'WPA2 Policy' both checked, with 'WPA Encryption' and 'WPA2 Encryption' set to 'AES'. The 'Authentication Key Management' section shows 'PSK' checked and 'Enable' selected. The 'PSK Format' is set to 'ASCII' and the 'WPA gtk-randomize State' is set to 'Disable'.

Kích hoạt chuẩn không dây 802.11a: WIRELESS → 802.11a/n → Network → 802.11a Network Status → Apply.



The screenshot shows the Cisco Wireless configuration interface. The left sidebar has 'Wireless' selected, and the main area is titled '802.11a Global Parameters'. The 'General' section shows '802.11a Network Status' checked and 'Enabled'. The '802.11a Band Status' section shows 'Low Band', 'Mid Band', and 'High Band' all set to 'Enabled'. The 'Data Rates**' section shows various data rates with 'Mandatory' and 'Supported' options. The 'CCX Location Measurement' section shows 'Mode' set to 'Enabled'.

Kích hoạt chuẩn không dây 802.11b/g: Wireless → 802.11b/g/n → Network → 802.11b/g Network Status → Apply.



V. Kiểm tra

Sử dụng laptop để kết nối tới WLAN “Lab01” và kiểm tra thông tin địa chỉ IP xin được.



```
C:\> ipconfig /all
Wireless LAN adapter Wi-Fi:
Connection-specific DNS Suffix . . :
Description . . . . . : Intel(R) Centrino(R)
Wireless-N 1030
Physical Address. . . . . : 4C-80-93-53-D2-52
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
IPv4 Address. . . . . : 192.168.1.212(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : Wednesday, April 23, 2019
6:02:38 PM
Lease Expires . . . . . : Thursday, April 24, 2019
6:02:38 PM
Default Gateway . . . . . : 192.168.1.10
DHCP Server . . . . . : 8.8.8.8
DNS Servers . . . . . : 8.8.4.4

NetBIOS over Tcpip. . . . . : Enabled
```