802.11r WiFi roaming configuration example

Introduction

This article provides a basic configuration example of 802.11r WiFi roaming, which is suitable for setting up roaming WiFi network for small house or office.

Firmware

The information in this page is updated in accordance with **00.07.09** firmware version. .

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Prerequisites

- Main gateway with WAN access (Any RUTOS router. RUTX50 is used in this example)
- Access Points (Any WiFi-capable RUTOS device. RUTX11 (**Router 2**) and RUTX11 (**Router 3**) are used in this example)

If you're having trouble finding this page or some of the parameters described here on your device's WebUI, you should **turn on "Advanced WebUI" mode**. You can do that by clicking the "Advanced" button, located at the top of the WebUI.

Configuration

Gateway router

LAN Setting

Login to the router's WebUI, navigate to the **Network → Interfaces → Edit LAN** page. Enter main gateway's IP address and save. We will leave it default (192.168.1.1) for this example. Enter IP address on the same subnet as main gateway. We will use 192.168.1.2 for Router 1 and 192.168.1.3 for Router 2 in this example.

1. Connect your AP/WiFi router to the gateway router using LAN to LAN connection.
2. Login to the router's WebUI, navigate to the **Network → Interfaces → Edit LAN** page. Configure as follows:
    1. Enter **IPv4 address**. We will use our gateway router's IP - 192.168.1.1.

Enable 802.11r Fast Transition

Navigate to the **Network → Wireless → SSIDs** page. Configures as follows:

1. Select **radios** to 2.4Ghz
2. Enter **SSID**: WiFi_Roaming
3. Enter **Password**
4. Enable **802.11r Fast Transition**

Navigate to the **Fast Transition** section

1. Enter **Mobile Domain**: 4f57 (mobility domain is a cluster of APs forming a continuous radio frequency space, where thePairwise Master Key (PMK) can be synchronized)

- Note: 802.11v and 802.11k can be enabled in **Network → Wireless → SSIDs → Edit SSID → Additional setting**, which can improve performance of Fast transit. Please see the reference: **802.11k/v wireless roaming configuration guide**

To reduce the posbility of interference between 2 AP/WiFi Router, Highly recommend that set radio channel manually. Navigate to the **Network → Wireless → Radio → Edit 2.4GHz**. Configures as follows:

1. Select **Channel**: 11

- **Note**: For the 2.4 GHz band, the best options are typically channels 1, 6, and 11. These channels are the most widely recommended because they don’t overlap with each other, reducing interference and improving overall performance.;

AP/WiFi Router

Config similar LAN and SSID setting on **Router2** and **Router3**.

LAN Setting

Navigate to the **Network → Interfaces → Edit LAN**, Configures as follows:

1. Enter **IPv4 address**: 192.168.1.2 (On router 3, enter 192.168.1.3)

Navigate to the **Network → DHCP → Sever Setting**, configures as follows:

1. Select **DHCPv4 Mode** to Relay
2. Enter **DHCP Server** 192.168.1.1 (Gateway router is also the DHCP server for all internal devices)

Add default routing to gateway router

Navigate to the **Network → Routing → Static routes**, add one default routing to gateway routing. Configures as follows:

1. **Add** one new static route
2. Set **Target** 0.0.0.0
3. Set **IPv4-Netmask**: 255.255.255.0
4. Set **IPv4 Gateway**: 192.168.1.1
5. Set **matric**: 1
6. Select **Route Type**: unicast
7. **Save & Apply**

Enable 802.11r Fast Transition

Navigate to the **Network → Wireless → SSIDs**, configures as follows:

1. Select **radios** to 2.4Ghz
2. Enter **SSID**: WiFi_Roaming (Same as gateway's SSID)
3. Enter **Password** (Same as gateway's SSID password)
4. Enable **802.11r Fast Transition**

   

   Navigate to the **Fast Transition** section

1. Enter **Mobile Domain**: 4f57 (Keep same as gateway router's setting)

Result

SSID Search

The single SSID should now be visible on your WiFi devices (an iOS phone is used in this example).

Log check

Connect PC to gateway router via network cable, login webUI navigate to **System → Maintenance → CLI**. Open **CLI** then login by username root and login password. Do the following steps to check the result.

1. Stand close to **Router 2** or **Router 3**.
2. Connect to SSID **WiFi_Roaming**
3. Check if the connected devices are showed on wireless clients page. (**Status → Wireless → Interfaces**)
4. Reboot the router 2 or router 3 (Simulate the devices is offline)
5. Check the gateway router's CLI, the log will show fast transit completed, do not start 4-way handshake.