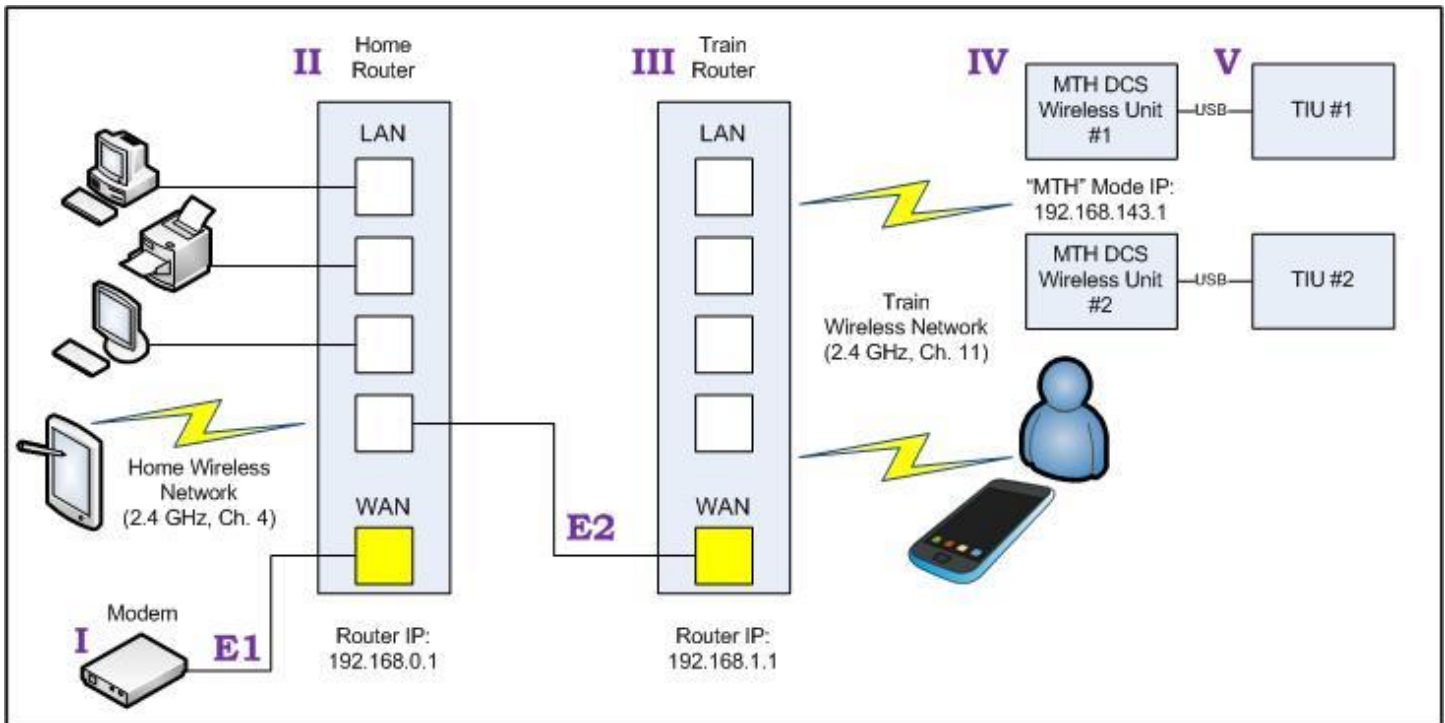


# Manual Setup of Train Room Router

as trial by Runner Susan and Network Specialist Brad



## Component Descriptions:

- I. Modem for ISP (Internet service provider) (I) connected to existing Home Router (II) by Cat5 cable (E1).
- II. Home Router (II) (house network wired and wireless distribution).
- III. Train Router (III) (totally independent wired or wireless distribution to MTH DCS WiFi Module) connected to Home Router (II) by a CAT5 cable (E2) as shown.
- IV. MTH DCS WiFi Module (IV) connected to Train Router's WiFi network (ESSID).
- V. Existing DSC TIU (V) connected to MTS DSC WiFi module using USB or USB/RS232 adapter combination.

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## Configuration Notes:

1. Ensure the IP used to manage the Train Router (**III**) is different than the IP used to manage the Home Router (**II**). This is typically set in a field called "Device IP Address" (or similar wording) in the Train Router's web configuration utility. See the router's documentation for details. Any easy-to-remember rule is to set the Train Router's IP address so that the second-to-last digit (a "1" in the figure above) equals the same digit in the Home Router plus "1". For example, if the Home Router's IP were 192.168.**210**.1, the Train Router's IP would be 192.168.**211**.1. Do not set this value greater than 255 (change the Home Router's IP address to a lower number first).
2. To improve wireless network reliability, ensure the Home Router (**II**) and Train Router (**III**) use manual channel assignments for the 2.4 GHz wireless network, and that these channels are at least four channels apart. Channels "4" and "11" are used in the diagram above.
3. The wireless settings for the MTH DCS WiFi Module (**IV**) must match those of the Train Router's (**III**) wireless settings. These include ESSID, Encryption Type, and Passphrase.
4. Using their 'smart device', train operators select the wireless network ESSID for the Train Router (**III**) to run trains. Trains cannot be run from the existing home wireless network.
5. Cable "**E2**" is optional and provides internet connectivity for train operators when connected to the Train Router's (**III**) wireless network. It can also make firmware upgrades easier for the MTH DCS WiFi module.
6. Hardwired Cat5 connections can replace one or more wireless connections between the Train Router (**III**) and the MTH DCS WiFi module (**IV**).

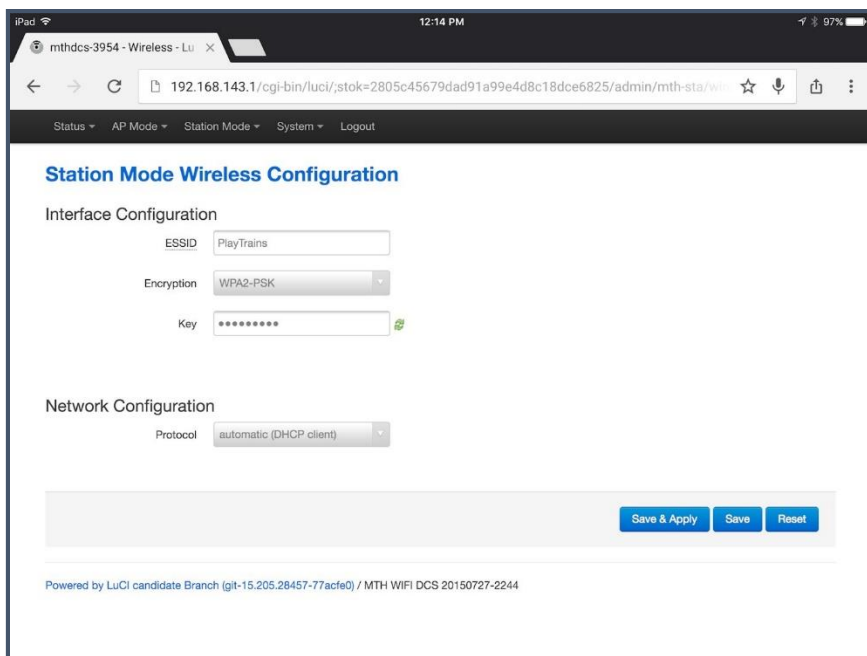
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## Installation Step-by-Step:

- Step 1. **Configure the Home Router.** Connect to your home router's (II) configuration utility through your home wireless network or through a cable connected directly to the back of the router. Change the channel assignment for your existing home wireless router's 2.4 GHz network to channel "4". Take note of the IP address for your existing Home Router (e.g. 192.168.0.1).
- Step 2. **Configure the Train Network Router.** Connect to your Train Network router's configuration utility through the Train Router's (III) wireless network or through a cable connected directly to the back of the Train Router. Change the channel assignment for your Train Router's 2.4 GHz network to channel "11". Save and apply the new settings and re-connect if necessary. Then change the IP address for your Train Router (e.g. 192.168.1.1) so the second digit is one greater than the Home Router. Save and apply the settings. You will likely be disconnected from the router as the router re-boots.

- Step 3. **Configure the MTH DCS WiFi Module.** Using a wireless-capable device, connect to the MTH WiFi module (IV) using the instructions provided on Page 6 of the ["Wi-Fi DCS User's Guide"](#) under the heading "For Routers that Require Manual Setup". Please note that all default passwords/passphrases/network keys for this device *are in lowercase* despite how they are shown in the instructions.



When complete, your "Station Mode" screen in LuCI should look something like the screenshot shown here, but with the ESSID, Encryption, and Key that match the settings of your Train Router's (III) wireless settings.

- Step 4. **Verify Operation.** Once you have switched the MTH/HOME switch on your MTH DCS WiFi Unit (IV) to the "HOME" position and re-applied power to the WiFi unit (IV) you will see a blue "WI-FI" light illuminate on the WiFi unit as shown here. This can take up to 90 seconds to illuminate after power is applied.



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## Troubleshooting

Problem	Possible Cause	Possible Solution
Blue "Wi-Fi" Light will not illuminate on MTH Wi-Fi module.	Mode switch on WiFi unit is in wrong position.	Remove the power from the Wi-Fi unit, move the switch to the "HOME" position, and re-apply power.
	Wi-Fi Parameters are mismatched between the MTH Wi-Fi unit and the Train Router.	Connect to the Train Router's (III) management utility and check the ESSID (or "SSID") name, Encryption Type, and Passphrase. Power Down the MTH DCS Wi-Fi, move the switch to "MTH" and power back on the Wi-Fi unit. Log into the MTH Wi-Fi unit using the SSID printed on the bottom of the unit and the IP Address 192.168.143.1. Verify the Wi-Fi unit's wireless settings are exactly the same as the Train Router's wireless network. Remember, the passphrase is case-sensitive.
	Insufficient Signal Strength between Train Router and Wi-Fi module.	Using your laptop/tablet/cell phone, connect to the Train Router's wireless network. Check how many 'bars' of signal strength you have when you place your device right next to the MTH Wi-Fi module. This should be at the maximum strength, or one bar from the maximum strength. If the signal is too weak, move the router closer to the train layout. You can also try relocating the train router away from large metal objects.
Unable to connect to router's or Wi-Fi module's configuration/management web page address (e.g. "192.168.0.1" or "192.168.143.1")	Connected to wrong wireless network.	Using your laptop/tablet/cell phone's wireless network selection page, make sure you are connected to the SSID (wireless network) for the device you are trying to configure.  If your device supports a hard-wire (Ethernet) connection, try using a cable to connect directly to the device you are trying to configure. This will bypass the unknown of the wireless settings. On a router, be sure and connect to a "LAN" port and not the single "WAN" port when using cable for router management.