WiFi: Register a Personal Device for the Internet of Things (IoT) WiFi Service

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Chapter 1. Understand the Internet of Things (IoT) Services

Students, staff, and faculty at the University of Minnesota can register personal gaming or streaming devices such as Xbox, Roku, Apple TV for WiFi access even if they don't support WPA2 authentication. This registration should be performed using the University Internet ID and password of the person who owns the device.

Internet of Things (IoT) Service Options

At the University of Minnesota, personal and departmental Internet of Things (IoT) devices can be registered for the Wi-Fi service. The current IoT service option is the Encrypted Service.

Encrypted Service

The current IoT service option is the Encrypted Service. Some of the benefits of Encrypted Service are listed below:

- Uses UofM-IoT SSID
- Better security with encrypted Wi-Fi traffic
- Easier setup process
- Supports more device types
- Requires device registration and a password (also known as a pre-shared key or PSK)

Best Practices for IoT Devices

The IoT service is designed for devices that are unable to log in to Wi-Fi with your Internet ID and password. These are some best practices when registering and using IoT devices on the University Wi-Fi network:

Table 1. Best Practices when Using IoT Devices

Any device that is capable of using eduroam should use eduroam. Eduroam is more secure because it has a higher level of encryption.

Table 1. Best Practices when Using IoT Devices (continued)

Personal device registration expires after one year and **registration must be renewed to continue service**. Devices are automatically removed from the registration database unless they are renewed.
Regular software updates on IoT devices are recommended.
If the IoT device asks you to choose a channel when connecting to Wi-Fi, select 5GHz if able.
If a device uses MAC address randomization that feature should be disabled otherwise the device may not be able to connect to Wi-Fi.

Which devices can be registered for IoT Service

Registering personal and departmental Wi-Fi devices allows users affiliated with the UMN to connect devices such as Xbox, Roku, Apple TV, Google Chromecast, door locks, freezer monitors, and more to the University Wi-Fi network. Unregistered devices can disrupt or slow down the University Wi-Fi network, making it difficult for neighboring devices to connect.

Table 2. Which Devices Can or Cannot Be Registered for IoT Service

Can Be Registered	Cannot Be Registered
XBox	Google Chromecast
Roku	Google Home
Apple TV	smart phones
miscellaneous streaming devices	laptops
departmental devices	printers

Chapter 2. Register and Connect to the Encrypted Service

The Internet of Things (IoT) Services WiFi connection is accomplished by using the wireless MAC address to register and connect to the Encrypted Service.

Step 1: Find the wireless MAC address

A device's wireless (Wi-Fi) MAC address, also known as hardware or physical address, is used for connecting to the network.

- Any IoT device that needs a companion device (smart phone, computer) to be on the same network for the setup, follow the steps to Register your Chromecast Device.
- When using an Ethernet Adapter ensure that you have registered your device on the wired network.

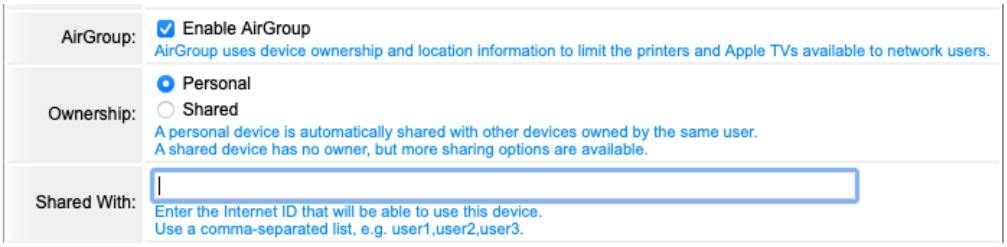
Step 2: Register the device for the Encrypted IoT Service

To connect devices to the WiFi services, register devices for the Encrypted IoT Service. **Do not register laptops or smart phones using this process** unless otherwise specified for temporary IoT device AirGroup setup. Phones and laptops should connect to eduroam using your full University email address and password. Full access to your University account and systems may not be fully functional on the IoT network. For more information on eduroam, follow Connect to eduroam.

1. Go to the Wi-Fi Registration webpage.
    - This link will only work if you are accessing this article on campus through a device connected to eduroam or you are connected to VPN.
    - If you are registering this device for yourself, sign in with your Internet ID and password.
2. From the side menu under **Devices**, select **Create Device**.
3. In the **MAC address** field, enter the wireless or Wi-Fi MAC address of the device.
    - The device name can be whatever you choose. For example, if you are registering a Roku, you might name it Goldy's Roku.

4. Enter a name for the device in the **Device Name** field. This name is to help you identify the device to yourself in the future.
5. Check the **Wi-Fi Password box**.

6. If you are registering a device that you are casting or communicating to or from another device (such as your smartphone), as part of the registration process:
    a. Check the **AirGroup** box.
    b. Leave the default **Personal** selected in the **Ownership** section.
    c. If you will be sharing the device with another person, put their Internet ID in the **Shared With** field, separating multiple IDs by commas.
        - This will allow you to cast from another device to the registered device even if they are connected to different SSIDs (e.g. eduroam, UofM-IoT, etc.)



7. Check the **Terms of Use** checkbox to accept the terms of use.
    - The message reads **I am the owner of this device and accept the terms of use**.
8. Select **Create**.
9. Your device is now registered. You can connect to the IoT Encrypted Service.

Note: Personal device registration will expire automatically in 1 year unless registration is renewed.

Step 3: Connect to the Encrypted IoT WiFi Service

NOTE: If your device is using the Legacy Unencrypted IoT service and not the new Encrypted Service, the legacy IoT service will eventually be disabled. **Any new devices should be registered for the new encrypted IoT service**. Existing IoT devices can easily be converted to the new service. Registration is required annually.

1. Open the **Network Settings** on your device and view the list of available Wi-Fi networks.
    - This should be near to where your wireless MAC address was listed.
2. From the list of available networks, select **UofM-IoT** and enter the generated password.
3. Your device is now connected.

Contact UMN Technology Help if you have problems following the above steps.

Step 4: Check any Known Device Issues

There are some known issues with certain devices when connecting to departmental and personal Internet of Things (IoT) devices for University of Minnesota IoT Wi-Fi service.

Wireless Printers

When WiFi service is poor for anyone in the area of a wireless printer.

Wireless printers broadcast a signal that conflicts with University of Minnesota networks. Instead, please connect to printers using a USB cable.

Apple TV

When the connection of an Apple TV to the Internet of Things (IoT) Services does not work, you can attempt to connect using our enterprise eduroam connection by using Apple Configurator.

Apple Configurator can set up a profile to add to the Apple TV that will connect to our enterprise connection. Some support may be offered from **appletv@umn.edu**.

For University Departments hoping to use an Apple TV in a meeting or conference room, send a message to **appletv-users@lists.umn.edu** for assistance.

Chapter 3. Convert a Legacy Device

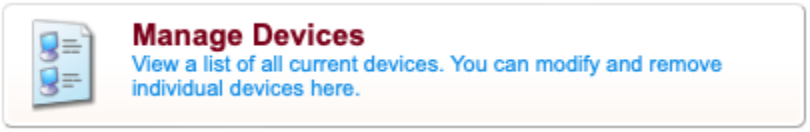
The Internet of Things (IoT) option for departmental and personal devices is the Encrypted Service. This service enables enhanced security for your devices. It also allows devices to connect that require a password (PSK) to attach to the network.

- **Note for IoT Admins of departmental IoT devices:** Devices without a pre-shared key or PSK need to be updated to the new encrypted service following this article's directions.

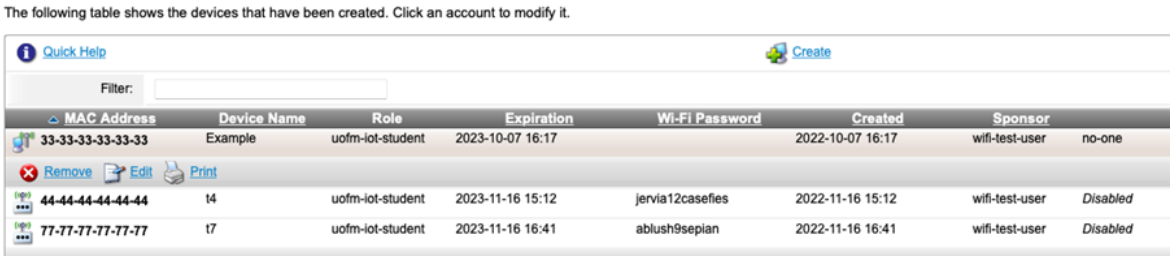
Converting Your IoT Device from Legacy Unencrypted Service to Encrypted Service

The legacy IoT service has been deprecated and will be retired soon. Any new devices must be registered for the new encrypted IT service. If your device is connected using the Legacy Unencrypted Service you can follow these steps to convert to the new Encrypted Service.

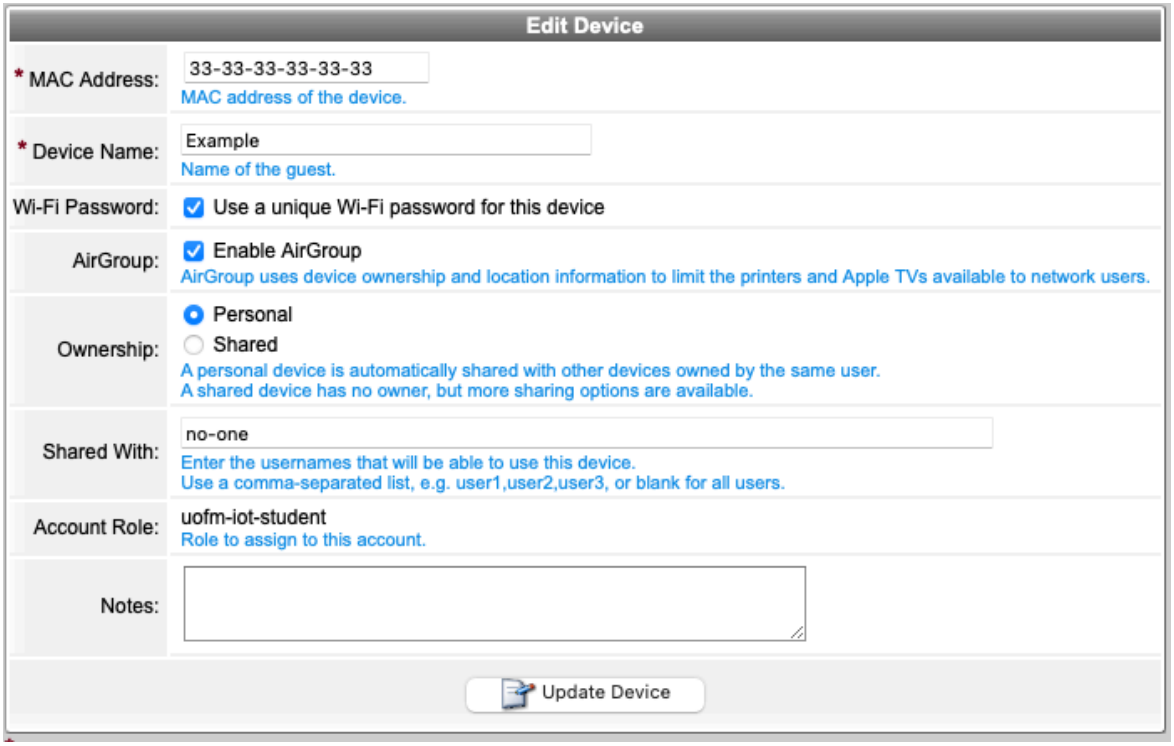
1. If you are off-campus, connect to UMN VPN.
2. Go to ClearPass Guest Device Manager and select **Manage Devices**.



3. In the Manage Devices page, highlight the MAC address you want to update and select **Edit**.



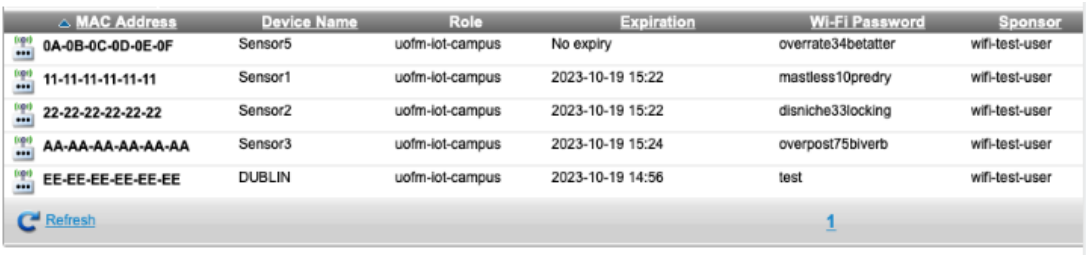
4. An Edit form opens. In the **Wi-Fi Password** section, check the **Use a unique Wi-Fi password for this device** box.



5. Select the **Update Device** button.
6. Your new password will be generated and displayed in the **Current Password** section.

   - **Note**: If you bulk registered multiple devices as a departmental IoT Admin, select **Manage Devices** to see the newly created passwords. Use the password corresponding to an individual device to connect to UofM-IoT. If you want

to set the same password for a group of devices, refer to Setting the Same Password for a Group of IoT Devices.



MAC Address	Device Name	Role	Expiration	Wi-Fi Password	Sponsor
0A-0B-0C-0D-0E-0F	Sensor5	uofm-iot-campus	No expiry	overrate34betatter	wifi-test-user
11-11-11-11-11-11	Sensor1	uofm-iot-campus	2023-10-19 15:22	mastless10predry	wifi-test-user
22-22-22-22-22-22	Sensor2	uofm-iot-campus	2023-10-19 15:22	disniche33locking	wifi-test-user
AA-AA-AA-AA-AA-AA	Sensor3	uofm-iot-campus	2023-10-19 15:24	overpost75biverb	wifi-test-user
EE-EE-EE-EE-EE-EE	DUBLIN	uofm-iot-campus	2023-10-19 14:56	test	wifi-test-user

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