

Self-Help Guide

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

Students, staff, and faculty at the University of Minnesota can register personal gaming or streaming devices such as Xbox, Roku, Apple TV, and more for WiFi access even if they don't support WPA2 authentication (username and password).

This registration should be performed using the University Internet ID and password of the person who owns the device.

Register a Personal Gaming or Streaming Device for the Internet of Things (IoT) Wi-Fi Service

Understand the Internet of Things (IoT) Services

Internet of Things (IoT) Service Options

Body

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

- 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:

- Any device that is capable of using eduroam should use eduroam. Eduroam is more secure because it has a higher level of encryption.
- 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 Internet of Things (IoT) Service?

Body

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.

The types of devices that should be registered using the [Register a Personal Device for IoT](#) guide or [Register a Departmental Device for IoT](#) guide are listed below.

Xbox, Roku, Apple TV, and other streaming devices

Xbox, Roku, Apple TV, and similar devices can be registered for Internet of Things (IoT) service. Follow the directions on this guide to connect these devices.

Google Chromecast and Google Home

Do not register Google Chromecast, Google Home, and similar device configurations using this process. These devices are limited to residence halls and require a Student Internet ID and password. They have additional steps for setup on the UofM-IoT Network. Please follow [Register your Chromecast Device](#) for these devices.

Laptops, Smart Phones, Printers

Do not register laptops, smart phones, or printers using this process unless otherwise specified.

Phones and laptops should connect to eduroam using your full University email address (InternetID@umn.edu) and password authentication. For more information on eduroam, follow [Connect to eduroam](#).

Smart Light Bulb and Similar Home Devices

Please note that some Internet of Things (IoT) devices designed to work on home networks may not be supported by the UMN network. The scale, design, and security controls of the UMN network makes it challenging for some devices to function properly on the network.

Some examples include:

- Devices that require a direct connection or special addressing from a Wi-Fi router (e.g. a Phillips Hue light bulb).

- Some devices that connect to a local hub that is then connected to the University network.

Departmental Devices (i.e., Door Locks, Cameras, Sensors)

Departmental-owned on-campus door locks, cameras, sensors, and similar devices can be registered for Internet of Things (IoT) service. Follow the directions on this guide to connect these devices.

Register and Connect to the Encrypted Service

Step 1: Find the wireless MAC address

Body

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

- For any IoT device that needs a companion device (smart phone, computer) to be on the same network for the setup, please follow the steps to [Register your Chromecast Device](#).
- Attempting to use an [Ethernet Adapter](#)? Ensure that you have [registered your device on the wired network](#).

Finding Your Device's MAC Address

For help finding the MAC address of your device, select the link for your device below:

- [Xbox One](#), [Xbox 360](#)
- [PlayStation 4](#)
 - Note: Wii and Playstation 3 may not be able to connect to Wi-Fi. Several students have reported difficulty connecting these devices, and thus far we have found no resolution. If there are any changes, this article will be updated with how to connect these devices.

- [Roku](#)
- [Alexa](#)
- [Siri](#)
- [Nintendo Wii U](#), [Nintendo Switch](#)
- [Sony TV](#)
- [Apple TV](#)
- [Amazon Fire Stick](#), [Amazon Echo](#)
- [Chromecast](#), [Google Home](#)
 - Chromecast configuration is limited to the residence halls, requires a Student Internet ID, and extra steps to work on our network. Please follow the steps to [Register your Chromecast Device](#).

Note: If a device uses MAC address randomization that feature should be disabled otherwise it may not be able to connect to Wi-Fi.

If you need assistance, please contact [Technology Help](#).

Step 2: Register the device for the Encrypted IoT Service

Body

At the University of Minnesota, personal Internet of Things (IoT) devices such as Xbox, PlayStation, Roku, Apple TV, etc can be registered for Wi-Fi service.

Follow these steps to register your device for the Encrypted IoT Service. This step is a part of the [Register a Personal Device for IoT Wi-Fi Service](#) guide.

Registering a Personal Device for 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 (InternetID@umn.edu) and password. Full access to your University account and systems (i.e., MyU, Canvas, PeopleSoft) 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.
 - If you're working on behalf of a department or another individual, please contact [Technology Help](#).
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**.

* MAC Address:	<input type="text"/>
	<small>MAC address of the device.</small>
* Device Name:	<input type="text"/>
	<small>Name of the device.</small>
Wi-Fi Password:	<input checked="" type="checkbox"/> Use a unique Wi-Fi password for this device

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 your roommate or 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.).

AirGroup:	<input checked="" type="checkbox"/> Enable AirGroup <small>AirGroup uses device ownership and location information to limit the printers and Apple TVs available to network users.</small>
Ownership:	<input checked="" type="radio"/> Personal <input type="radio"/> Shared <small>A personal device is automatically shared with other devices owned by the same user. A shared device has no owner, but more sharing options are available.</small>
Shared With:	<input type="text"/> <small>Enter the Internet ID that will be able to use this device. Use a comma-separated list, e.g. user1,user2,user3.</small>

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

Body

At the University of Minnesota, personal and departmental Wi-Fi devices can be connected to the Internet of Things (IoT) service. Follow these steps to connect your device for the Encrypted IoT 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.

Connecting Your Device to Encrypted IoT Service

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.

Please contact [UMN Technology Help](#) if you have problems following the above steps.

Step 4: Check any Known Device Issues

Body

These are some of the known issues and their workarounds for connecting departmental and personal Internet of Things (IoT) devices for University of Minnesota IoT Wi-Fi service.

Wireless Printers

Wireless printers broadcast a signal that conflicts with University of Minnesota networks, and can lead to poor service for everyone in the area near the printer. Instead, please connect to printers using a USB cable.

Apple TV

Attempt the connection with UofM-IoT following the instructions in the [Register a Personal Device for the Internet of Things \(IoT\) Wi-Fi Service](#) Self-Help guide. In case that does not work, you can attempt to connect using our enterprise eduroam connection by using [Apple Configurator](#) (link is an archived Apple article).

- 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** and user discussions are taking place on **appletv-users@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.

Convert a Legacy Device

Convert a Legacy Device to the New Encrypted Service

Body

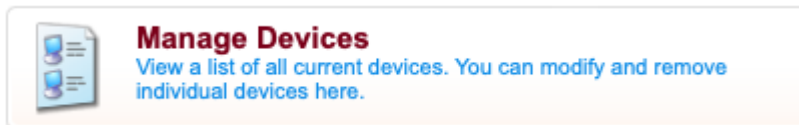
The Internet of Things (IoT) option for departmental and personal devices is the Encrypted Service. This service enables enhanced security for your devices. It also allows devices to connect that require a password (PSK) to attach to the network.

- **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.

The legacy IoT service has been retired. 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.

Converting Your IoT Device from Legacy Unencrypted Service to 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**.

The following table shows the devices that have been created. Click an account to modify it.


Quick Help

Create

Filter:

MAC Address	Device Name	Role	Expiration	Wi-Fi Password	Created	Sponsor	
<div><div></div><div>33-33-33-33-33-33</div></div>	Example	uofm-iot-student	2023-10-07 16:17		2022-10-07 16:17	wifi-test-user	no-one
<div><div><div></div><div>Remove</div></div><div><div></div><div>Edit</div></div><div><div></div><div>Print</div></div></div>							
<div><div></div><div>44-44-44-44-44-44</div></div>	t4	uofm-iot-student	2023-11-16 15:12	jervia12casefies	2022-11-16 15:12	wifi-test-user	Disabled
<div><div></div><div>77-77-77-77-77-77</div></div>	t7	uofm-iot-student	2023-11-16 16:41	ablush9sepian	2022-11-16 16:41	wifi-test-user	Disabled

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

Edit Device	
* MAC Address:	<input type="text" value="33-33-33-33-33-33"/> <small>MAC address of the device.</small>
* Device Name:	<input type="text" value="Example"/> <small>Name of the guest.</small>
Wi-Fi Password:	<input checked="" type="checkbox"/> Use a unique Wi-Fi password for this device
AirGroup:	<input checked="" type="checkbox"/> Enable AirGroup <small>AirGroup uses device ownership and location information to limit the printers and Apple TVs available to network users.</small>
Ownership:	<input checked="" type="radio"/> Personal <input type="radio"/> Shared <small>A personal device is automatically shared with other devices owned by the same user. A shared device has no owner, but more sharing options are available.</small>
Shared With:	<input type="text" value="no-one"/> <small>Enter the usernames that will be able to use this device. Use a comma-separated list, e.g. user1,user2,user3, or blank for all users.</small>
Account Role:	<input type="text" value="uofm-iot-student"/> <small>Role to assign to this account.</small>
Notes:	<div></div>
<div> Update Device</div>	

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

Updated Device Details	
MAC Address:	33-33-33-33-33-33
Account Status:	Active
Account Activation:	Friday, 07 October 2022, 4:17 PM
Account Expiration:	Account will expire at Saturday, 07 October 2023, 4:17 PM
Account Role:	uofm-iot-student
Sponsor's Name:	wifi-test-user
Current Password:	everted34emove
Wi-Fi Password:	<input checked="" type="checkbox"/> Use a unique Wi-Fi password for this device

- **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	disnische33locking	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
Refresh				1	

- You have completed the process. You can now use this new password to connect your IoT device to the UofM-IoT Wi-Fi network.