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 options are the Legacy Unencrypted Service and the new Encrypted Service.
Legacy Unencrypted Service

- Uses UofM-Guest SSID
- No encryption of Wi-Fi traffic
- Limited device support
- Requires annual device registration

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.

New 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-Guest 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. If not connecting to eduroam, these devices should connect to UofM-Guest without registration.

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

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: | MAC address of the device. |
| * Device Name: | Name of the device. |
| Wi-Fi Password: | 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-Guest, etc.).

<table>
<thead>
<tr>
<th>AirGroup: Enable AirGroup</th>
</tr>
</thead>
<tbody>
<tr>
<td>AirGroup uses device ownership and location information to limit the printers and Apple TVs available to network users.</td>
</tr>
</tbody>
</table>

| Ownership: |
| Personal |
| Shared |
| 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. |

| Shared With: |
| Enter the Internet ID that will be able to use this device. |
| Use a comma-separated list, e.g. user1, user2, user3. |

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.
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](https://technology.umn.edu) 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-Guest following the instructions in the [Register a Personal Device for the Internet of Things (IoT) Wi-Fi Service](https://technology.umn.edu) 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](https://technology.umn.edu)).

- 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](mailto:appletv@umn.edu) and user discussions are taking place on [appletv-users@umn.edu](mailto: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](mailto:appletv-users@lists.umn.edu) for assistance.
Convert a Legacy Device

Convert a Legacy Device to the New Encrypted Service

Body

There are two Internet of Things (IoT) options for departmental and personal devices: the Legacy Unencrytpes Service and the new Encrypted Service. The Encrypted 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 currently registered for the unencrypted IoT service using the UofM-Guest SSID will need to have a password created (also known as a pre-shared key or PSK) before connecting to the new UofM-IoT SSID. The legacy IoT service on UofM-Guest will continue to work. Adding a PSK will allow an IoT device to function on either UofM-Guest or UofM-IoT.

The Legacy IoT Service will eventually be disabled. Any new devices should 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**.

   ![Manage Devices](#)

   View a list of all current devices. You can modify and remove individual devices here.

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.

<table>
<thead>
<tr>
<th>MAC Address</th>
<th>Device Name</th>
<th>Role</th>
<th>Expiration</th>
<th>Wi-Fi Password</th>
<th>Created</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>33-33-33-33</td>
<td>Example</td>
<td>uofm-IoT-student</td>
<td>2023-10-07 16:17</td>
<td>2022-10-07 16:17</td>
<td>wifi-test-user</td>
<td>no-one</td>
</tr>
<tr>
<td>44-44-44-44</td>
<td>14</td>
<td>uofm-IoT-student</td>
<td>2023-11-16 15:12</td>
<td>2022-11-16 15:12</td>
<td>wifi-test-user</td>
<td>Disabled</td>
</tr>
<tr>
<td>77-77-77-77</td>
<td>17</td>
<td>uofm-IoT-student</td>
<td>2023-11-16 16:41</td>
<td>2022-11-16 16:41</td>
<td>wifi-test-user</td>
<td>Disabled</td>
</tr>
</tbody>
</table>
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 Form](image)

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

![Updated Device Details](image)

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