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# Connecting to Xfinity Mobile secure hotspots on Linux

## Xfinity Hotspot?

So if you are in the monopolized area of Xfinity in the US, you may (or may not) be aware that their hotspot network is pretty strong.

Since most subscribers use the default modem, and the default setting on it enables the hotspot functionality, most of your neighbours are already emitting the hotspot.

This is divided into two networks:

1. xfinitywifi, which is an open network with a captive portal
2. Xfinity Mobile, which is a WPA2 Enterprise network

Traditionally, you can only use the open network on Linux or Windows systems. The annoyance is that

1. it's fully open (which is fine with sites using https or if you have some VPN)
2. but also that it means you need to re sign in every few weeks. annoying if you want it always connected.

## Why would you want such a thing

Now you might say “why would you make this always connected”?

My primary connection is 5G Home Internet via a Calyx SIM (see my video last year). However, modems can be flakey and so I wanted a redundant link.

Ie, say the T-Mobile network has an outage, or ModemManager crashes, or the USB cable comes loose. Having a failover LAN is incredible useful.

Now, I'm not after a full Xfinity line for that - I am petty enough against Xfinity, that if I must give them money, then it will be as little as possible. Well, a normal Xfinity plan is \$50 a month. They offer hotspot access at \$10 a month.

So, the reasoning goes, that for only \$10 extra a month, I can have a “redundant” network, where I can use OpenWRT's MultiWan support to have two simultaneous uplinks. One via the modem (primary), and a higher weight backup, that is the Xfinity hotspot.

NOTE - the \$10 a month plan only gets you the open xfinitywifi, you'll need a full plan to use the “secure” network.

Thankfully, asking a friend is free, and even cheaper than \$10

# Using the secure hotspot

Now to get to my real point, they only offer this “secure” hotspot on mobile, where they just install the cert and it magically works, but that's hard to use.

BUT, they have a website to use it on Mac's, where it downloads a .mobileconfig.

## Step 1: Obtain a mobile config

So, the link to go to is <https://www.xfinity.com/support/articles/wifi-for-mac>

HOWEVER, if you open this on Linux, you'll get an error.

Instead, you need to:

### Step 1a: spoof your user agent

Pick a user agent spoofer plugin on your choice.

Then set it to be MacOS on Safari.

### Step 1b: actually download the profile

Now you should be able to login and download the profile

If you're with a friend's login, this is all you'll need from them.

## Step 2: Take a look at it

So turns out this mobile config is just XML.

And you can get all the details you need!

Its:

- WPA2 Enterprise
- TTLS outer
- PAP inner
- You get the outer ID, and the user/pass of the inner.

Note! Get your username and password from the mobile config. These are NOT your xfinity credentials!!

There are unique username and passwords for your devices on the wifi!

```
<dict>
  <key>AutoJoin</key>
  <true/>
  <key>CaptiveBypass</key>
  <false/>
  <key>EAPClientConfiguration</key>
  <dict>
    <key>AcceptEAPTypes</key>
    <array>
      <integer>21</integer>
    </array>
    <key>OuterIdentity</key>
    <string>xanonymous-xm-ttls@xfinity.com</string>
    <key>TLSMaximumVersion</key>
    <string>1.2</string>
    <key>TLSMinimumVersion</key>
    <string>1.0</string>
    <key>TLSTrustedServerNames</key>
    <array>
      <string>*.aaa.wifi.comcast.com</string>
      <string>*.aaa.wifi.xfinity.com</string>
    </array>
    <key>TTLSInnerAuthentication</key>
    <string>PAP</string>
    <key>UserName</key>
    <string>[REDACTED]</string>
    <key>UserPassword</key>
    <string>[REDACTED]</string>
  </dict>
  <key>EncryptionType</key>
  <string>WPA2</string>
  <key>HIDDEN_NETWORK</key>
  <false/>
  <key>IsHotspot</key>
  <false/>
  <key>SSID_STR</key>
  <string>Xfinity Mobile</string>
</dict>
```

### Step 3: Enter it on Linux

Easy right? Well if you enter these details on the NetworkManager UI in KDE at least, you'll start getting errors.

It took me several attempts of following `journalctl -f` and `dmesg -w` to figure out what's happening.

And it comes down to two lines. I thought I had issues with the domain and such, and tried to get the certs, yada yada.

Still would not connect.

Turns out, you need to pay attention to the TLS min and maximum in that mobile config...

But there's no spot for it in the KDE NetworkManager UI.

Instead, you need to pop up `nmtui`:

The screenshot shows the 'Edit Connection' window in the NetworkManager Text User Interface (nmtui). The window is titled 'Edit Connection' and has a blue border. It contains several sections for configuring a network connection. The 'Profile name' is 'Xfinity Mobile' and the 'Device' is also 'Xfinity Mobile'. Under the 'WI-FI' section, the 'SSID' is 'Xfinity Mobile' and the 'Mode' is '<Client>'. The 'Security' is set to '<WPA & WPA2 Enterprise>' and 'Authentication' is '<TTLS>'. The 'Anonymous identity' is 'xanonymous-xm-ttls@xfinity.com'. There are fields for 'CA cert' and 'CA cert password', with a checkbox for 'Show password'. The 'Inner authentication' is set to '<PAP>' and there are fields for 'Username' and 'Password', also with a 'Show password' checkbox. A checkbox for 'Store password for all users' is checked. The 'Show expert TLS options' checkbox is checked, revealing the 'Wpa\_supplicant settings' section. This section includes a 'Cipher string' field and checkboxes for 'TLS 1.0' (checked), 'TLS 1.1' (checked), 'TLS 1.2' (checked), and 'TLS 1.3' (unchecked). The 'Disable time checks' checkbox is checked. There are fields for 'BSSID' and 'Cloned MAC address', both of which are redacted with black boxes. The 'MTU' is set to '(default)'. At the bottom, there are checkboxes for 'IPv4 CONFIGURATION' (checked), 'IPv6 CONFIGURATION' (checked), 'Automatically connect' (unchecked), and 'Available to all users' (checked). The window has '<Cancel>' and '<OK>' buttons at the bottom right.

```
Edit Connection

Profile name Xfinity Mobile
Device Xfinity Mobile

= WI-FI <Hide>
  SSID Xfinity Mobile
  Mode <Client>

  Security <WPA & WPA2 Enterprise>
  Authentication <TTLS>
  Anonymous identity xanonymous-xm-ttls@xfinity.com
  CA cert
  CA cert password
  [ ] Show password
  Inner authentication <PAP>
  Username
  Password
  [ ] Show password
  [X] Store password for all users
  [X] Show expert TLS options
  Wpa_supplicant settings:
    Cipher string
    TLS 1.0 <Enable>
    TLS 1.1 <Enable>
    TLS 1.2 <Enable>
    TLS 1.3 <Disable>
  Disable time checks <Default>

  BSSID
  Cloned MAC address
  MTU (default)

= IPv4 CONFIGURATION <Automatic> <Show>
= IPv6 CONFIGURATION <Disabled> <Show>

[ ] Automatically connect
[X] Available to all users

<Cancel> <OK>
```

Now, you can see the “expert TLS options”.

Set it following the mobile config.

## Step 4: et voila

Just make sure you reenale rejoining so when you get deauthed, it rejoins.

```
wlp15s0 IEEE 802.11 ESSID:"Xfinity Mobile"
Mode:Managed Frequency:5.22 GHz Access Point: [REDACTED]
Bit Rate=960.7 Mb/s Tx-Power=3 dBm
Retry short limit:7 RTS thr:off Fragment thr:off
Encryption key:off
Power Management:on
Link Quality=62/70 Signal level=-48 dBm
Rx invalid nwid:0 Rx invalid crypt:0 Rx invalid frag:0
Tx excessive retries:6 Invalid misc:0 Missed beacon:0
```

## Notes

The secure network appears to be speed capped at 30 Mbit down, 6 Mbit up, so they allow faster for burst traffic under 1 MB, as measured in Palo Alto on June 18th.

The open network appears to be capped to 60 Mbit down, 6 Mbit up as measured on May 1st in Palo Also, but it's possible it has also been reduced.

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