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How to use a WiFi interface

This page describes how to configure a WiFi interface on a Debian system, for use on a network.

Contents

Once your wireless device has an interface available (verifiable with DebianMan: iwconfig), it is required to be configured to access a network. If you do not have a wireless interface present, please refer to WiFi for information on providing a driver for your device.

Wireless network interface configuration can be performed using a connection manager (such as NetworkManager) or through Debian's `/etc/network/interfaces` file with a special purpose utility (such as wpa_supplicant). Examples of NetworkManager and wpa_supplicant configuration are described below.

The WikiPedia: WEP algorithm is insecure and deprecated by WPA. Use of WEP is **not recommended** and is not covered within this document.

NetworkManager

NetworkManager is configured through graphical interfaces, which are available for GNOME and KDE. Your wireless interface should *not* be referenced within Debian's `/etc/network/interfaces` file.

NetworkManager is also a front-end for wpa_supplicant.

GNOME

1. Ensure your user account is a member of the `netdev` group.
2. Install the DebianPkg: network-manager-gnome package:

```
$ su
# apt-get update
# apt-get install network-manager-gnome
```

3. Log out of GNOME, then log back in to your system.
4. A new applet (computer icon) will appear in the notification area / system tray. Left-click this icon to present the nm-applet pop-up menu.
5. Neighboring wireless networks with a broadcasted SSID should be listed:
   - Click on the desired network's name.
   - If the network uses WPA encryption with a password (aka passphrase/pre-shared key), you will be prompted to enter it. After providing, click the "Connect" button.
   - The wireless network connection will be activated.

   If the desired network is not listed (e.g. SSID not broadcast/hidden):
   - Click "Connect to Other Wireless Network...".
   - Enter the network's SSID at "Network Name".
   - If encryption is used, select the method from the "Wireless Security" drop-down list (usually "WPA Personal" or "WPA2 Personal").
     - Enter the passphrase/pre-shared key at "Password".
   - Click the "Connect" button to activate the wireless network connection.

See the NetworkManager page for frequently asked questions, documentation and support references.

KDE

1. Ensure your user account is a member of the `netdev` group.

2. Install the DebianPkg: plasma-widget-networkmanagement package:

```
$ su
# aptitude update
# aptitude install plasma-widget-networkmanagement
```

3. Add the Network Management plasma widget to your system tray.
   - Click on the Plasma "foot"
   - Click "Add Widget"
   - Search for "Network"
   - Drag the "Network Management" item to your system tray.
4. A new applet (wallplug/socket icon) will appear in the system tray. Click this icon.
5. Neighboring wireless networks with a broadcasted SSID should be listed:
   - Click on the desired network's name.
   - If the network uses WPA encryption with a password (aka passphrase/pre-shared key), you will be prompted to enter it. After providing, click the "Connect" button.
   - The wireless network connection will be activated.

   If the desired network is not listed (e.g. SSID not broadcast/hidden):
   - Click "Connect to Other Wireless Network...".
   - Enter the network's name in "Name (ESSID)".
   - Tick "Use Encryption" if in use on the network.
     - Select the encryption method used (usually "WPA Personal").
     - Enter the passphrase/pre-shared key at "Password".
     - Select "WPA 1" or "WPA 2" for the protocol version, as used by the network.
   - Click the "Connect" button to activate the wireless network connection.

See the NetworkManager page for frequently asked questions, documentation and support references.

Wicd

You must remove network-manager to get wicd to work. Check to see if network-manager is installed and see if, after you installed the driver, your wireless is already working in the notification area of your desktop manager. You may already be good to go.

WikiPedia: wicd (Wireless Interface Connection Daemon) is a lightweight alternative to NetworkManager. It is environment-independent, making it suitable for all desktop environments, including GNOME, Xfce, LXDE, and Fluxbox. Like NetworkManager, wicd is configured via a graphical interface. Your wireless interface should *not* be referenced within Debian's `/etc/network/interfaces` file.

1. Update the list of available packages and install the DebianPkg: wicd package:

```
$ su
# aptitude update
# aptitude install wicd
```

2. Amend `/etc/network/interfaces` to contain only the following:

```
# This file describes the network interfaces available on you
# and how to activate them. For more information, see interfa

# The loopback network interface
auto lo
iface lo inet loopback
```

   Note: as of wheezy it is fine to have your wireless interface in `/etc/network/interfaces`, but not required. You can set the wireless interface (e.g. wlan0) in the wicd client's preferences.

3. If not already performed, add your regular user account to the `netdev` group and reload DBus:

```
# adduser yourusername netdev
# /etc/init.d/dbus reload
```

4. Start the wicd daemon:

```
# /etc/init.d/wicd start
```

5. Start the wicd GUI with your regular user account:

```
# exit
$ wicd-client -n
```

See also [wicd frequently asked questions](#).

connman

I have connection drops ([Open in wicd/1.7.2.4-4.1: #772996: wicd-daemon: wlan0: deauthenticating by local choice (Reason: 3=DEAUTH_LEAVING): 772996](#)) with Wicd and `connman` do great job instead:

```
$ sudo apt-get install connman

$  connmanctl
connmanctl>
connmanctl> scan wifi
Scan completed for wifi

connmanctl> services
$SSID    wifi_f8d111090ed6_6d617269636f6e5f64655f6d6965726461_ma
...      ...

connmanctl> agent on
Agent registered

connmanctl> connect wifi_f8d111090ed6_6d617269636f6e5f64655f6d69
Agent RequestInput wifi_f8d111090ed6_6d617269636f6e5f64655f6d696
Passphrase = [ Type=psk, Requirement=mandatory, Alternates=[ WPS
WPS = [ Type=wpspin, Requirement=alternate ]
Passphrase? $PASS
Connected wifi_f8d111090ed6_6d617269636f6e5f64655f6d6965726461_m
```

```
connmanctl> quit
```

After the configuration, **connman** remembers your SSID selections and reuse them automatically. Don't worry about long HEXes - in client mode TAB auto-completion works both for commands and data.

Command Line

Find your wireless interface and bring it up:

```
# ip a
# iwconfig
# ip link set wlan0 up
```

Scan for available networks and get network details:

```
$ su
# iwlist scan
```

Now edit `/etc/network/interfaces`. The required configuration is much dependent on your particular setup. See the following example to get an idea of how it works:

```
# my wifi device
auto wlan0
iface wlan0 inet dhcp
        wireless-essid [ESSID]
        wireless-mode [MODE]
```

For further information on available configuration options, see `man interfaces`, `man wireless` and `/usr/share/doc/wireless-tools/README.Debian`.

You can now bring your interface up and down with the usual `ifup` and `ifdown` commands. If you added `auto wlan0` as in the example above, the interface should be brought up automatically during boot up.

WPS

WPS-PBC

Find your WiFi network where WPS is enabled.

```
# iwlist scan

wlan0     Scan completed :
          Cell 01 - Address: 11:22:33:44:55:66
                    Channel:11
                    Frequency:2.462 GHz (Channel 11)
                    Quality=64/70  Signal level=-46 dBm
...
```

Use wpa_cli to connect to the MAC adress provided by the scan.

```
# wpa_cli wps_pbc 11:22:33:44:55:66
```

Then press the WPS button on your access point to start the PBC mode.

Once connected, start dhclient to obtain a dynamic IP adress.

```
dhclient wlan0
```

wpa_supplicant

wpa_supplicant is a WPA client and IEEE 802.1X WikiPedia: supplicant.

The DebianPkg: wpasupplicant package provides `wpa-*` DebianMan: ifupdown options for `/etc/network/interfaces`. If these options are specified,

wpa_supplicant is started in the background when your wireless interface is raised and stopped when brought down.

GNOME and KDE users shouldn't configure wpa_supplicant manually. Use NetworkManager as explained above.

Before continuing, install the DebianPkg: wpasupplicant package:

```
$ su
# aptitude update
# aptitude install wpasupplicant
```

WPA-PSK and WPA2-PSK

Also known as "WPA Personal" and "WPA2 Personal" respectively.

1. Restrict the permissions of `/etc/network/interfaces`, to prevent pre-shared key (PSK) disclosure (alternatively use a separate config file such as /etc/network/interfaces.d/wlan0 on newer Debian versions):

```
# chmod 0600 /etc/network/interfaces
```

2. Use the WPA passphrase to calculate the correct WPA PSK hash for your SSID by altering the following example:

```
$ wpa_passphrase myssid my_very_secret_passphrase
```

If you don't put the passphrase on the command line, it will be prompted for. The above command gives the output:

```
network={
        ssid="myssid"
        #psk="my_very_secret_passphrase"
```

```
        psk=ccb290fd4fe6b22935cbae31449e050edd02ad44627b16ce0
}
```

you'll need to copy from "psk=" to the end of the line, to put in your /etc/network/interfaces file.

3. Open `/etc/network/interfaces` in a text editor :

```
# sensible-editor /etc/network/interfaces
```

4. Define appropriate stanzas for your wireless interface, along with the SSID and PSK HASH. For example :

```
auto wlan0
iface wlan0 inet dhcp
        wpa-ssid myssid
        wpa-psk ccb290fd4fe6b22935cbae31449e050edd02ad44627b1
```

The "auto" stanza will bring your interface up at system startup. If not desired, remove or comment this line.

5. Save the file and exit the editor.
6. Bring your interface up. This will start wpa_supplicant as a background process.

```
# ifup wlan0
```

Additional `wpa-*` options are described within `/usr/share/doc/wpasupplicant/README.modes.gz`. This should also be read if connecting to a network not broadcasting its SSID.

For general `/etc/network/interfaces` information, see the DebianMan: interfaces(5) man page.

WPA-EAP

For networks using WikiPedia: EAP-TLS, you are required to establish a wpa_supplicant configuration file and provide the client-side certificate. An example WPA2-EAP configuration file can be found at /usr/share/doc/wpasupplicant/examples/wpa2-eap-ccmp.conf.

Once available, reference your configuration file in `/etc/network/interfaces`. For example:

```
auto wlan0
iface wlan0 inet dhcp
    wpa-conf /etc/wpa_supplicant/wpa_supplicant.conf
```

More information can be found in the DebianMan: wpa_supplicant.conf(5) man page. A fully-commented wpa_supplicant configuration file example is at `/usr/share/doc/wpasupplicant/README.wpa_supplicant.conf.gz`.

Switching Connections

To switch between multiple distinct configurations:

- GNOME users should use "Menu System > Administration > Network". (n.b. this doesn't work in etch)
- Console users can
  - use logical interfaces, as

```
iface wlan_home inet dhcp
    wpa-ssid mynetworkname
    wpa-psk mysecretpassphrase
```

```
# ifup wlan0=wlan_home
```

  - use DebianPkg: ifscheme, see the example configuration at alwayssunny.com.

- You can use DebianMan: guessnet(8) to switch profiles automatically by your location.

Security consideration

1. Every member of a network can *listen* to other members' traffic (whether it's an unencrypted public hot-spot, or a WEP/WPA/WPA2, or LAN). **Use SSL/TLS protocols (HTTPS, IMAPS...) or VPN to preserve your privacy.**
2. WEP is so insecure that it is basically equivalent to not using any encryption at all.
3. WPA**1** is deprecated. **Use WPA2 instead.**
4. Make sure you use a **strong pass-phrase**.

Network security, see: http://www.aircrack-ng.org/doku.php?id=tutorial.

See Also

- WiFi/AdHoc - Establishing a WiFi network without an access point.
- DebianMan: iwconfig(8)
- NetworkConfiguration
- NetworkManager
- WiFi
- WPA

CategoryNetwork | CategoryWireless