Alien ALR-F800 readers support network connections using an optional Wi-Fi USB adapter. The following application note contains detailed instructions on how to configure the reader in order to establish a Wi-Fi connection.

## Minimum Reader Firmware Requirements

- reader firmware version (ReaderVersion) 17.07.17

The Wi-Fi interface control and configuration is implemented using the Alien Reader Protocol (ARP) `service` command interface: `service wifi OPTIONS`

In most cases a minimum set of commands is required to configure the reader and establish a Wi-Fi connection. For more advanced configuration options refer to the output of the Alien `service wifi help conf` command.

## NOTES

- once the reader Wi-Fi settings are properly configured and the Alien `wifi` service is enabled, the reader will automatically try to connect to a Wi-Fi network on boot

- both Ethernet and Wi-Fi connections can be active simultaneously but only one ARP network connection to the reader can be established at a time (using either interface)

- if DHCP mode is enabled for the Wi-Fi interface but the reader fails to obtain an IP address from the wireless router, the Wi-Fi interface will be initialized using a failover IP address 192.168.2.100

## General Setup Procedure

The general procedure to enable Wi-Fi functionality consists of the following steps:

1. install the ALR-F800 firmware v17.07.17 or later

2. plug in the compatible Wi-Fi USB adapter (from the list of supported devices below)

3. add a new Wi-Fi network configuration that includes at least the network SSID and the password parameters

   ```
   service wifi add "SSID"

   service wifi set net 0 psk "PASSWORD"
   ```

   NOTES

   - in most cases make sure to use **DOUBLE QUOTES** around the SSID and the PASSWORD values (use no quotes only when using hexadecimal values)

   - several networks could be added to the reader Wi-Fi configuration, each with its own set of parameters. Use a 0-based network ID/index when configuring the specific network

4. start `wifi` service to connect to the WiFi network added above:

   ```
   service wifi start
   ```

5. enable `wifi` service to automatically start WiFi interface on boot:

   ```
   service wifi enable
   ```

## Example

ARP command sequence to make the reader connect to a Wi-Fi network with SSID *Area 51* using a password *Welcome*.

add/register a new network with the SSID *Area 51*

```
service wifi add "Area 51"
```

set Wi-Fi access password for the network that has ID of 0 to *Welcome*

```
service wifi set net 0 psk "Welcome"
```

start WiFi service (prints 'R', for Running, on success)

```
service wifi start
```

print the last error (use it to determine the reason if Wi-Fi failed to start)

```
service wifi err
```

print link status

```
service wifi link
```

print WiFi IP address

```
service wifi ip
```

## Examples of Commands

```
service wifi scan           # scan for and print available Wi-Fi networks
service wifi err            # print the last error message
service wifi add "Area 51"  # add/register a new network with the SSID Area 51
service wifi list           # print configured Wi-Fi networks and their zero-based IDs
service wifi set net 0 psk "Welcome"      # set Wi-Fi access password for the
                                          # network that has ID of 0 to Welcome
service wifi get net 0      # print settings for the registered network with ID of 0
service wifi conf           # print the entire Wi-Fi service configuration
service wifi start          # start Wi-Fi service, prints 'R' (Running) on success
service wifi link           # print Wi-Fi link status
service wifi ip             # print Wi-Fi IP address
service wifi enable         # set Wi-Fi service to start automatically on boot
service wifi disable        # disable starting Wi-Fi service automatically on boot
service wifi stop           # stop Wi-Fi service
service wifi help           # display help
service wifi help conf      # display help for advanced Wi-Fi configuration options
```

## `service wifi` Command Parameter Groups

The Wi-Fi service configuration parameters are organized in groups as follows:

- general configuration parameters

  ```
  add | del | get | set
  ```

- parameters related to each of the registered network (referenced by its numerical 0-based ID/index)

  ```
  get net ID [PARAM]  |  set net ID PARAM [VALUE]
  ```

- IP address related parameters

  ```
  mac | ip | netmask | gateway | dhcp
  ```

## `service wifi` Command Options

```
start|stop|status       # Wi-Fi service control commands
scan                    # scan for and list available wireless networks
dev|link|err            # print status info (device capabilities, link status, last error)
conf                    # print entire Wi-Fi configuration
reload                  # apply configuration changes to a running Wi-Fi service
add  {"SSID"|HEXSSDI}    # add/register a new network,
                        # SSID is a DOUBLE-QUOTED ASCII string or hex string
del  {"SSID"|HEXSSDI}    # delete network
list                    # list registered networks
get [PARAM]             # print general WiFi configuration [PARAM]
set  PARAM [VALUE]       # set general WiFi configuration PARAM; or
                        # delete PARAM if VALUE is omitted
get net ID [PARAM]      # print network-ID configuration [PARAM]
set net ID PARAM [VALUE] # set network-ID configuration PARAM; or
                        # delete PARAM if VALUE is omitted
mac|ip|netmask|gateway|dhcp    # get|set network interface related parameters
help [conf]             # display help
```

## Supported Wi-Fi Devices

The following Wi-Fi USB adapters have been verified to work with the ALR-F800:

- Buffalo AirStation N150 Wireless USB Adapter (WLI-UC-GNM)

- Panda PAU05

- Panda PAU06

- Alfa AWUS036NEH 1000mW 1W 802.11g/n High Gain USB Wireless G / N Long-Range WiFi Network Adapter

For more information and technical support email us at support@alientechnology.com

Alien Technology LLC
845 Embedded Way
San Jose, CA 95138

(408) 782-3900
www.Alientechnology.com