Wireless Accessory Configuration
User Manual

March 2016

Redpine Signals, Inc.
2107 N. First Street, #680
San Jose, CA 95131.
Tel: (408) 748-3385
Fax: (408) 705-2019
Email: info@redpinesignals.com
Website: www.redpinesignals.com

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About this Document

This document gives an overview of the Apple MFI program implemented for Redpine's n-Link module and gives the user information on how to configure the n-Link module using WAC.

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1 Introduction

The Apple MFi program is a licensing program for iOS device accessories and technologies manufactured by third party companies. The acronym MFi stands for "Made for iPod", "Made for iPhone" or "Made for iPad". It is designed to set up the wireless accessories with the credentials stored in the iPhone/iPad. After configuring the module using the iPhone/iPad, this accessory can only be accessed/operated using the iPhone/iPad. More information can be obtained from WAC_POSIX_Server_1.22 documentation.

2 Application Overview

The application developed is used to demonstrate how to configure the nLink module using WAC.

2.1 Setup Required

1. Linux machine.
2. n-Link module, with the IAP chip integrated to the I2C interface.
3. WLAN Access Point.

2.2 Software / Utilities Required

1. DHCP Server: DHCP server has to be installed in the linux machine. For a Fedora distribution, it can be installed using the following command:

   $ yum install dhcp

   Refer the following link for further details on installation and configuration of DHCP server:

   https://docs.fedoraproject.org/en-US/Fedora/17/html/System_Administrators_Guide/s1-dhcp-configuring-server.html
2. DHCP client utility.
3. mDNS responder: This utility can be downloaded in the form of a tar file from the following link.

   https://opensource.apple.com/tarballs/mDNSResponder/

   It can also be built from the source code provided as a part of the release package. The source can be found in the following path.

   $ cd host/APPS/WAC_POSIX_Server_1.22/

   Note: Release package named mDNSResponder-567.tar.gz is used for the evaluation
4. WAC_POSIX_Server_1.22 package, which is provided as a part of the release package.

2.3 Installing the required utilities

1. DHCP server: Copy the dhcpd.conf file which is present in the release package to the following paths. DHCP server is configured using this file:

   $ cp -rf dhcpd.conf /etc/
   $ cp -rf dhcpd.conf /etc/dhcp/

   Run the following command to start the dhcp server.

   $ /sbin/service dhcpd enable

2. mDNS Responder: Extract the `mDNSResponder-567.tar.gz` file.

   $ tar -xvf `mDNSResponder-567.tar.gz.`

   Go to the following path in mDNSResponder-567 folder:

   $ cd mDNSResponder-567/mDNSPosix/

   Run the following command:

   $ make install os=linux

   This installs the mDNSResponder which runs in the deamon mode.

This application is used to configure the n-Link device in Accessory mode so that iPhone/iPad can configure network credentials using WAC.

3 Compiling the driver and the application

The driver has to be compiled by following the steps mentioned in the TRM.

After compiling the driver, go to the WAC sub folder present in the release package.

```
$ cd host/APPS/WAC_Posix_Server_1.22
```

To compile the application for BSD driver, open the Makefile and comment the define ONEBOX_NL80211.

For NL80211 mode, uncomment the define ONEBOX_NL80211 in the Makefile.

Compile the application by giving the following command:

```
$ make clean;make
```

This will generate an executable with the name WACServer.

Copy the executable into the release folder.

```
$ cp WACServer ../../release
```

4 Executing the Application

1. Initially stop the mDNSResponder which is running in deamon mode before starting the MFi application by giving the following command:

   $ /etc/init.d/mdns stop

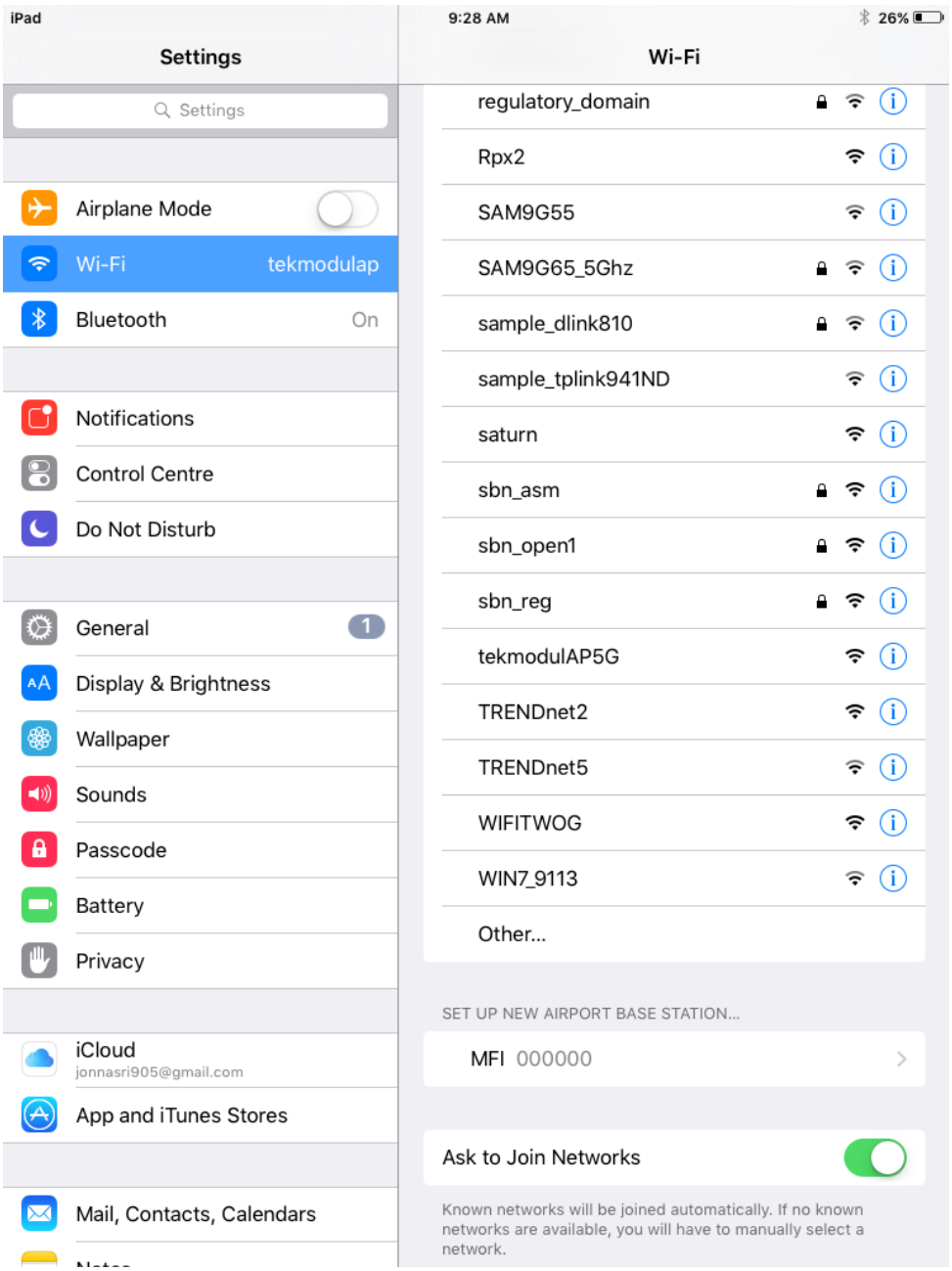
   Note: Give the following command before executing the application.

   $ iptables -F

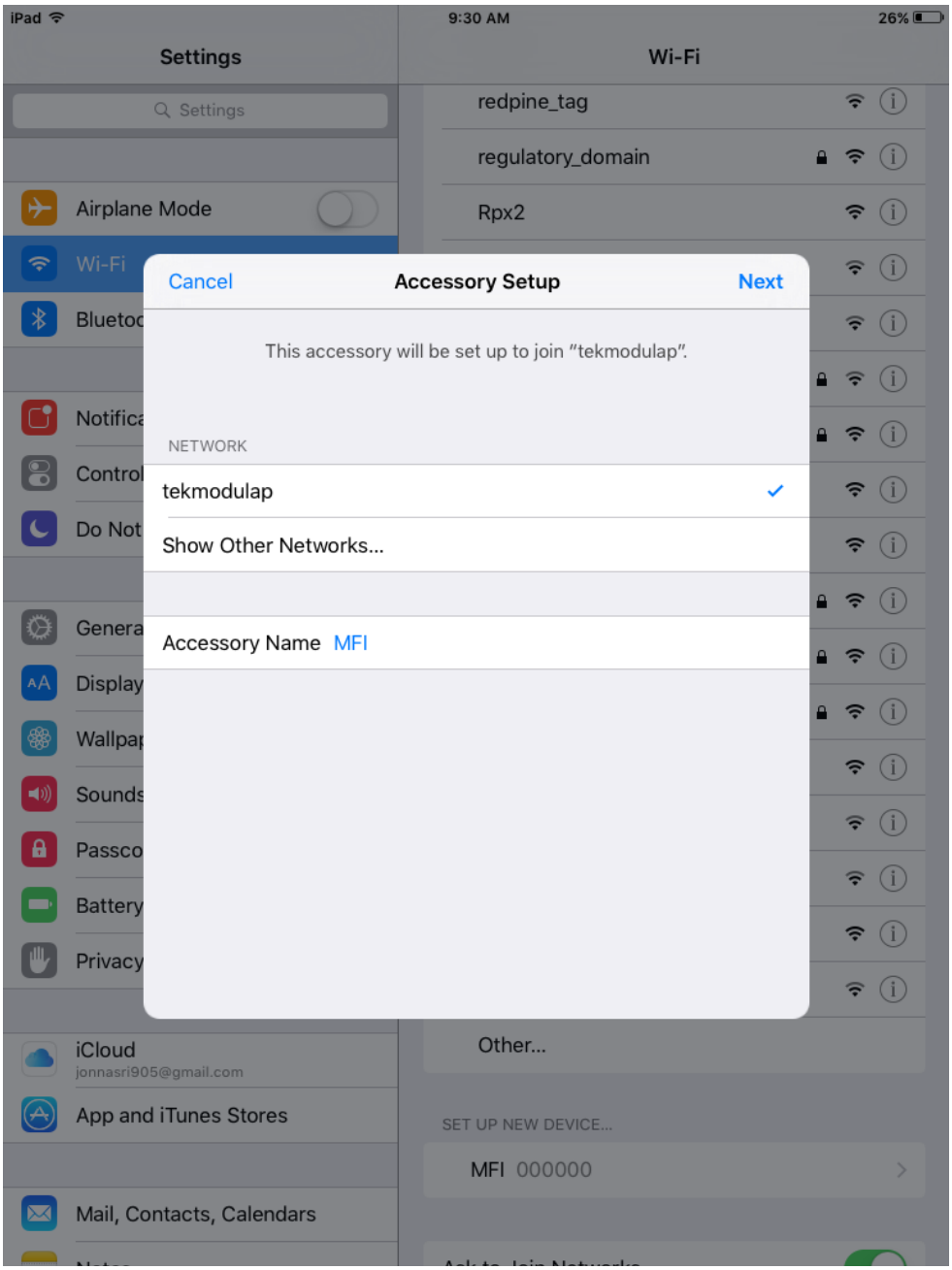
2. Start the application by running the following command:

   $ ./WACServer

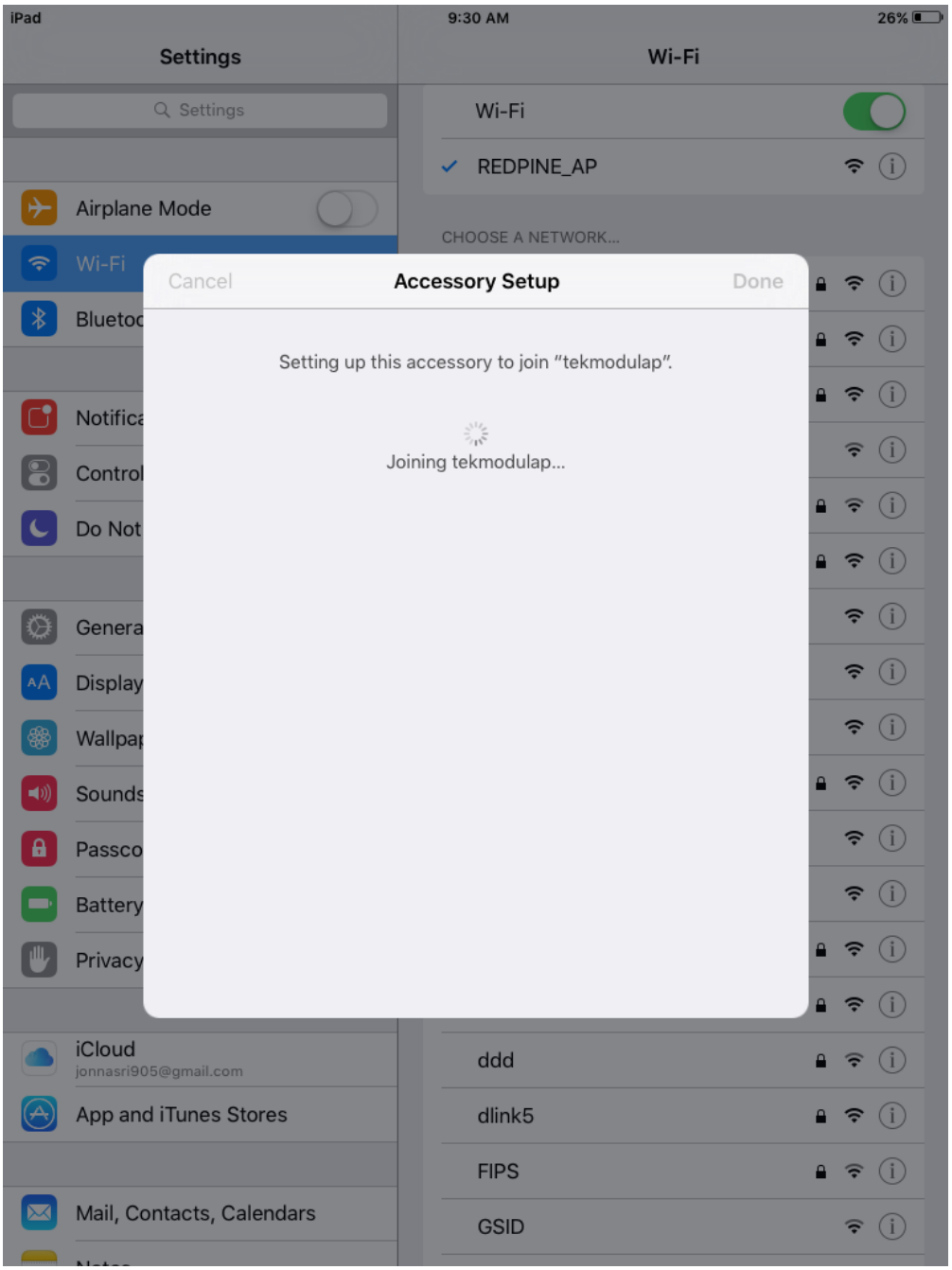
3. Scan for the device in iPhone/iPad in WiFi settings for the device named "MFI" as shown in the screen shot given below.



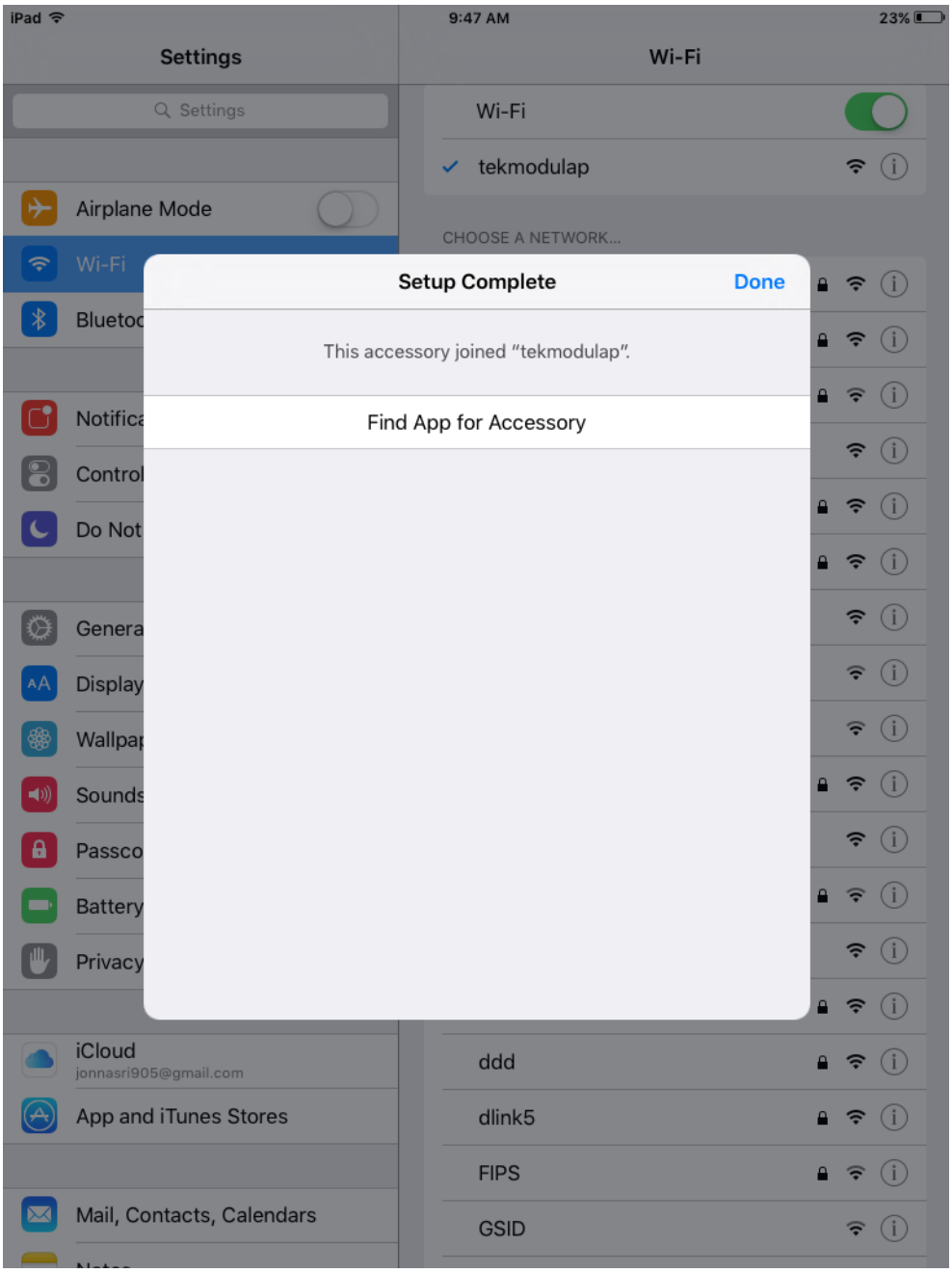
4. Select the device and select the destination WiFi network to join after configuring the module in Wifi client mode and select next, as shown in the screen shot below.



5. iPhone/iPad authenticates the module and configures the module to join to the destination network (`tekmodulap`) as shown in the screen shot below.



6. After joining to the desired network iPhone/iPad performs the final authentication and pops up a message after the entire configuration as shown in the screen shot below.



7. Thus device is configured and can be accessed.

5 Limitations

Facing issues some times with mDNSResponder connection with WAC server .WAC is not able to connect to the mDNS Responder.

Revision History

Revision No.	Version No.	Date	Author	Changes
1	1	12/02/2016	Jahnavi Meher	Initial Version

Review History

Review No.	Version No.	Date	Reviewer	Comments
	0.1			Initial Version