

## NFC631KT Software for Wi-Fi Protected Setup (WPS) Version 1.1.2 Resource Packages Description

### 1. Required System

- (1) Access Point (AP) For Linux (Fedora Core 6 [2.6.18-1.2796.fc6])
- (2) Station (STA) For Linux (Fedora Core 6 [2.6.18-1.2796.fc6])

### 2. Packages in /SOURCES directory

The following packages are structured as figure1. Those packages are included in attached CD, NFC631KT Software for Wi-Fi Protected Setup. The specification (1), (2), and (4), will be publicly available from Wi-Fi Alliance [<http://www.wi-fi.org/>] or NFC Forum [<http://www.nfc-forum.org/specs/>]

- (1) wpa\_supplicant-0.5.8-sony\_r5.7.patch  
Modifications to wpa\_supplicant (0.5.8)
- (2) hostapd-0.5.8-sony\_r5.7.patch  
Modifications to hostapd (0.5.8)
- (3) NFCTokenRW-1.1.1.tar.gz  
This is sample application using NFC library.
- (4)(5) WpsNfcLibrary-1.1.1.tar.gz  
This is NFC Library for WPS.
- (6) NFCKernelDriver-1.0.3.tar.gz  
This is NFC Reader/Writer kernel driver for Linux operating system.

The following packages are required to setup NFC Plug-in WPS Access Point (AP) and Station (STA) devices. Refer to the following sections about setting up procedures.

- (7) madwifi-0.9.3.1-WPS\_1.0.patch  
Modification to MADWiFi Driver (0.9.3.1)

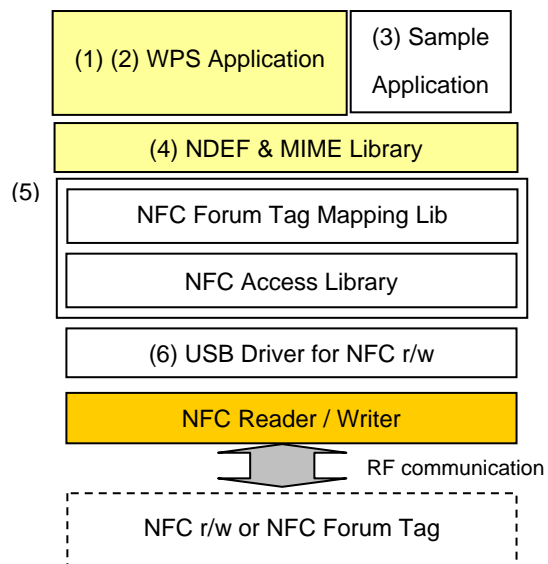


Figure 1. NFC Plug-in Architecture Image.

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## **NFC Kernel Driver**

### 1. Contents

This is an NFC Reader/Writer kernel driver for Linux.

### 2. How to install NFC Kernel Driver

Required

- [1] Uncompress NFCKernelDriver-1.0.3.tar.gz
- [2] Change directory to “NFCKernelDriver-1.0.3/linux/kobj”
- [3] \$ su
- [4] # ./install\_sonyrw

\* If you want to install to other kernel version, you may use and modify  
“NFCKernelDriver-1.0.3/linux/src” on your responsibility

## **MADWiFi Driver for WPS**

### **1. Contents**

This is the modification to MADWiFi Driver (0.9.3.1). And we implement to get WPS IEs in “Probe Request” for AP, and in “Beacon” and “Probe Request” for STA.

### **2. How to build MADWiFi Driver for Linux**

Required

\* gcc 4.1.1 or later

- (1) Download “madwifi-0.9.3.1.tar.gz” from <http://madwifi.org/>
- (2) Uncompress “madwifi-0.9.3.1.tar.gz” into “/usr/src/redhat/BUILD”. Check if “madwifi-0.9.3.1” directory is created.
- (3) Copy “madwifi-0.9.3.1-WPS\_1.0.patch” into “madwifi-0.9.3”
- (4) Change directory to “madwifi-0.9.3.1”
- (5) \$ patch -p0 < madwifi-0.9.3.1-WPS\_1.0.patch
- (6) \$ make
- (7) \$ su
- (8) # make install
- (9) Reboot the computer just in case

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### **NFC Library**

#### 1. Contents

This is NFC library for Linux, which are library object, and header files.

wpsnfc.dll – This library works for Encode/Decode WPS NDEF data.

libnfc\_mapping\_pn53x.dll – This library works for administrate NFC Mapping format, and control NFC Reader/Writer device.

You should put these libraries into library path. (ex. “/usr/lib”)

## **NFC Token Reader/Writer Sample Application**

### **1. Contents**

This is sample application to use NFC Libraries.

### **2. How to build “NFCTokenRW”**

Required

\* gcc 4.1.1 or later

- [1] Uncompress WpsNfcLibrary-1.1.1.tar.gz. Check if “WpsNfcLibrary” directory is created.
- [2] Uncompress NFCTokenRW-1.1.1.tar.gz. Check if “NFCTokenRW” directory is created.
- [3] Change directory to “NFCTokenRW”
- [4] \$ make all
- [5] Copy “NFCTokenRW/Obj/Release/NFCTokenRW” to the working directory

### **3. How to Setup for “NFCTokenRW”**

- [1] Copy “WpsNfcLibrary/linux/wpsnfc.dll” and  
“WpsNfcLibrary/linux/libnfc\_mapping\_pn53x.dll” to the library path (ex. /usr/lib)
- [2] Insert NFC Reader/Writer to USB Plug
- [3] Change directory to the working directory
- [4] \$ su
- [5] # ./NFCTokenRW /dev/ttyUSB0

## Preparing to build wpa\_supplicant/hostapd for WPS

### 1. Description

To build wpa\_supplicant/hostapd for WPS (WPS applications), some packages are required to use UPnP, SSL and QT functionality. Refer to the following steps.

### 2. Install Required Packages

Use “yum” or “pirut” and install the following packages, if not installed

- \* libupnp (1.3.1 or later)
- \* libupnp-devel (1.3.1 or later)
- \* openssl (0.9.8b or later)
- \* openssl-devel (0.9.8b or later)
- \* qt4 (4.3.0 or later)
- \* qt4-devel (4.3.0 or later)
- \* bridge-utils (1.1 or later)

[1] Check the current installed packages

```
$ yum list libupnp-devel openssl-devel qt4-devel bridge-utils
```

```
ex. openssl          0.9.8b-2    installed
```

```
    openssl-devel    0.9.8b-2    installed
```

```
...
```

[2] Install packages which have not been installed yet

```
$ yum install libupnp-devel qt4-devel bridge-utils
```

[3] If you don't use “yum” or “pirut”, refer the following URL,

and you can download these packages, and build them on your responsibility

\* libupnp : <http://upnp.sourceforge.net/>

\* openssl : <http://www.openssl.org/>

\* qt4 : <http://www.trolltech.com/>

\* bridge-utils : <http://linux-net.osdl.org/index.php/Bridge>

## **wpa\_supplicant for WPS**

### 1. Contents

This package is modified wpa\_supplicant (0.5.8) by SONY.

Original package is uploaded to [http://hostap.epitest.fi/wpa\\_supplicant/](http://hostap.epitest.fi/wpa_supplicant/)

### 2. How to build “wpa\_supplicant”

- [1] Uncompress WpsNfcLibrary-1.1.1.tar.gz. Check if “WpsNfcLibrary” directory is created.
- [2] Download “wpa\_supplicant-0.5.8.tar.gz” from [http://hostap.epitest.fi/wpa\\_supplicant/](http://hostap.epitest.fi/wpa_supplicant/)
- [3] Uncompress “wpa\_supplicant-0.5.8.tar.gz”. Check if “wpa\_supplicant-0.5.8” directory is created.
- [4] Copy “wpa\_supplicant-0.5.8-sony\_r5.7.patch” into “wpa\_supplicant-0.5.8”
- [5] Change directory to “wpa\_supplicant-0.5.8”
- [6] \$ patch -p0 < wpa\_supplicant-0.5.8-sony\_r5.7.patch
- [7] \$ copy defconfig .config
- [8] Check “.config” file, and should be the following settings.  
CONFIG\_MADWIFI=y  
CFLAGS += (input directory of “MADWiFi Driver”)  
...  
CONFIG\_EAP\_WPS=y  
CONFIG\_WPS\_OPT\_UPNP=y  
EXTRALIBS += (input path of “libupnp.so”)  
...  
CONFIG\_WPS\_OPT\_NFC=y  
CFLAGS += (input directory of “WpsNfcLibrary”)  
EXTRALIBS += (input path of “wpsnfc.dll” and “libnfc\_mapping\_pn53x.dll”)  
...  
MODIFIED\_BY\_SONY=y
- [9] \$ make
- [10] Copy “wpa\_supplicant” to the working directory

### 3. How to build “testbed\_sta”

- [1] Change directory to “wpa\_supplicant-0.5.8/testbed\_sta”
- [2] \$ qmake-qt4 && make
- [3] Add executable permission to “sta\_start” and “sta\_end” files  
ex. \$ chmod +x sta\_start sta\_end
- [4] Copy “testbed\_sta”, “sta\_start”, and “sta\_end” to the working directory
- [5] Copy “wpa\_supplicant.conf” to the working directory

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## hostapd for WPS

### 1. Contents

This package is modified hostapd (0.5.8) by SONY.

Original package is uploaded to <http://hostap.epitest.fi/hostapd/>

### 2. How to build “hostapd”

[1] Uncompress WpsNfcLibrary-1.1.1.tar.gz. Check if “WpsNfcLibrary” directory is created.

[2] Download “hostapd-0.5.8.tar.gz” from <http://hostap.epitest.fi/hostapd/>

[3] Uncompress “hostapd-0.5.8.tar.gz”. Check if “hostapd-0.5.8” directory is created.

[4] Copy “hostapd-0.5.8-sony\_r5.7.patch” into “hostapd-0.5.8”

[5] Change directory to “hostapd-0.5.8”

[6] \$ patch -p0 < hostapd-0.5.8-sony\_r5.7.patch

[7] \$ copy defconfig .config

[8] Check “.config” file, and should be the following settings.

CONFIG\_MADWIFI=y

CFLAGS += (input directory of “MADWiFi Driver”)

...

CONFIG\_EAP\_WPS=y

CONFIG\_WPS\_OPT\_UPNP=y

LIBS += (input path of “libupnp.so”)

...

CONFIG\_WPS\_OPT\_NFC=y

CFLAGS += (input directory of “WpsNfcLibrary”)

LIBS += (input path of “wpsnfc.dll” and “libnfc\_mapping\_pn53x.dll”)

...

MODIFIED\_BY\_SONY=y

[9] \$ make

[10] Copy “hostapd” to the working directory

### 3. How to build “testbed\_ap”

[1] Change directory to “hostapd-0.5.8/testbed\_ap”

[2] \$ qmake-qt4 && make

[3] Add executable permission to “ap\_start” and “ap\_end” files

ex. \$ chmod +x ap\_start ap\_end

[4] Copy “testbed\_ap”, “ap\_start”, and “ap\_end” to the working directory

[5] Copy “hostapd.conf”, “hostapd.eap\_user” and “web” directory to the working directory

## How to setup WPS applications

### 1. STA

\* Compatible Wireless Device

WLI-CB-AMG54 (BUFFALO)

DWL-G630 (D-Link)

[1] Log-in as a user which has root permission.

[2] Copy the following files to the working directory.

\* testbed\_sta (source directory: "wpa\_supplicant-0.5.8/testbed\_sta/")

\* sta\_start (source directory: "wpa\_supplicant-0.5.8/testbed\_sta/")

\* sta\_end (source directory: "wpa\_supplicant-0.5.8/testbed\_sta/")

\* wpa\_supplicant.conf (source directory: "wpa\_supplicant-0.5.8/testbed\_sta/")

\* wpa\_supplicant (source directory: "wpa\_supplicant-0.5.8/")

[3] If necessary, insert WLAN PCMCIA card which needs MADWifi Driver into your PC.

[4] If necessary, change the following parameters in wpa\_supplicant.conf

but you MUST NOT set empty value

```
wps_properttry = {  
    version  
    uuid  
    auth_type_flags  
    encr_type_flags  
    conn_type_flags  
    config_methods  
    wps_state  
    rf_bands  
    manufacture  
    model_name  
    model_number  
    serial_number  
    dev_category  
    dev_sub_category  
    dev_oui  
    dev_name  
    os_version  
}
```

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- [5] If you use wired UPnP, set Firewall exception, or disable Firewall  
ex. To disable Firewall

# /etc/init.d/iptables stop

- [6] If you use NFC option, insert NFC Reader/Writer to USB plug.

And check if “/dev/ttyUSBn” exists (‘n’ is number)

ex. # dmesg

...

sonyrw 2-1:1.0: Sony NFC converter detected

usb 2-1: Sony NFC converter now attached to ttyUSB0

- [7] Check if “sta\_start” and “sta\_end” files have “execute permission”.

If not, add “execute permission”.

ex. \$ chmod +x sta\_start sta\_end

- [8] Start testbed\_sta

# ./testbed\_sta

## 2. AP

- \* WPS Compatible Wireless Devices

WLI-CB-AMG54 (BUFFALO)

DWL-G630 (D-Link)

- [1] Log-in as a user which has root permission.

- [2] Copy the following files to the working directory.

\* testbed\_ap (source directory: “hostapd-0.5.8/testbed\_ap”)

\* ap\_start (source directory: “hostapd-0.5.8/testbed\_ap”)

\* ap\_end (source directory: “hostapd-0.5.8/testbed\_ap”)

\* hostapd.conf (source directory: “hostapd-0.5.8/testbed\_ap”)

\* hostapd.eap\_user (source directory: “hostapd-0.5.8/testbed\_ap”)

\* “web” directory (source directory: “hostapd-0.5.8/testbed\_ap”)

\* hostapd (source directory: “hostapd-0.5.8/”)

- [3] If necessary, insert WLAN PCMCIA card which needs MADWifi Driver into your PC.

- [4] Set the Firewall exception, or disable Firewall

ex. To disable Firewall

# /etc/init.d/iptables stop

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[5] If necessary, change the following parameters in hostapd.conf  
but you **MUST NOT** set empty value

```
wps_properttry = {  
    version  
    uuid  
    auth_type_flags  
    encr_type_flags  
    conn_type_flags  
    config_methods  
    wps_state  
    rf_bands  
    manufacture  
    model_name  
    model_number  
    serial_number  
    dev_category  
    dev_sub_category  
    dev_oui  
    dev_name  
    os_version  
    upnp_root_dir  
    upnp_device_url  
}
```

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- [6] If necessary, change the following parameters in web/wps\_device.xml  
but you MUST NOT set empty value

```
...
<device>
...
  <friendlyName>...</friendlyName>
  <manufacturer>...</manufacturer> (*1)
  <manufacturerURL>...</manufacturerURL>
  <modelDescription>...</modelDescription>
  <modelName>...</modelName> (*1)
  <modelName>...</modelName> (*1)
  <modelURL>...</modelURL>
  <serialNumber>...</serialNumber> (*1)
  <UDN>uuid:...</UDN> (*1)(*2)
  <UPC>...</UPC>
...
</device>
```

(\*1) Recommend the value is same value in hostapd.conf

(\*2) “uuid:”, the part of [UDN] value, is fixed

- [7] If you use NFC option, insert NFC Reader/Writer to USB plug.

And check if “/dev/ttyUSBn” exists (‘n’ is number)

ex. # dmesg

```
...
sonyrw 2-1:1.0: Sony NFC converter detected
usb 2-1: Sony NFC converter now attached to ttyUSB0
```

- [8] Check if “ap\_start” and “ap\_end” files have “execute permission”.

If not, add “execute permission”.

ex. \$ chmod +x ap\_start ap\_end

- [9] Start testbed\_ap

# ./testbed\_ap