AN1486

MRF24WG0MA/MB Software Migration

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OVERVIEW

This application note explains the necessary changes to the existing MLA software stack to migrate from older MRF24WB0MA/MB software stack to incorporate the MRF24WG0MA/MB modules.

GETTING STARTED

- MRF24WG0MA/MB driver code is deeply embedded in the MLA releases.
- Macro definitions are used to differentiate between MRF24WB0MA/MB and MRF24WG0MA/MB.
  - `#define MRF24WG` (`HardwareProfile.h`)
- Substitute newly modified WiFi™ directory files that have updates from MRF24WB0MA/MB projects.
- Six WiFi files have specific `post-fix _24WG` versions.
- Certain C function prototypes are changed or removed, depending on which earlier version is being compared to, for example, `SaveAppConfig()`, power throttle control functions.
- A good starting point is to start with the TCP/IP demonstration application as a reference for porting.

The best approach to use in migrating applications based on MRF24WB0MA/MB to MRF24WG0MA/MB is adding application files to the new software stack.

- Start with the new version of the same demonstration application that was used to spawn the original application, or use the TCP/IP demonstration application.
- Add custom application files from the older application.
- Header files that typically need modifications are `TCPIPConfig.h`, `WF_Config.h` and `HardwareProfile.h`. The `TCPIPConfig.h` and `WF_Config.h` files can be used to set up WiFi connections and TCP/IP configurations. The `HardwareProfile.h` file can be used to configure the stack for custom circuit board.

  Examples of more customized application files are: `CustomHTTPApp.c`, `CustomSNMPApp.c`, `MainDemo.c`, `WF_Config.c`, and so on.
- For changed Application Programming Interfaces (APIs), refer to the following release notes and help files:
  - `\Microchip\TCPIP Stack\TCPIP Stack Version.txt`
  - `\Microchip\Help\Readme for Microchip Application Libraries.htm`
  - `\Microchip\Help\TCPIP Stack Help.chm`

LIST OF CHANGES

The following section describes the changes to the existing MLA stoftware stacks.

TCP/IP Stack v5.41 Based Application

Related WiFi files are located at `\Microchip Solutions v20xx-xx-xx\Microchip\TCPIP Stack\WiFi.`

Where, `Microchip Solutions v20xx-xx-xx` indicates the MLA installation directory location.

For example, `\Microchip Solutions v2012-07-18\Microchip\TCPIP Stack\WiFi`

Replace existing header files that has `WF` prefix with the following files:

- `WFConsoleIwconfig.h`
- `WFConsoleMsgs.h`
- `WFMgmtMsg.h`
- `WFMac.h`
- `WFConsoleMsgHandler.h`
- `WFDriverPrv.h`
- `WFConsole.h`
- `WFApi.h`
- `WFConsoleIfconfig.h`
- `WFEasyConfig.h`
- `WFConsoleIwpriv.h`
- `WFRaw.h`

Table 1 lists the files that have MRF24WG0MA/MB specific versions.

TABLE 1: FILES WITH MRF24WG0MA/MB SPECIFIC VERSIONS

Existing Files	Replace With
WFDriverCom.c	WFDriverCom_24G.c
WFDriverRaw.c	WFDriverRaw_24G.c
WFMgmtMsg.c	WFMgmtMsg_24G.c
WFParamMsg.c	WFParamMsg_24G.c
FDriverPrv.h	WWFDriverPrv_24G.h
WFRaw.h	WFRaw_24G.h

Additional Migration from TCP/IP Stack v5.25

- SaveAppConfig has different input parameters:
  V5.25: void SaveAppConfig(void)
  V5.36: void SaveAppConfig(const APP_CONFIG *prtAppConfig)
- Search for function call SaveAppConfig() in the following files: MainDemo.c, MainDemo.h, CustomHTTPApp.c, UARTConfig.c, WFEasyConfig.c, SNMPv3.c
- Add #define MRF24WG definition to project definition files.
- Power throttle table control support was removed. If the following API's were used, they must be removed from the application to use the current version of the TCP/IP stack:
  - static INT8 WFPowerToAppPower(UINT8 wfPower)
  - static UINT8 AppPowerToWFPower(INT8 appPower)
  - void WF_ThrottleTableSet(tWFThrottleTable *p_table)
  - void WF_ThrottleTableGet(tWFThrottleTable *p_table)
  - void WF_ThrottleTableEnable()
  - void WF_ThrottleTableDisable(UINT8 bitRate)
  - void WF_ThrottleTableGetState(BOOL *p_state, UINT8 *p_bitRate)

Other Changes

- WF_Config.c, WF_Config.h

  void WF_ProcessEvent(UINT8 event, UINT16 eventInfo)

  is changed to

  void WF_ProcessEvent(UINT8 event, UINT16 eventInfo, UINT8 *extraInfo).

  Where, UINT8 *extraInfo is the WPA passphrase that is sent to the host. The host can speed up the connection by making the passphrase to key calculation.

  WF_Config.h

  Depending on the version, the contents in the WF_Config.h file changes. The format change occurs between MLA July 18, 2012 and MLA April 3, 2012 versions.

- Many changes are detailed in the WFApi.h file. Refer to comments in the code for detailed function descriptions.
  - Domains reduced to WF_DOMAIN_FCC, WF_DOMAIN_ETSI, WF_DOMAIN_JAPAN, WF_DOMAIN_OTHER
  - New API calls specific to MRF24WG are listed in Table 2.

TABLE 2: NEW API CALLS SPECIFIC TO MRF24WG

Sl. No.	New API Calls Specific to MRF24WG	File Name
1	void WF_CMGetConnectContext(tWFConnectContext *p_ctx);	WFConnectionManager.c
2	void WF_CPSetSsidType(UINT8 CpId, UINT8 hidden);	WFConnectionProfile.c
3	void WF_CPGetSsidType(UINT8 CpId, UINT8 *hidden);	WFConnectionProfile.c
4	void WF_CPSetWepKeyType(UINT8 CpId, UINT8 wepKeyType);	WFConnectionProfile.c
5	void WF_CPGetWepKeyType(UINT8 CpId, UINT8 *p_wepKeyType);	WFConnectionProfile.c
6	void WF_CPGetWPSCredentials(UINT8 CpId, tWFWpsCred *p_cred);	WFConnectionProfile.c
7	void WF_CASetDtimInterval(UINT16 dtimInterval);	WFConnectionAlgorithm.c
8	void WF_CAGetDtimInterval(UINT16 *p_dtimInterval);	WFConnectionAlgorithm.c
9	void WF_SetTxMode(UINT8 mode);	WFParamMsg_24G.c
10	void WF_GetTxMode(UINT8 *mode);	WFParamMsg_24G.c
11	void WFEnableDebugPrint(UINT8 option);	WFParamMsg_24G.c
12	void WF_SetStackVersion(UINT8 major, UINT8 minor);	WFParamMsg_24G.c
13	void WF_TxPowerSetMax(INT8 maxTxPower);	WFTxPower.c
14	void WF_TxPowerGetMax(INT8 *p_maxTxPower);	WFTxPower.c
15	void WF_MulticastSetConfig(tWFMultiCastConfig *p_config);	WFParamMsg_24G.c
16	void WF_EnableSWMultiCastFilter(void);	WFParamMsg_24G.c
17	void WF_DisplayModuleAssertInfo(void);	WFDebugStrings.c

Software Aid

Use a file compare utility like WinMerge (freeware) to reduce the time to determine the differences between an existing application and the latest version of the TCP/IP stack. This also reduces the likelihood subtle changes will go unnoticed.

The WinMerge software can be downloaded from the following web site http://winmerge.org.

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