Microchip and FreeRTOS.org demo application Release 1.2

This application demonstrates one method of integrating various Microchip Stacks and software Libraries using the FreeRTOS.org embedded real-time operating system. It should not be treated as a complete or finished application but as a suggested demonstration of how to integrate the libraries.
The library versions used are:

MiWi™ P2P V2.0
TCP/IP Stack V5.10
Graphics Library V1.75
FreeRTOS.org V5.4.2

For each of these libraries please consult the relevant library information in the License sub-folder.

The source code is documented and for a more complete explanation refer to:
AN1264 "Integrating Microchip Libraries with a Real-Time Operating System"

Compatibility Matrix
The following hardware combinations have been tested:

Processor/Platform	Graphics PICTail V2 (AC164127)	Graphics PICTail V3 (AC164127-3)	ENC28J60 Ethernet PICTail	ENC624J600 Ethernet PICTail
PIC24FJ128GA010 PIM + Explorer 16	Y	Y	Y	Y
PIC32MX360F512 PIM + Explorer 16	Y	Y	Y	Y
PIC32MX360F512 Starter Kit + IO Expansion Board	Y	Y	Y	Y

Re-Compiling
To compile for a particular hardware application first load the most appropriate project file (3 are provided). Then modify GraphicsConfig.h to reflect the particular Graphics PICTail attached. Finally, modify HardwareProfile.h to reflect the correct combination of development board and Ethernet PICTail.
By default the projects are configured to build for the Graphics PICTail V3 (AC164127-3). If you change from version 3 to V2 (older single board display) then it is also necessary to change the graphics driver file. First Remove the "Graphics\SSD1926.c" from the project and then Add the file "src\drvTFT001.c" into the Graphics folder in project view. (If changing back to the newer display board the reverse is necessary).

Version History:

V1.2 First Public Release
Software upgraded to TCP/IP V5.10, Graphics V1.75 and MiWi P2P V2.1 (with new MiMac and MiApp interface).
New license for FreeRTOS (V5.4.2 onwards) has been created in conjunction with FreeRTOS.org to prevent confusion over licensing conditions. Users are now free to use this code as an example framework for their own projects so long as all of the licensing conditions in the individual license files are adhered to.
The new MiWi interface incorporates are more effective method of integrating the MiWi P2P stack. Previously (and as currently stated in the App. Note) the main MiWi task was processed at a high rate with 10ms sleep intervals between loops. This meant that messages would be dealt with fairly efficiently however much time was spent evaluating non-active code (i.e. when no messages had been received). The new method uses a semaphore inside the MiWi/MRF24J40.c transceiver ISR. Here when a new message has been detected (indicated by the RX_BUFFERED flag being set) a semaphore is used to signal to the MiWi task. This wakes up and then processes the message. In addition the timeout is used on the blocking call in taskMiWi so that even if non message is received it will periodically unblock and activate the stack keeping it alive.
Known issue: there is some delay in received MiWi messages being processed on the PIC24F, this could probably be resolved by adjusting the timeouts and task priorities assigned in the application. It may also be desirable to use a modified high level algorithm when sending data over the RF link as no account is taken of missed or lost packets in the current application (MiWi provides this service but it is not used).

V1.1 Internal license release.
Software upgraded to TCP/IP V5.00, Graphics V1.65 and FreeRTOS.org V5.20.
Software modified to additionally support Graphics PICTail Version 3 and the ENC624J600 PICTail Plus™

V1.0 Internal release only
Based on PIC32/PIC24, Graphics PICTail V2, ENC28J60 PICTail, MRF24J40 PICTail.