Freescale MQX RTOS Example Guide
security_email example

This document explains the security_email example, what to expect from the example and a brief introduction to the API.

The example

The security_email example demonstrates network communication in MQX by sending out an e-mail when a push button is pressed. It also updates itself to the current time using the SNTP protocol, and acquires an IP address off a network via DHCP. It will conserve power in Stop2 sleep mode and wake at the press of a button. Please note that this example requires basic knowledge about your network setup and e-mail configuration. These values will vary from network to network, and not all networks will have an e-mail server or an SNTP server. Also some corporate networks are located behind a firewall or proxy, which might inhibit the functionality of this example. Please contact your system administrator for more information on your network configuration.

Running the example

Open up the security.h file in the Sources group. The network settings need to be configured. Look for the line in security.h that begins with #define DEMOCFG_ENABLE_DHCP 1.

If the network you are connected to uses DHCP, you don't need to make the changes below. However if the network you are connected to requires a static IP, change
#define DEMOCFG_ENABLE_DHCP 1 to
#define DEMOCFG_ENABLE_DHCP 0

Then change the other parameters shown below to match your network. This is the only required parameter if using a static IP:

```
#ifndef ENET_IPADDR
  #define ENET_IPADDR   IPADDR(192,168,1,114)
#endif

#ifndef ENET_IPMASK
   #define ENET_IPMASK  IPADDR(255,255,255,0)
#endif

#ifndef ENET_IPGATEWAY
  #define ENET_IPGATEWAY  IPADDR(192,168,1,1)
#endif

#ifndef ENET_IPDNS
  #define ENET_IPDNS          IPADDR(192,168,1,1)
#endif
```

You can get those values by asking your network administrator. Alternatively, if your computer is already connected to the network via an Ethernet cable, open a Command Prompt on the PC (Start > All Programs >Accessories > Command Prompt). Then type ipconfig /all to get

the information for your Local Area Connection and configure your board accordingly.

The GMT time can be configured using the SNTP protocol. The SNTP server to contact is specified by a domain name which must be enclosed in quotation marks, as shown below:

```
#define  SNTP_SERVER    "time.nist.gov"
```

The default SNTP address is the NIST time server. However if your external internet connection goes through a proxy or firewall, you have to use an SNTP server located within your network. Contact your network administrator to find out the address for your network's SNTP server. If you cannot determine the SNTP server for your network, then disable the SNTP feature by setting DEMOCFG_ENABLE_SNTP to 0:

```
#define DEMOCFG_ENABLE_SNTP 0
```

Next, set up the e-mail configuration. If you are using Outlook Express or Thunderbird, you can find these settings in the configuration options. You might also find these settings on the help page for your network provider.

Note: e-Mail servers that require encryption, usually via SSL (for example, Gmail, Hotmail, etc) will not work with this release of MQX.

The main e-mail settings are configured in the following #defines:

```
#define  EMAIL_SERVER       "smtp.server.com"
#define  EMAIL_TO           "to@email.com"
#define  EMAIL_FROM         "from@email.com"
```

Ensure that all values are enclosed in quotation marks.
EMAIL_SERVER: The domain name of the SMTP server that you use for e-mail. This cannot be an SMTP server that requires SSL encryption. If your network is behind a firewall or proxy, you have to use an SMTP server located within your network.

EMAIL_TO: e-Mail address to send the e-mail to. This can be any e-mail address.

EMAIL_FROM: Your official e-mail address for the SMTP server you are connecting to. You cannot use an alias or "friendly address" e-mail address. Many servers will reject connections that do not provide a real e-mail address on the assumption that the message being transferred is a spam.

If your SMTP server does not require authentication, then leave the DEMOCFG_AUTH_REQUIRED in 0. However if it does require authentication, and does not require encryption, change

```
#define DEMOCFG_AUTH_REQUIRED 0 to
#define DEMOCFG_AUTH_REQUIRED 1
```

Then change the username and password parameters. The username and password is usually the same combination that you would use to access your e-mail:

```
#define  AUTH_USERNAME  "username"
#define  AUTH_PASSWORD  "password"
```

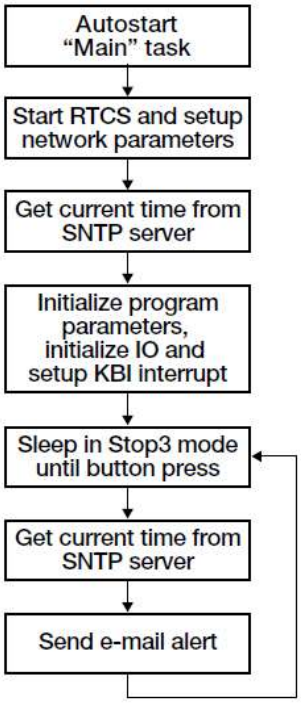
Start HyperTerminal on the PC (Start menu->Programs->Accessories->Communications).
Make a connection to the serial port that is connected to the board (usually will be COM1).

Set it for 115200 baud, no parity, 8 bits and click OK.

Compile, download, and run the application. After this, press a SWx button on the board. After you release it, an e-mail will be sent to the e-mail address you specified, stating the time you pressed the button and how much time elapsed from the last event.

Explanation of the example

The application demo creates only one main task. The flow of the task is described in the next figure.



The RTCS initialization happen when the next function is called:
`SEC_InitializeNetworking(3, 2, 2, DEMOCFG_ENABLE_DHCP);`

The GPIO is initializing by calling the function `SEC_InitializeIO()`.

The MCU goes into STOP mode until a push button is pressed. At that moment the data is collected and an email is sent with the gathered information.