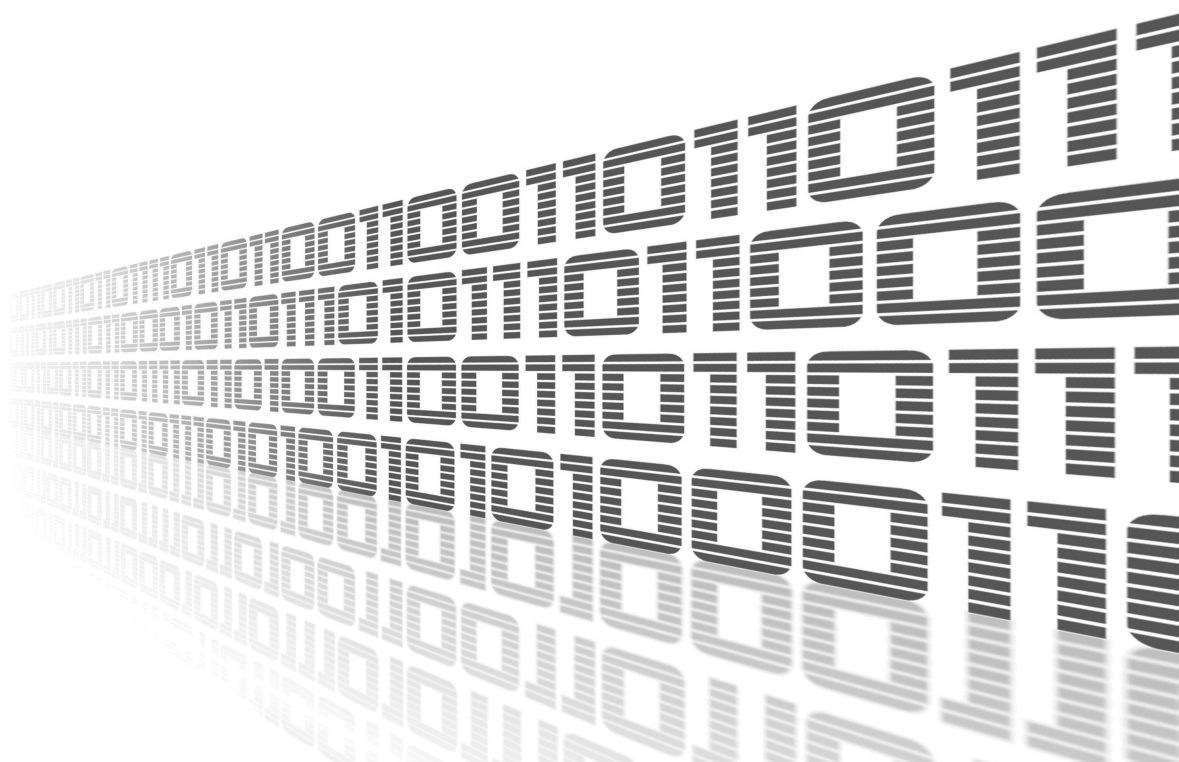# RouterApp

FOTA

APPLICATION NOTE

ADVANTECH

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Used symbols

⚠ *Danger* – Information regarding user safety or potential damage to the router.

❗ *Attention* – Problems that can arise in specific situations.

ⓘ *Information, notice* – Useful tips or information of special interest.

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Document No. APP-0037-EN, revision from September 1, 2022. Released in the Czech Republic.

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1. Router App Description

> ⚠️ Router app *Firmware Over-The-Air* is not contained in the standard router firmware. Uploading of this router app is described in the Configuration manual (see Chapter Related Documents). This router app is not available for routers of v2 production line.

> ℹ️ Firmware of version 6.3.5 or above is required for ICR-4400 routers having the *Telit FN980* cellular module. This module was assembled in a few ICR-4400 router samples.

The *FOTA* (Firmware Over-The-Air) Router App is an additional feature of the Advantech routers. It allows the router to update the firmware of the cellular module automatically. Only the firmware of the cellular module is updated (not the firmware of the router).

The router app is easy to use – it can be activated with just one checkbox. The router must be connected to the Internet to use FOTA updates. The connection to the server with firmware files provided by Advantech Czech is already defined in the router app, but it is possible to enter your server credentials. The FOTA router app checks for the new cellular module firmware every 24 hours. It is also possible to check for new firmware manually.

Figure 1: FOTA Router app Operation

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1.1 Supported Cellular Modules and Available Firmwares

⚠️ Uploading of incorrect cellular module firmware may irretrievably damage the device. **Updating firmware other than from the Advantech FOTA server is at your own risk!**

Following is the list of cellular modules supported by this router app.

Manufacturer	Model
Cinterion	PHS8-E, PHS8-P, PLS8-E, PLS8-X, PLS83-W, PLS83-EP, PLPS9-W, PLPS9-X
Quectel	BG96, C25-AF, C25-AU, EC25-E, EC25-EU, UC20-G, EM12-GL, EM120R-GL, EM121R-GL, EM160R-GL, RM500Q-AE, RM500Q-GL, RM505Q-AE, RM505Q-GL
Telit	LE910-EU V2, E910-NA V2, LE910-NA1, LE910-NA1-SKU, LE910-SV1
Huawei	ME909s-120, ME909s-821

Table 1: Supported Cellular Modules

The primary purpose of the Advantech FOTA server is to update cellular module firmware for security or functional reasons. The table below lists the cellular firmware files available on the FOTA server. In addition, the table states the dependencies as well.

Manufacturer	Model	Last revision of module's 'FW	Min. ver. of module's FW	Min. ver. of router's FW
Quectel	EC25-AF(D)	EC25AFFDR07A10M4G	–	6.1.8
Telit	LE910–EU–V2	20.00.403	–	6.1.5
Telit	LE910–NA1	20.00.524	–	6.1.5
Telit	LE910–NA1–SKU	20.00.525@ 20.00.525@20.00.015 20.00.528@20.00.018 @20.00.015	20.00.522@ – – @20.00.012	6.1.6 6.1.6 6.1.7 6.1.6
Telit	LE910–NA1–SKU	20.00.528 20.00.018	–	6.1.7 6.1.7
Huawei	ME909s-821	11.617.04.00.00	–	–
Cinterion	PHS8-P	03.320	02.003, 03.001	–
Cinterion	PLS8-E	01.438	01.000, 01.090	–
Cinterion	PLS8-X	03.017	–	–

Table 2: FW Available on the Advantech FOTA Server

To install the router app to the router, go to the *Router Apps* page in the *Customization*

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section of the router's Web interface. After uploading the router app to the router, go to its Web interface by clicking on the router app's name. On the left, you will see the router app's menu, as shown in Figure 2.

There is an *Automatic Update* page in the *Configuration* section. In the *Status* section, there is a *System Log* page. You can return to the Web interface of the router and the main menu using the *Return* button in the *Customization* section.

Figure 2: Firmware Over-The-Air Router App

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2. Configuration

In this chapter, the configuration of the FOTA router app is described. Go to the *Automatic Update* page in the *Configuration* section – this is also the home page of the FOTA router app. To enable the FOTA router app, tick the *Enable automatic update* checkbox and click *Apply*. The other configuration items are described in the table below. The behavior of the FOTA router app is described in the table below as well.

Figure 3: Automatic Update Configuration

Item	Description
Enable automatic update	Enable the FOTA router app. There is a preset connection to the Advantech FOTA server with up to date firmware information.
URL	Optionally fill-in a different server address where the JSON file with firmware information is stored, along with firmware files.
Username	Optional. Specify only if you have specified URL. The preset username "conel" for the preset server is saved in the router app.
Password	Optional. Specify only if you have specified URL. The preset password for the preset server is saved in the router app.
Apply	Configuration changes will take effect after pressing the *Apply* button.
Start Manually	Press this button to check manually for a new cellular module firmware. Otherwise, a check for updates takes place every 24 hours at the same time that router app was first enabled.

Table 3: FOTA Configuration

2.1 Behavior of the FOTA Router App

When the FOTA router app is enabled, it will connect to the preset server to check for a new firmware update. The check is executed every 24 hours at the same time the router app was enabled. You can also run this firmware update check manually using the *Start Manually* button.

There is a JSON file on the FOTA server containing the cellular module names, associated firmware revision numbers, firmware dependencies, and links to firmware files. The router app will download this file and compare it to the current firmware revision number. If there is new firmware available (higher revision number), the firmware file for the cellular module is downloaded. The router needs a stable connection and power supply to download the firmware file corretly. If the downloading of the firmware fails, the router app will recognize the incomplete file when next attempting to download the firmware file. It will then continue to download the rest of the file – it does not unnecessarily download duplicate data again.

The router app will regularly check for new firmware when connected to the Internet (it does not matter which interface is used). The preset server address, username and password are saved in the router app, so there is no need to fill in credentials unless you use another server.

3. System Log

The *System Log* page displays System Log messages. It is the same system log like the one in the main menu of the router. FOTA router app messages are indicated by `fota` strings. You can check the operation of the router app in the log or view any messages in the event of configuration problems. You can download these messages and save them to a computer as a text file (.log) by clicking the *Save Log* button. You can also download a detailed report (.txt) for communication with technical support by clicking the *Save Report* button.
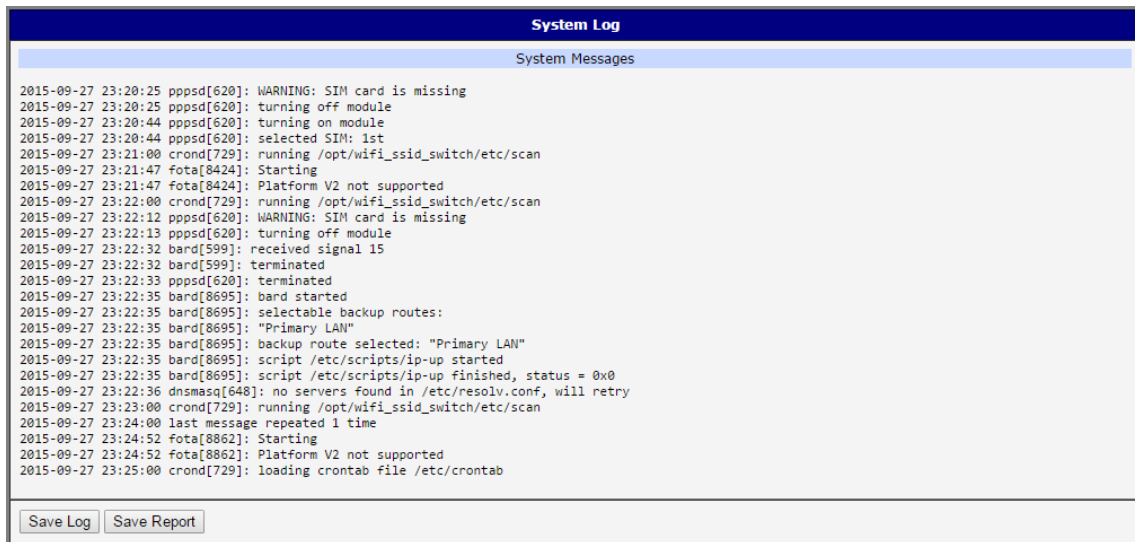


```
                                  System Log
                                System Messages

2015-09-27 23:20:25 pppsd[620]: WARNING: SIM card is missing
2015-09-27 23:20:25 pppsd[620]: turning off module
2015-09-27 23:20:44 pppsd[620]: turning on module
2015-09-27 23:20:44 pppsd[620]: selected SIM: 1st
2015-09-27 23:21:00 crond[729]: running /opt/wifi_ssid_switch/etc/scan
2015-09-27 23:21:47 fota[8424]: Starting
2015-09-27 23:21:47 fota[8424]: Platform V2 not supported
2015-09-27 23:22:00 crond[729]: running /opt/wifi_ssid_switch/etc/scan
2015-09-27 23:22:12 pppsd[620]: WARNING: SIM card is missing
2015-09-27 23:22:13 pppsd[620]: turning off module
2015-09-27 23:22:32 bard[599]: received signal 15
2015-09-27 23:22:32 bard[599]: terminated
2015-09-27 23:22:33 pppsd[620]: terminated
2015-09-27 23:22:35 bard[8695]: bard started
2015-09-27 23:22:35 bard[8695]: selectable backup routes:
2015-09-27 23:22:35 bard[8695]: "Primary LAN"
2015-09-27 23:22:35 bard[8695]: backup route selected: "Primary LAN"
2015-09-27 23:22:35 bard[8695]: script /etc/scripts/ip-up started
2015-09-27 23:22:35 bard[8695]: script /etc/scripts/ip-up finished, status = 0x0
2015-09-27 23:22:36 dnsmasq[648]: no servers found in /etc/resolv.conf, will retry
2015-09-27 23:23:00 crond[729]: running /opt/wifi_ssid_switch/etc/scan
2015-09-27 23:24:00 last message repeated 1 time
2015-09-27 23:24:52 fota[8862]: Starting
2015-09-27 23:24:52 fota[8862]: Platform V2 not supported
2015-09-27 23:25:00 crond[729]: loading crontab file /etc/crontab
```

Save Log   Save Report

Figure 4: System Log

4. Licenses

Summarizes Open-Source Software (OSS) licenses used by this module.

Firmware Over-The-Air Licenses

Project	License	More Information
json-c	Json-c	License

Figure 5: licenses

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5. Related Documents

You can obtain product-related documents on *Engineering Portal* at *icr.advantech.cz* address.

To get your router's *Quick Start Guide*, *User Manual*, *Configuration Manual*, or *Firmware* go to the *Router Models* page, find the required model, and switch to the *Manuals* or *Firmware* tab, respectively.

The *Router Apps* installation packages and manuals are available on the *Router Apps* page.

For the *Development Documents*, go to the *DevZone* page.

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