SC0104
Sample Code

AT32F407/437 LWIP FreeRTOS Multicast

Introduction

This sample code introduces how to run LwIP protocol stack on FreeRTOS and demonstrates example application of UDP multicast.

Applicable products:

Part number	AT32F407xx
	AT32F437xx

List of peripherals:

Main peripherals	EMAC
	GPIO
	USART

1 Application method

1.1 Hardware requirements

1) LED2/LED3
2) USART1(PA9/PA10)
3) AT-START-F407/ AT-START-F437 evaluation board
4) Ethernet cable

1.2 Software requirements

1) APP_Release
   - multicast_udp_test host computer tool
2) SourceCode
   - at32f407_freertos/ at32f437_freertos source code
   - FreeRTOS source code
   - LWIP source code
   - AT32 driver library
3) Doc
   - SC0104_AT32F407_437_LWIP_FreeRTOS_Multicast_V2.0.0

Note: All projects are built around keil 5. If users want to use them in other compiling environments, please refer to AT32F407_Firmware_Library_V2.x.x/project/at_start_f407/templates (such as IAR6/7, keil 4/5) for a simple change.

1.3 Example of application

1) Open the *at32f407_freertos/ at32f437_freertos* source code, compile and then download to the evaluation board;
2) Configure the IP address segment of the PC to be the same as that of the evaluation board, as shown in Figure 1;
3) Open the multicast_udp_test tool, enter the multicast address and port for sending and receiving, and then click on the “multi join” button, as shown in Figure 2;
4) Enter the string to be send and click on the “Send” button, and the evaluation board receives the data and transmits the same content to the host;
5) Use the *wireshark* tool to view the multicast communication process, as shown in Figure 3.

In daily application, this sample code realizes hot swap and calls ethernetif_set_link function to perform corresponding LWIP processing on the network connection status.

Figure 1. Set PC network segment

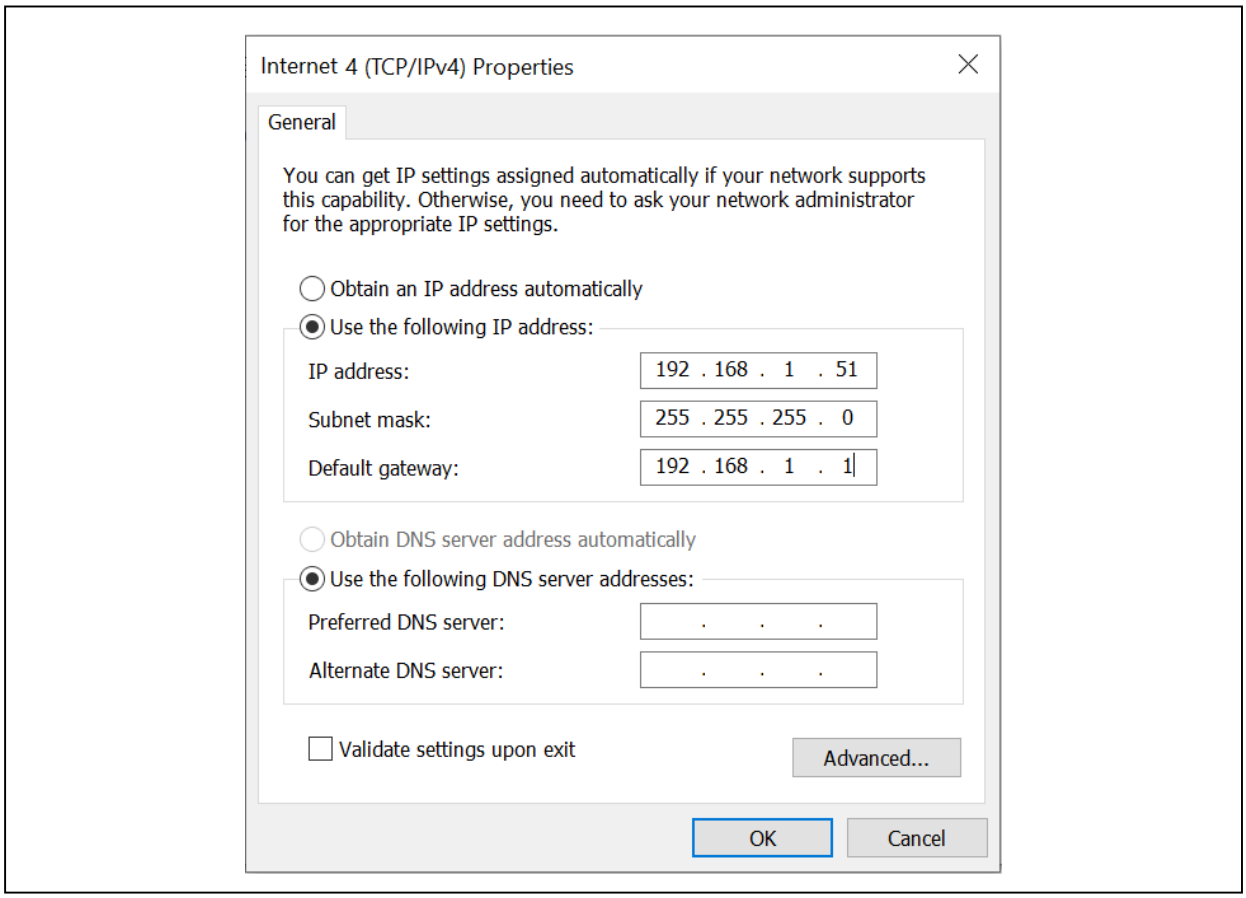


Figure 2. Host sends a string and receives feedback from evaluation board

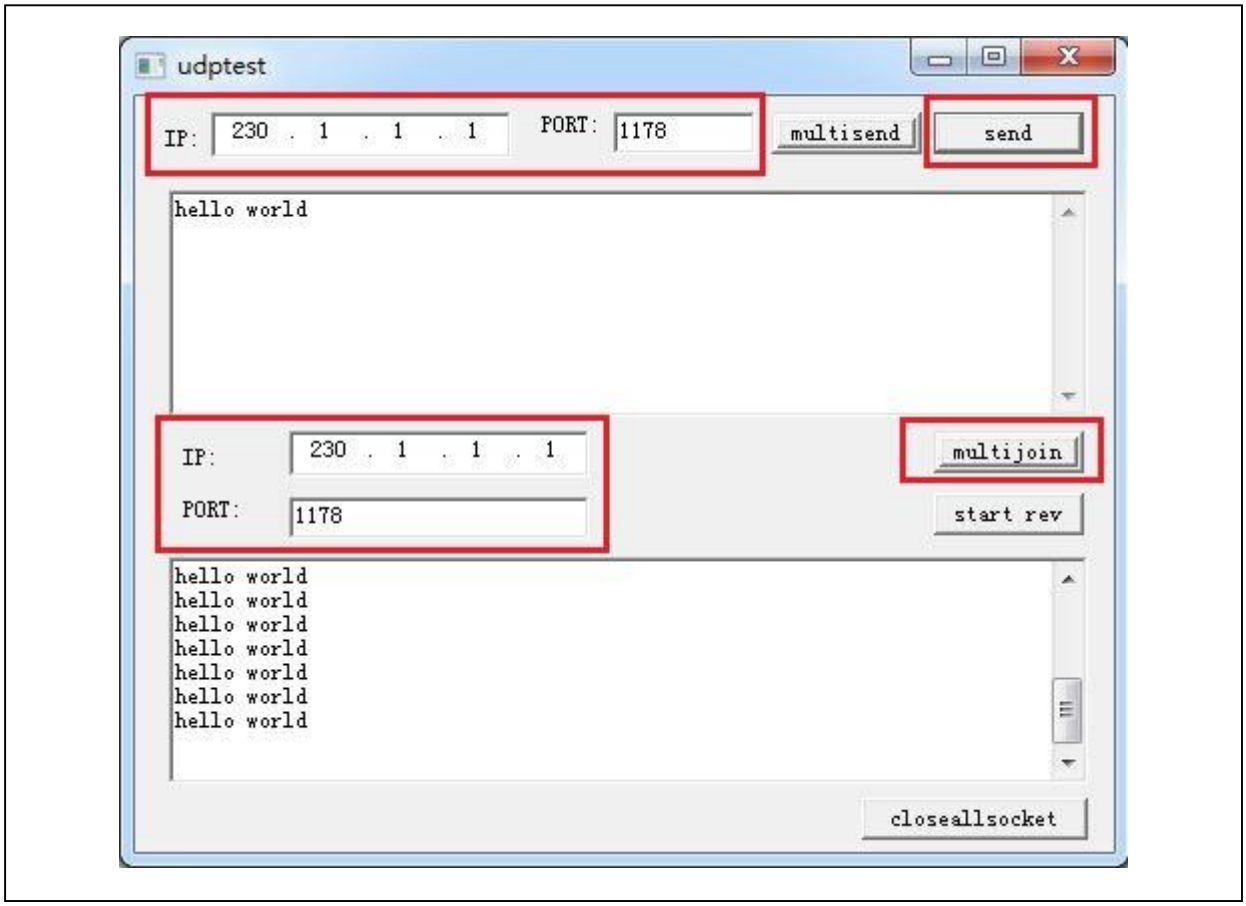
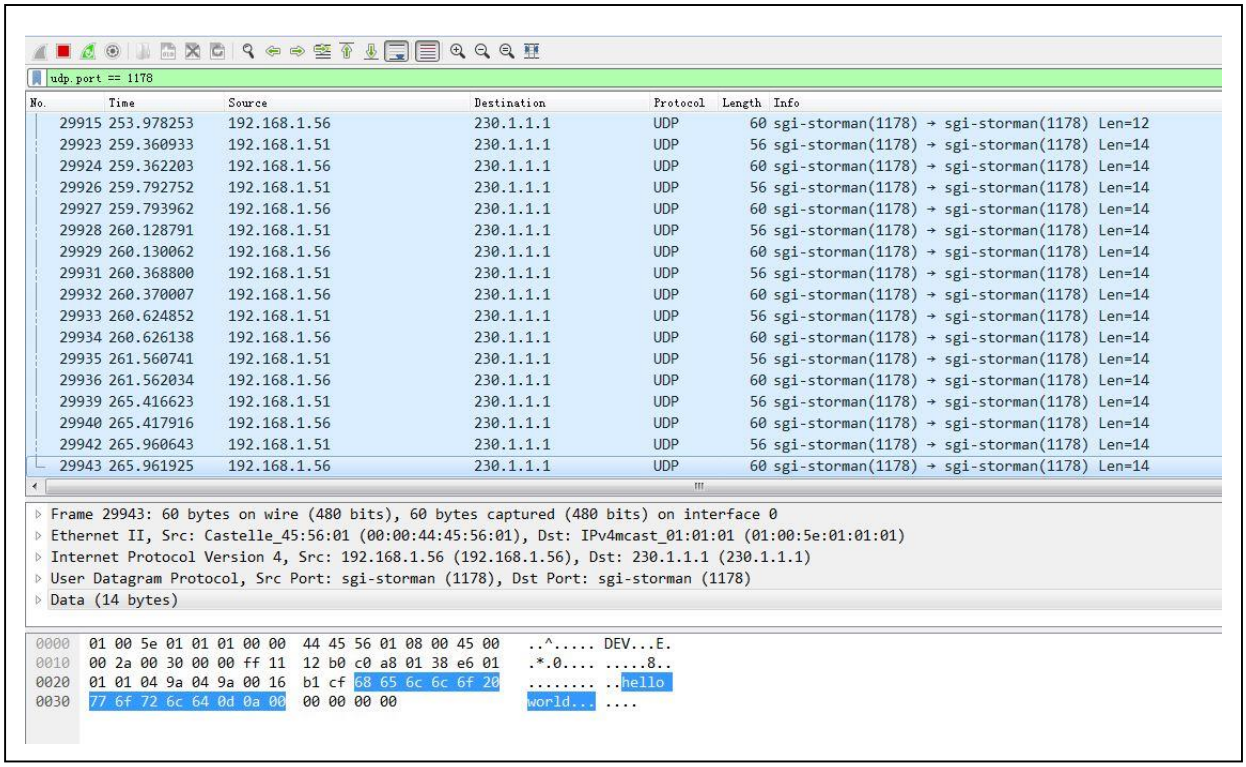


Figure 3. View multicast communication process through wireshark



2 Revision history

Table 1. Document revision history

Date	Version	Revision note
2022.09.29	2.0.0	Initial release.

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