SC0101
Sample Code

AT32F407/437 PTP Daemon

Introduction

This sample code demonstrates how to implement IEEE1588 protocol based on Ethernet network.

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) SourceCode
   - at32f407_ptp_daemon/ at32f437_ptp_daemon source code
   - PTP Daemon source code
   - LWIP source code
   - AT32 driver library
2) Doc
   - SC0082_AT32F407_437_LWIP_FreeRTOS_V2.0.1

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_ptp_daemon/ at32f437_ptp_daemon source code, compile and download to the evaluation board;
2) Install ptpd on Ubuntu (connected to the Internet) and enter instruction “sudo apt-get install ptpd”;
3) Configure the PC IP address segment to be the same as that of evaluation board, as shown in Figure 1;
4) Enter instruction “sudo ptpd –C –E –s –I enp0s3”, where “enp0s3” is the name of network card in Ubuntu, which can be accessed and modified through instruction “ifconfig”, as shown in Figure 2.

Note: If the data received and sent by the network port is occasionally lost, check whether the amount of code exceeds the zero-wait area of the chip. In this case, users can selectively compile important codes into the zero-wait area.

Figure 1. Set PC network segment

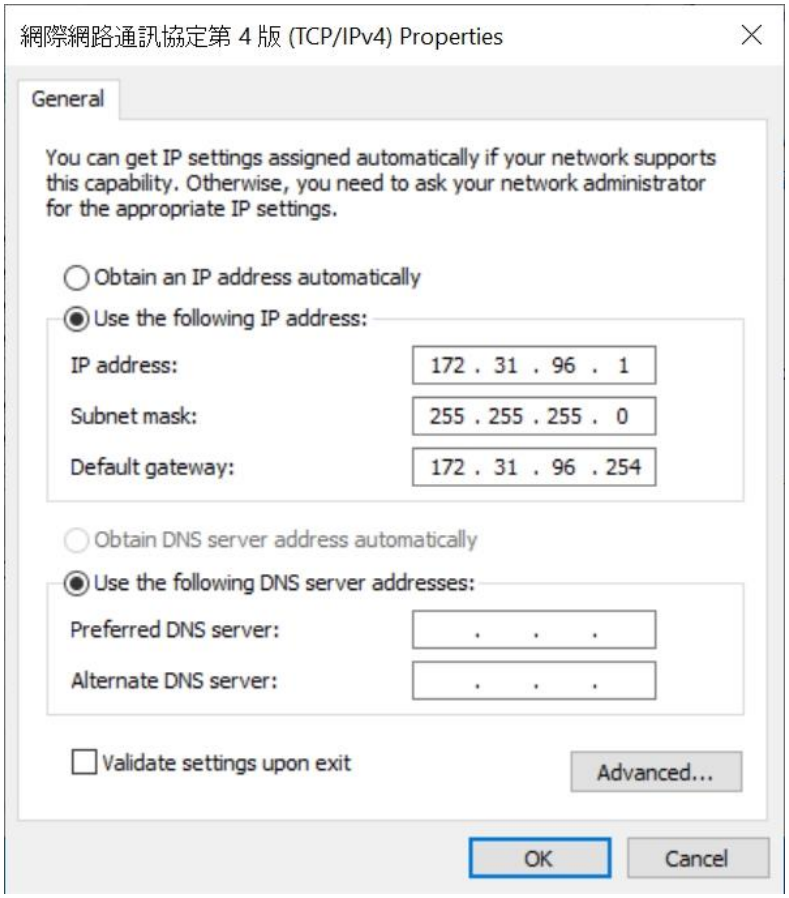


Figure 2. Ubuntu starts PTP Daemon client to synchronize time with MCU

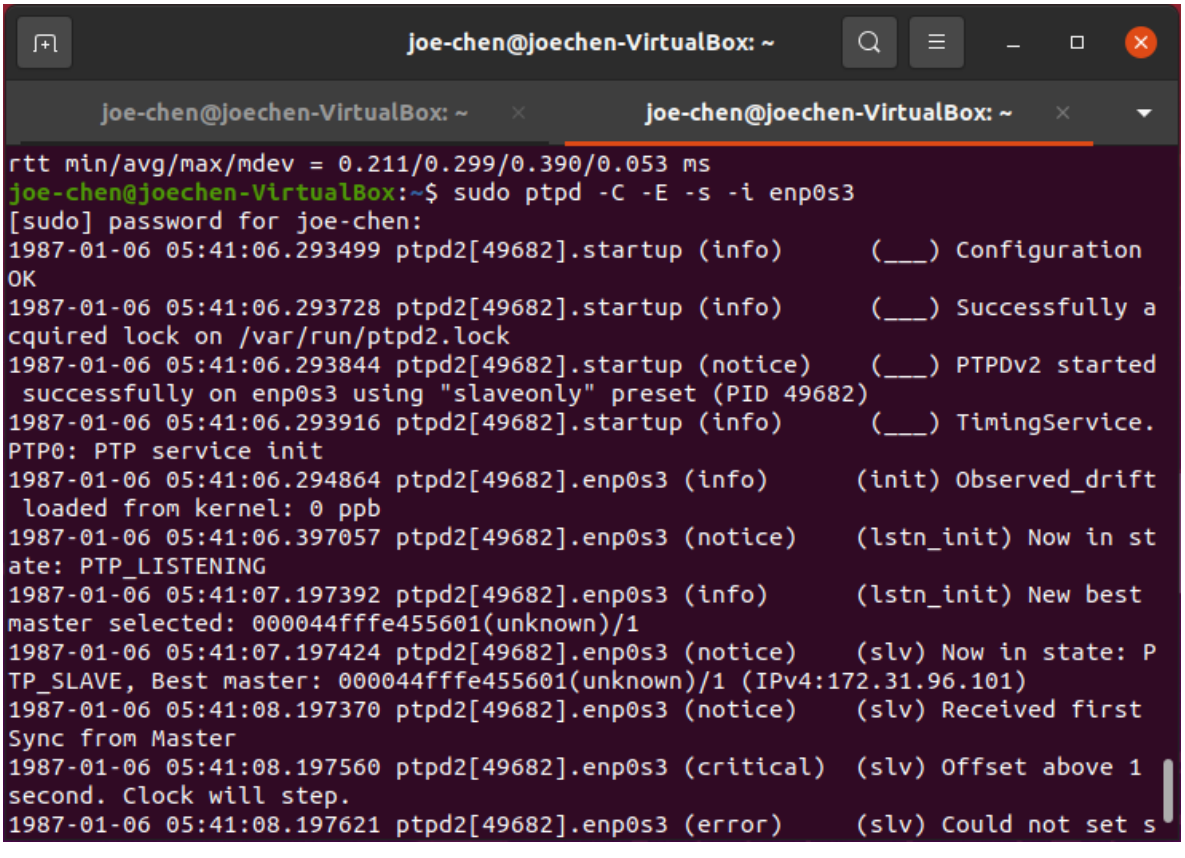
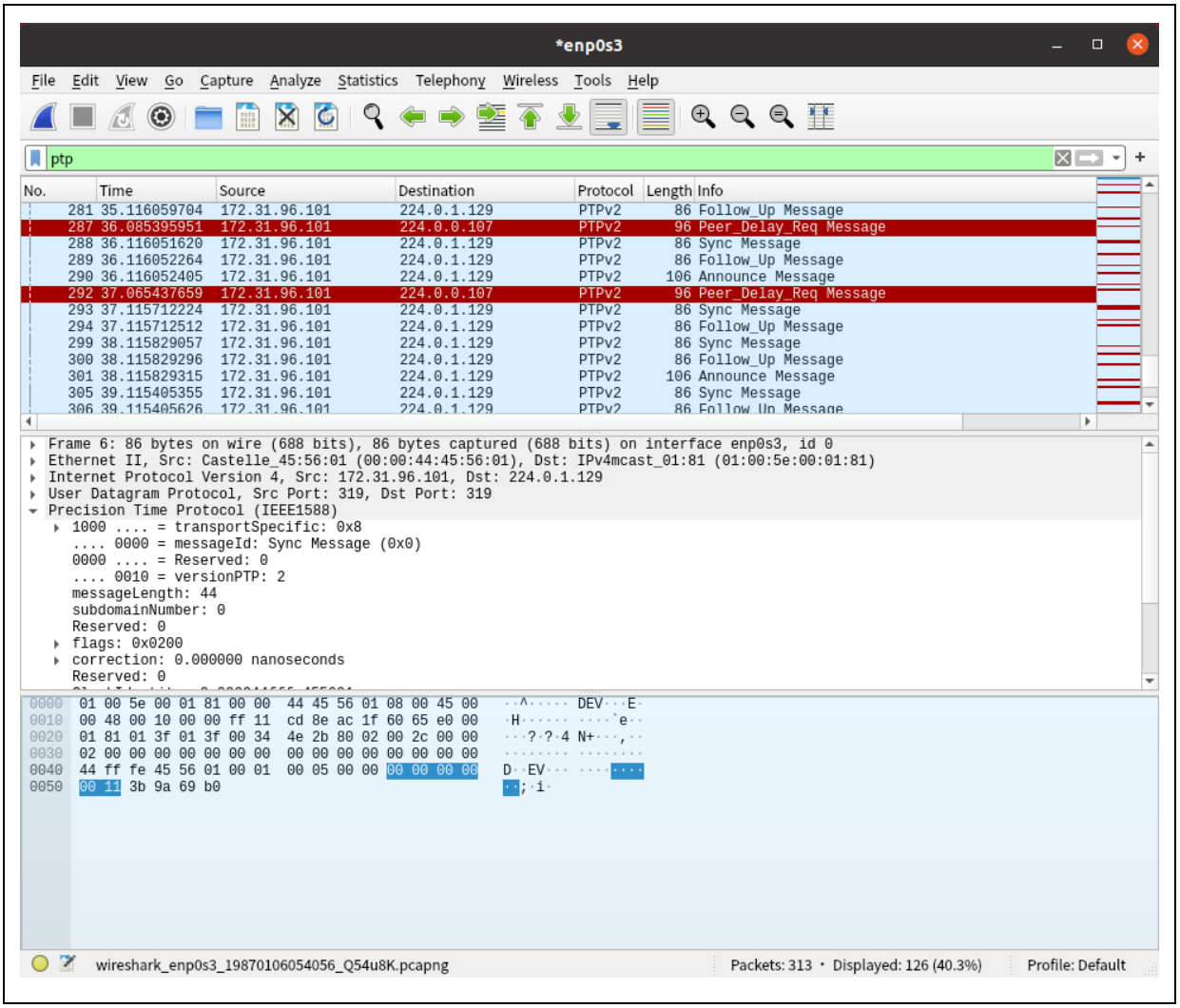


Figure 3. PTP packet



2 Revision history

Table 1. Document revision history

Date	Version	Revision note
2022.09.19	2.0.0	Initial release.

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