Analysis of data fields in the S7comm protocol

Experimental environment: Siemens S7-300, CUP 315-2DP, step7 5.6, wireshark

Purpose: Restore the PLC code with the captured data packet

Use wireshark to capture data transmitted by PC and PLC, including the data package with PLC code function[Download block], as shown in Figure 1.

```
45… 6062.89… 192.168.0.13     192.168.0.242    S7CO… … ROSCTR:[Job     ] Function:[Request download] -> Block:[OB 1]
45… 6062.91… 192.168.0.242    192.168.0.13     S7CO… … ROSCTR:[Ack_Data] Function:[Request download]
45… 6062.93… 192.168.0.242    192.168.0.13     S7CO… … ROSCTR:[Job     ] Function:[Download block] -> Block:[OB 1]
45… 6062.93… 192.168.0.13     192.168.0.242    S7CO… … ROSCTR:[Ack_Data] Function:[Download block]
45… 6062.97… 192.168.0.242    192.168.0.13     S7CO… … ROSCTR:[Job     ] Function:[Download ended] -> Block:[OB 1]
45… 6062.98… 192.168.0.13     192.168.0.242    S7CO… … ROSCTR:[Ack_Data] Function:[Download ended]
```

figure 1

Open this package, after many experimental analysis, the format of the data field is roughly: 7070...0000+**xx**+0000 0000+**????** ????+30e3...1400+**code**+6500...0100+**????** +0000 0000 0000 0000, where xx represents the length of data.

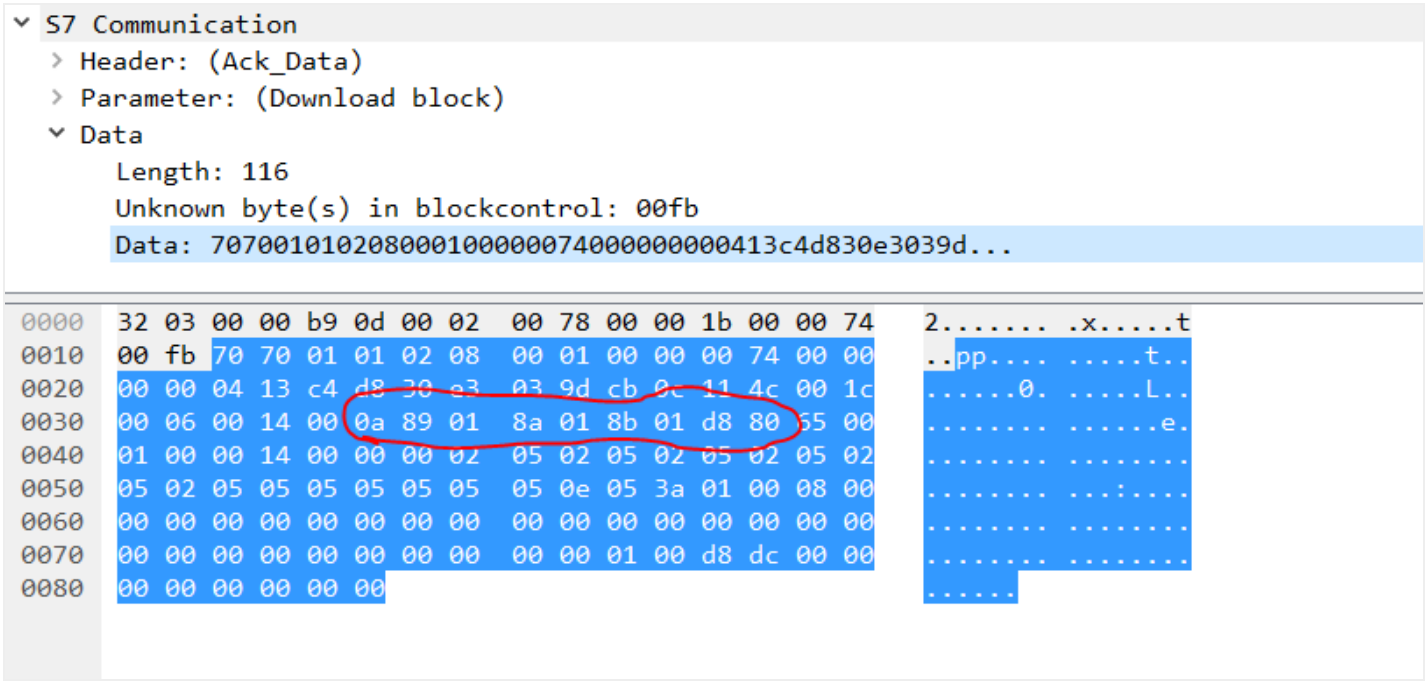


figure 2

The contents of the PLC code shown in Figure 3 in the data packet are the red part of Figure 2: 0a 89 01 8a 01 8b 01 d8 80. Many experiments have found that 0a is converted to decimal as 10, and divided by 2 and subtracted by 1 to get the instruction number 4. The latter part is two bytes for one instruction. The format is: _ _ _ _, where the last three bits represent the storage address and the first bit represents the type of operation. The size of the second digit also represents series or parallel. The current experiment shows that when the first digit is 8, the second digit is 0-7 (representative**In series with the next instruction**), the second digit is 8-F (representative)**Parallel with the previous command**). Here, the series and parallel connection should also be related to the first position (operation type). At present, I have only done a simple experiment, but the principle may be like this.

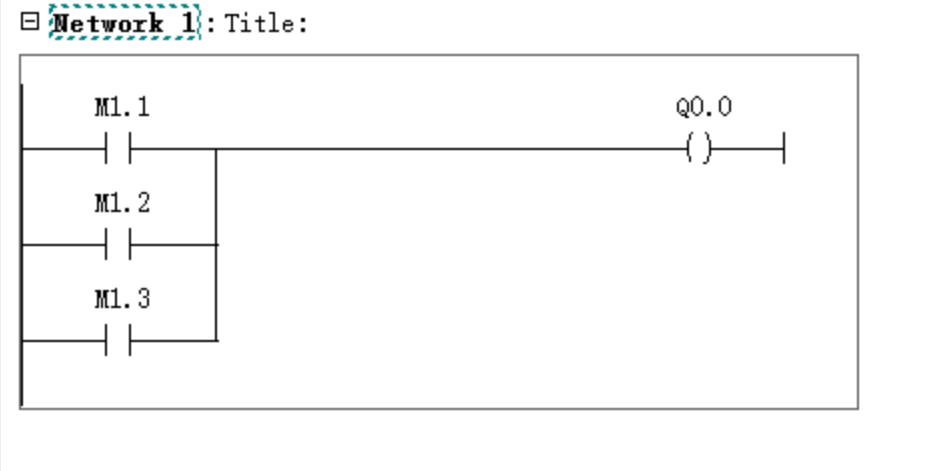


image 3

example:

data : addr opt

81 01 : M1.1 and

82 01 : M1.2 and

A1 01 : M1.1 inversion

data : opt

81 01 82 01 : M1.1 && M1.2

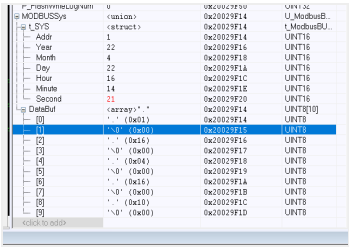
81 01 a2 01 : M1.1 && ^M1.2

89 01 8a 01 : M1.1 || M1.2

The analysis method was roughly found today, and the results of the subsequent experiments will be updated one after another.

Golang tcp forwarding remoteAddr error

Intelligent Recommendation



Modbus protocol data analysis

Modbus communication protocol Modbus is a serial communication protocol, which is published by Modicon (now Schneider Electric) to communicate with programmable logic controller (PLC) in 1979. MODBUS ...

Sending and analysis of protocol data

Sending and analysis of protocol data For languages such as C, C ++, we often have a variety of basic data types, such as Char, int, Float, Double, and so on. In order to review the specific data ty...

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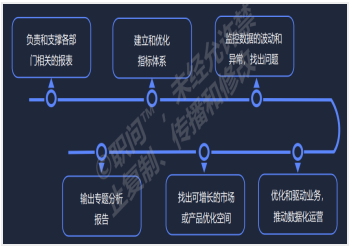

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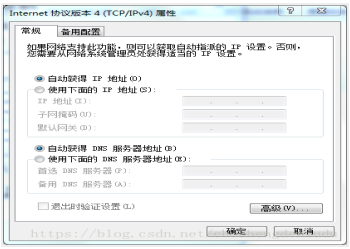
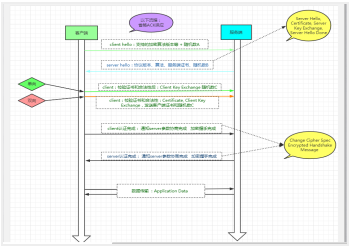


Protocol network data capture analysis

1, first set the IP address and DNS address of the computer are set to automatically obtain status. 2, open Wireshark capture tool, double-click to open the Wi-Fi. (I use the phone hotspot) 3, the fil...

More Recommendation



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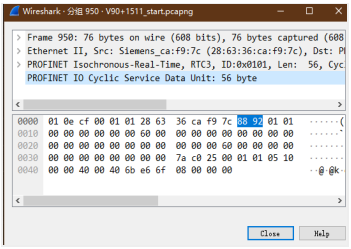
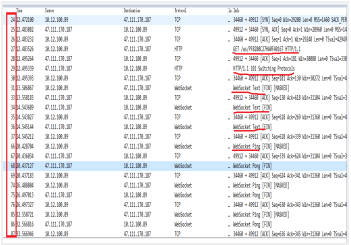


Profinet protocol analysis-process data

A new article, let's talk about the next point-process data. Process data, as the name suggests, is data that has been cyclically transmitted, and is continuously transmitted throughout t...



WebSocket protocol data format analysis

Figure 1 Description: The websocket protocol is an application layer protocol based on TCP. Explain one by one according to the serial numbers expanded by red rectangles on the left of Figure 1.10.12....

Analysis of a general network protocol data

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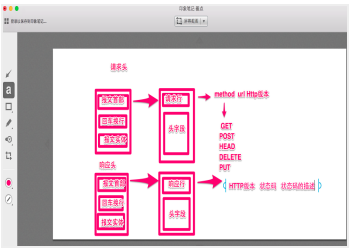

HTTP protocol common fields

URI&URL URI: Uniform resource identifier, not only can identify http, ftp and other network resources URL: Uniform Resource Locator Request header GET: Get a resource, and the parameters directly ...

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