Author	:	Lenze
Date	:	12/10/2011
Devices used	:	Lenze 9400 Highline FW 9.0 Lenze 9400 Profinet FW 1.40
Software tool used	:	Wireshark 1.6.2 Lenze Engineer 2.14.1.0 Siemens STEP 7 5.4 SP5

Subject:

How is it possible to record a complete Wireshark capturing of the entire bus telegram data exchange on the Profinet IO?

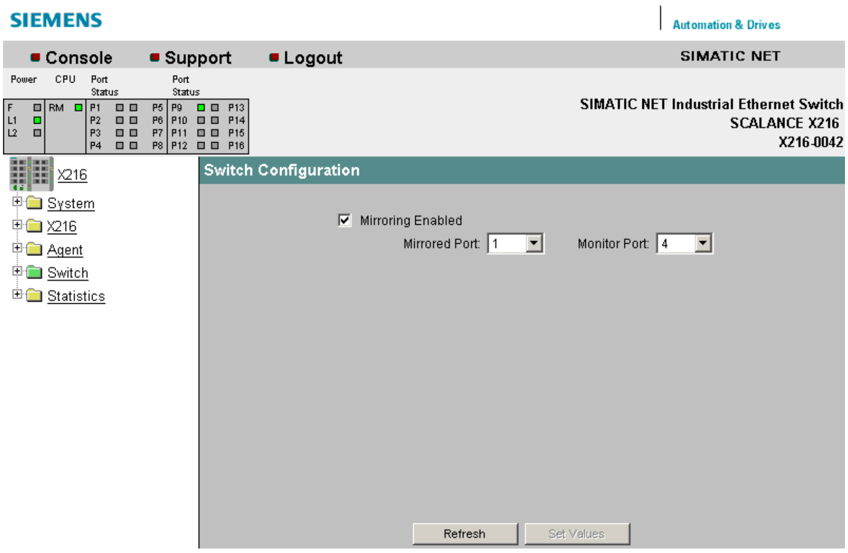
Description:

Profinet IO networks are set up with switches. A switch port cannot be used for monitoring useful analyser records since a switch port only passes on the message belonging to the IP address assigned.

There are two options to carry out Wireshark monitoring of the Profinet IO:

1.

A Profinet switch is used which is equipped with the Mirroring Enable function. Such a function is available from e.g. Siemens SCALANCE switch series X204 and higher and can be activated via the web browser.



SIMATIC NET Industrial Ethernet Switch
SCALANCE X216
X216-0042

Switch Configuration

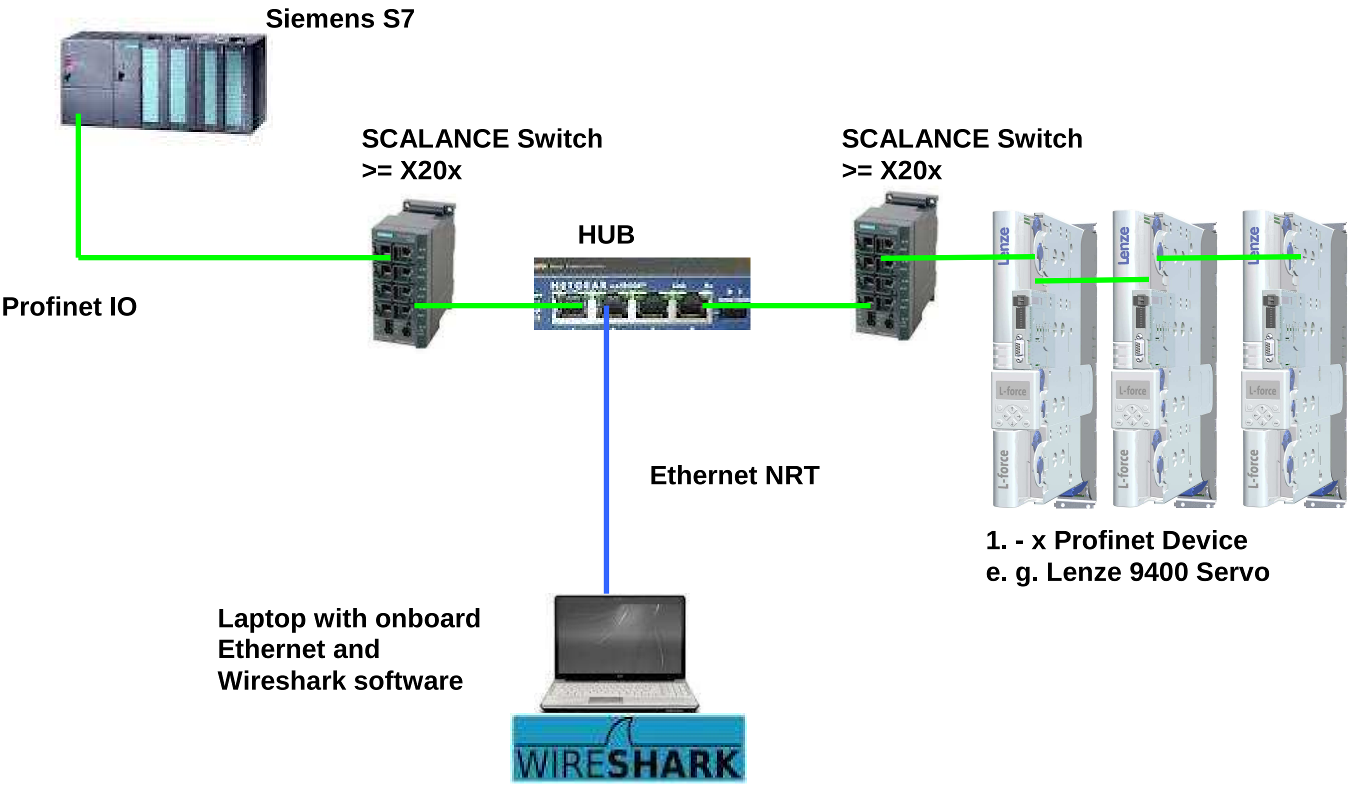
☑ Mirroring Enabled

Mirrored Port: 1 Monitor Port: 4

2.

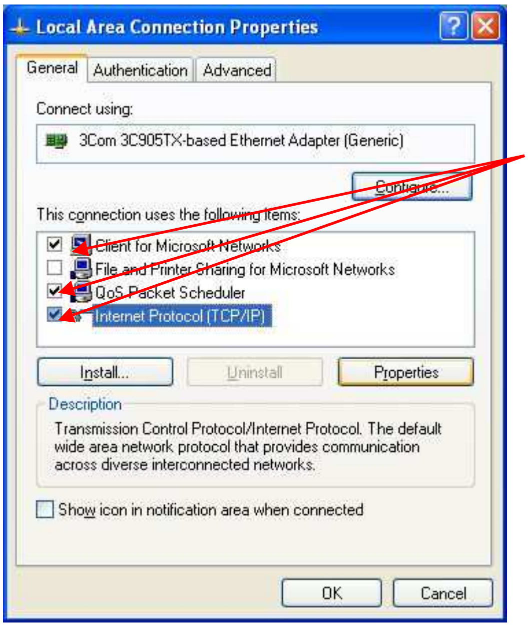
An Ethernet hub also provides the function to monitore a complete Profinet IO network since ALL messages are passed on at every hub port and not just only those telegrams of the IP addresses assigned. It is also possible to use the Lenze Ethernet Powerlink hub (type E94AZCEH) for this purpose. The hub is to be located directly after the Profinet IO Master as shown in the picture below. As a result, the complete Profinet IO network can be captured.

Structure of the Profinet Siemens Switch Mirroring Enable:


Siemens S7
SCALANCE Switch >= X20x
SCALANCE Switch >= X20x
HUB
Profinet IO
Ethernet NRT
1. - x Profinet Device e. g. Lenze 9400 Servo
Laptop with onboard Ethernet and Wireshark software
WIRESHARK

Notes for using Wireshark:

In case of an Ethernet measurement with the Wireshark software it is important that all TCP/IP protocols of unused Ethernet interfaces are deactivated in order to ensure that really only those Ethernet telegrams are captured which are part of the fieldbus communication.



Local Area Connection Properties

General | Authentication | Advanced

Connect using:

3Com 3C905TX-based Ethernet Adapter (Generic)

This connection uses the following items:

- ☑ Client for Microsoft Networks
- □ File and Printer Sharing for Microsoft Networks
- ☑ QoS Packet Scheduler
- ☑ Internet Protocol (TCP/IP)

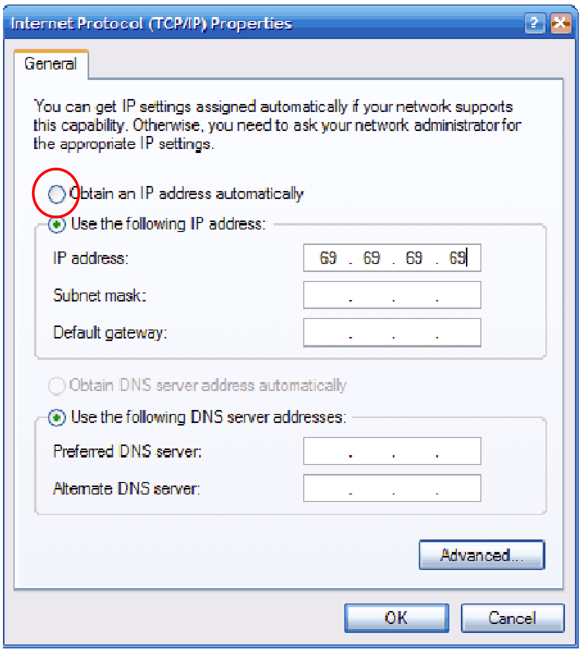
Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

□ Show icon in notification area when connected

All tick marks must be removed!

In the TCP/IP protocol properties DHCP must not be activated since otherwise Ethernet telegrams will sporadically be sent via the same interface, too.



Internet Protocol (TCP/IP) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

○ Obtain an IP address automatically

● Use the following IP address:

IP address: 69 . 69 . 69 . 69

Subnet mask: . . .

Default gateway: . . .

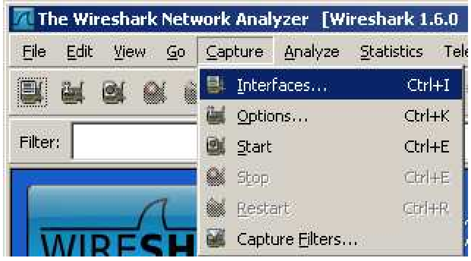
○ Obtain DNS server address automatically

● Use the following DNS server addresses:

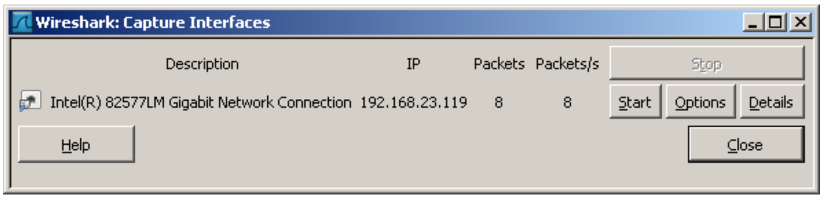
Preferred DNS server: . . .

Alternate DNS server: . . .

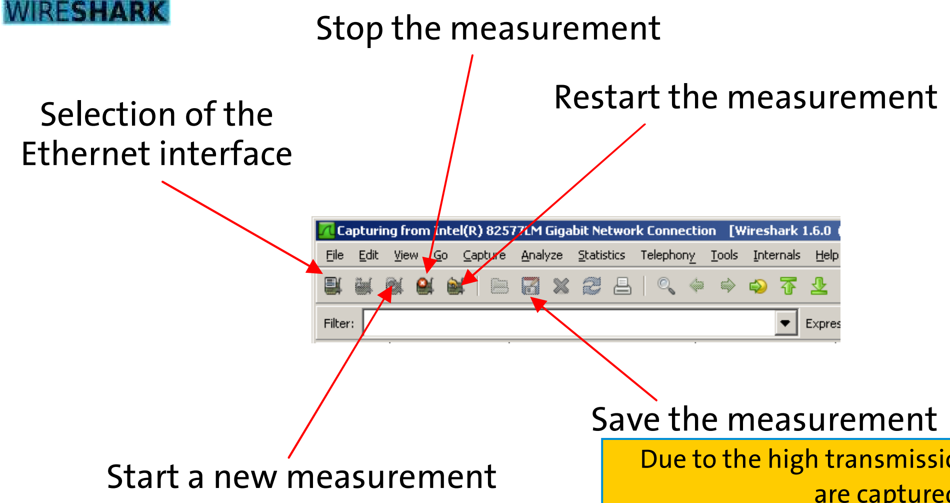
Select the Ethernet interface under Capture => Interface



In this case the laptop has only one onboard Ethernet interface.


Wireshark: Capture Interfaces

Description	IP	Packets	Packets/s	
Intel(R) 82577LM Gigabit Network Connection	192.168.23.119	8	8	Start Options Details


Stop the measurement

Restart the measurement

Selection of the Ethernet interface

Save the measurement

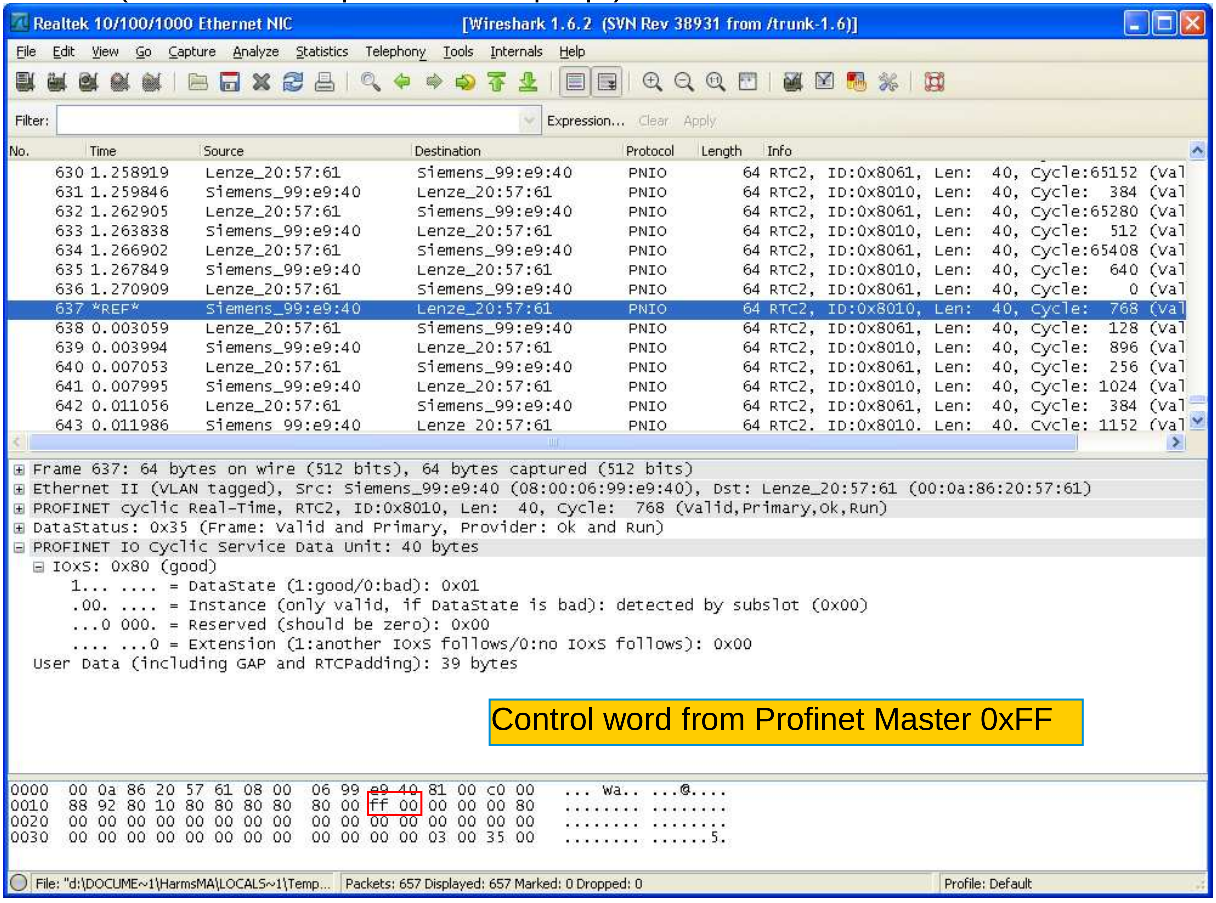
Start a new measurement

Capturing from Intel(R) 82577LM Gigabit Network Connection [Wireshark 1.6.0
File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help
Filter:
Expres

Due to the high transmission rate very many telegrams are captured very quickly
and the file size of the measurements saved is very big!
However, it is no problem to zip the files.

Display of the Profinet IO process data telegrams in Wireshark

Profinet telegram exchange between a S7 Profinet Master and a Lenze 94xx Profinet module (file “Wireshark process data.pcap”)



```
No.     Time      Source              Destination         Protocol  Length Info
    630 1.258919  Lenze_20:57:61      Siemens_99:e9:40    PNIO          64 RTC2, ID:0x8061, Len:  40, Cycle:65152 (Val
    631 1.259846  Siemens_99:e9:40    Lenze_20:57:61      PNIO          64 RTC2, ID:0x8010, Len:  40, Cycle:  384 (Val
    632 1.262905  Lenze_20:57:61      Siemens_99:e9:40    PNIO          64 RTC2, ID:0x8061, Len:  40, Cycle:65280 (Val
    633 1.263838  Siemens_99:e9:40    Lenze_20:57:61      PNIO          64 RTC2, ID:0x8010, Len:  40, Cycle:  512 (Val
    634 1.266902  Lenze_20:57:61      Siemens_99:e9:40    PNIO          64 RTC2, ID:0x8061, Len:  40, Cycle:65408 (Val
    635 1.267849  Siemens_99:e9:40    Lenze_20:57:61      PNIO          64 RTC2, ID:0x8010, Len:  40, Cycle:  640 (Val
    636 1.270909  Lenze_20:57:61      Siemens_99:e9:40    PNIO          64 RTC2, ID:0x8061, Len:  40, Cycle:    0 (Val
    637 *REF*     Siemens_99:e9:40    Lenze_20:57:61      PNIO          64 RTC2, ID:0x8010, Len:  40, Cycle:  768 (Val
    638 0.003059  Lenze_20:57:61      Siemens_99:e9:40    PNIO          64 RTC2, ID:0x8061, Len:  40, Cycle:  128 (Val
    639 0.003994  Siemens_99:e9:40    Lenze_20:57:61      PNIO          64 RTC2, ID:0x8010, Len:  40, Cycle:  896 (Val
    640 0.007053  Lenze_20:57:61      Siemens_99:e9:40    PNIO          64 RTC2, ID:0x8061, Len:  40, Cycle:  256 (Val
    641 0.007995  Siemens_99:e9:40    Lenze_20:57:61      PNIO          64 RTC2, ID:0x8010, Len:  40, Cycle: 1024 (Val
    642 0.011056  Lenze_20:57:61      Siemens_99:e9:40    PNIO          64 RTC2, ID:0x8061, Len:  40, Cycle:  384 (Val
    643 0.011986  Siemens_99:e9:40    Lenze_20:57:61      PNIO          64 RTC2, ID:0x8010, Len:  40, Cycle: 1152 (Val
```

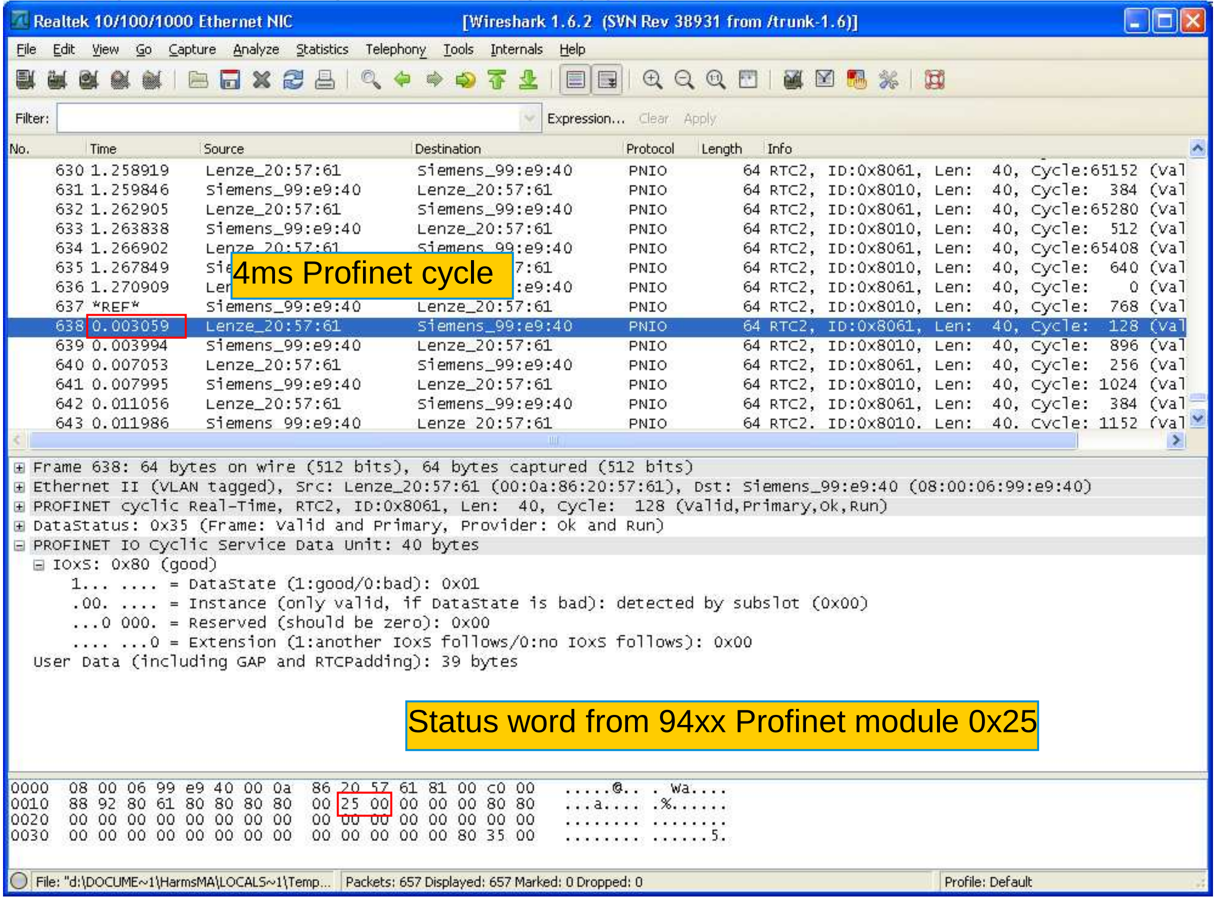
```
⊞ Frame 637: 64 bytes on wire (512 bits), 64 bytes captured (512 bits)
⊞ Ethernet II (VLAN tagged), Src: Siemens_99:e9:40 (08:00:06:99:e9:40), Dst: Lenze_20:57:61 (00:0a:86:20:57:61)
⊞ PROFINET cyclic Real-Time, RTC2, ID:0x8010, Len:  40, Cycle:  768 (Valid,Primary,Ok,Run)
⊞ DataStatus: 0x35 (Frame: Valid and Primary, Provider: Ok and Run)
⊟ PROFINET IO Cyclic Service Data Unit: 40 bytes
  ⊟ IOxS: 0x80 (good)
      1... .... = DataState (1:good/0:bad): 0x01
      .00. .... = Instance (only valid, if DataState is bad): detected by subslot (0x00)
      ...0 000. = Reserved (should be zero): 0x00
      .... ...0 = Extension (1:another IOxS follows/0:no IOxS follows): 0x00
  User Data (including GAP and RTCPadding): 39 bytes
```

Control word from Profinet Master 0xFF

```
0000  00 0a 86 20 57 61 08 00  06 99 e9 40 81 00 c0 00   ... Wa.. ...@....
0010  88 92 80 10 80 80 80 80  80 00 ff 00 00 00 00 80   ........ ........
0020  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00   ........ ........
0030  00 00 00 00 00 00 00 00  00 00 00 00 03 00 35 00   ........ ......5.
```

File: "d:\DOCUME~1\HarmsMA\LOCALS~1\Temp... | Packets: 657 Displayed: 657 Marked: 0 Dropped: 0 | Profile: Default

Profinet telegram exchange between a Lenze 94xx Profinet module and a S7 Profinet Master (file “Wireshark process data.pcap”)


Realtek 10/100/1000 Ethernet NIC [Wireshark 1.6.2 (SVN Rev 38931 from /trunk-1.6)]
File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help
Filter:
Expression... Clear Apply
4ms Profinet cycle
Status word from 94xx Profinet module 0x25

```
No.   Time       Source             Destination        Protocol  Length  Info
  630 1.258919   Lenze_20:57:61     Siemens_99:e9:40   PNIO          64 RTC2, ID:0x8061, Len:  40, Cycle:65152 (Val
  631 1.259846   Siemens_99:e9:40   Lenze_20:57:61     PNIO          64 RTC2, ID:0x8010, Len:  40, Cycle:  384 (Val
  632 1.262905   Lenze_20:57:61     Siemens_99:e9:40   PNIO          64 RTC2, ID:0x8061, Len:  40, Cycle:65280 (Val
  633 1.263838   Siemens_99:e9:40   Lenze_20:57:61     PNIO          64 RTC2, ID:0x8010, Len:  40, Cycle:  512 (Val
  634 1.266902   Lenze_20:57:61     Siemens_99:e9:40   PNIO          64 RTC2, ID:0x8061, Len:  40, Cycle:65408 (Val
  635 1.267849   Si                       7:61         PNIO          64 RTC2, ID:0x8010, Len:  40, Cycle:  640 (Val
  636 1.270909   Ler                      :e9:40       PNIO          64 RTC2, ID:0x8061, Len:  40, Cycle:    0 (Val
  637 *REF*      Siemens_99:e9:40   Lenze_20:57:61     PNIO          64 RTC2, ID:0x8010, Len:  40, Cycle:  768 (Val
  638 0.003059   Lenze_20:57:61     Siemens_99:e9:40   PNIO          64 RTC2, ID:0x8061, Len:  40, Cycle:  128 (Val
  639 0.003994   Siemens_99:e9:40   Lenze_20:57:61     PNIO          64 RTC2, ID:0x8010, Len:  40, Cycle:  896 (Val
  640 0.007053   Lenze_20:57:61     Siemens_99:e9:40   PNIO          64 RTC2, ID:0x8061, Len:  40, Cycle:  256 (Val
  641 0.007995   Siemens_99:e9:40   Lenze_20:57:61     PNIO          64 RTC2, ID:0x8010, Len:  40, Cycle: 1024 (Val
  642 0.011056   Lenze_20:57:61     Siemens_99:e9:40   PNIO          64 RTC2, ID:0x8061, Len:  40, Cycle:  384 (Val
  643 0.011986   Siemens_99:e9:40   Lenze_20:57:61     PNIO          64 RTC2, ID:0x8010, Len:  40, Cycle: 1152 (Val
```

```
⊞ Frame 638: 64 bytes on wire (512 bits), 64 bytes captured (512 bits)
⊞ Ethernet II (VLAN tagged), Src: Lenze_20:57:61 (00:0a:86:20:57:61), Dst: Siemens_99:e9:40 (08:00:06:99:e9:40)
⊞ PROFINET cyclic Real-Time, RTC2, ID:0x8061, Len:  40, Cycle:  128 (Valid,Primary,Ok,Run)
⊞ DataStatus: 0x35 (Frame: Valid and Primary, Provider: Ok and Run)
⊟ PROFINET IO Cyclic Service Data Unit: 40 bytes
  ⊟ IOxS: 0x80 (good)
      1... .... = DataState (1:good/0:bad): 0x01
      .00. .... = Instance (only valid, if DataState is bad): detected by subslot (0x00)
      ...0 000. = Reserved (should be zero): 0x00
      .... ...0 = Extension (1:another IOxS follows/0:no IOxS follows): 0x00
  User Data (including GAP and RTCPadding): 39 bytes
```

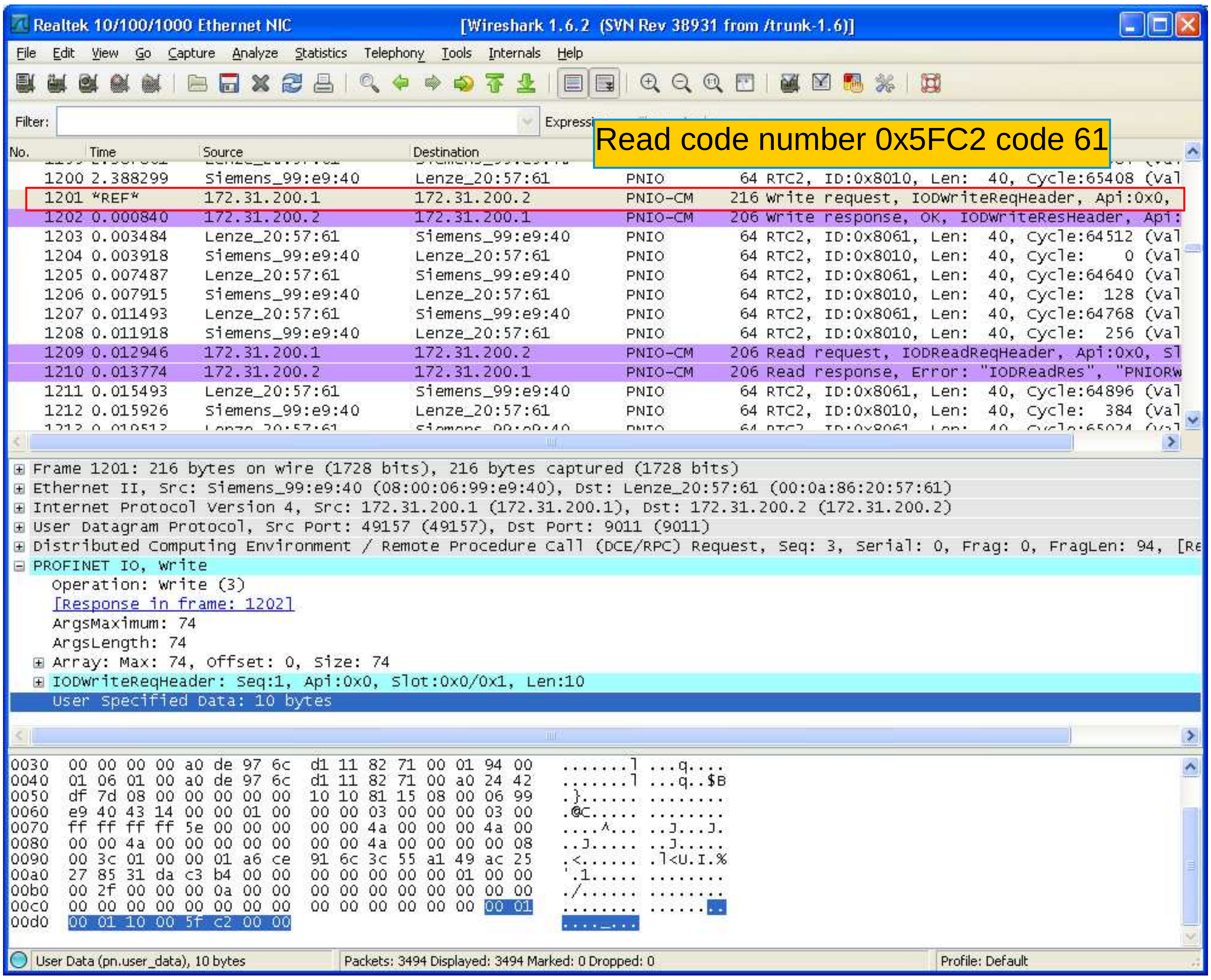
```
0000   08 00 06 99 e9 40 00 0a   86 20 57 61 81 00 c0 00    .....@.. . Wa....
0010   88 92 80 61 80 80 80 80   00 25 00 00 00 00 80 80    ...a.... .%......
0020   00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00    ........ ........
0030   00 00 00 00 00 00 00 00   00 00 00 00 00 80 35 00    ........ ......5.
```

File: "d:\DOCUME~1\HarmsMA\LOCALS~1\Temp... Packets: 657 Displayed: 657 Marked: 0 Dropped: 0 Profile: Default

Display of the Profinet IO acyclic parameter communication in Wireshark

The telegrams of the acyclic Profinet parameter channel are highlighted in purple in Wireshark.

In this example, code 61 (0x5FC2) was read by the 94xx (file Wireshark acyclic parameter transfer code number read.pcap).


Realtek 10/100/1000 Ethernet NIC
[Wireshark 1.6.2 (SVN Rev 38931 from /trunk-1.6)]
File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help
Filter:
Expressi
No.
Time
Source
Destination

Read code number 0x5FC2 code 61

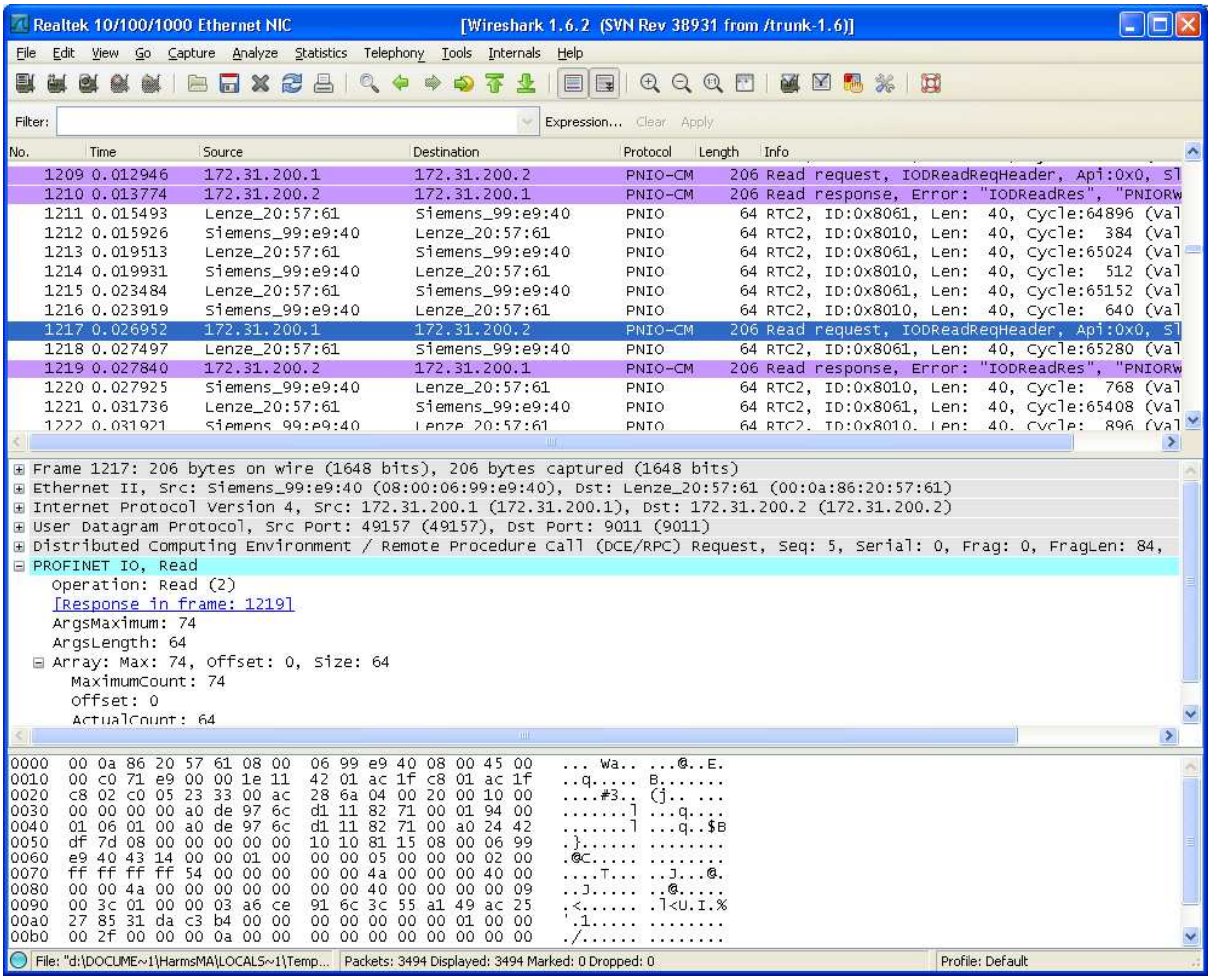
```
 1200 2.388299   Siemens_99:e9:40   Lenze_20:57:61     PNIO       64 RTC2, ID:0x8010, Len:  40, Cycle:65408 (Val
 1201 *REF*      172.31.200.1       172.31.200.2       PNIO-CM   216 Write request, IODWriteReqHeader, Api:0x0,
 1202 0.000840   172.31.200.2       172.31.200.1       PNIO-CM   206 Write response, OK, IODWriteResHeader, Api:
 1203 0.003484   Lenze_20:57:61     Siemens_99:e9:40   PNIO       64 RTC2, ID:0x8061, Len:  40, Cycle:64512 (Val
 1204 0.003918   Siemens_99:e9:40   Lenze_20:57:61     PNIO       64 RTC2, ID:0x8010, Len:  40, Cycle:    0 (Val
 1205 0.007487   Lenze_20:57:61     Siemens_99:e9:40   PNIO       64 RTC2, ID:0x8061, Len:  40, Cycle:64640 (Val
 1206 0.007915   Siemens_99:e9:40   Lenze_20:57:61     PNIO       64 RTC2, ID:0x8010, Len:  40, Cycle:  128 (Val
 1207 0.011493   Lenze_20:57:61     Siemens_99:e9:40   PNIO       64 RTC2, ID:0x8061, Len:  40, Cycle:64768 (Val
 1208 0.011918   Siemens_99:e9:40   Lenze_20:57:61     PNIO       64 RTC2, ID:0x8010, Len:  40, Cycle:  256 (Val
 1209 0.012946   172.31.200.1       172.31.200.2       PNIO-CM   206 Read request, IODReadReqHeader, Api:0x0, Sl
 1210 0.013774   172.31.200.2       172.31.200.1       PNIO-CM   206 Read response, Error: "IODReadRes", "PNIORW
 1211 0.015493   Lenze_20:57:61     Siemens_99:e9:40   PNIO       64 RTC2, ID:0x8061, Len:  40, Cycle:64896 (Val
 1212 0.015926   Siemens_99:e9:40   Lenze_20:57:61     PNIO       64 RTC2, ID:0x8010, Len:  40, Cycle:  384 (Val
```

```
⊞ Frame 1201: 216 bytes on wire (1728 bits), 216 bytes captured (1728 bits)
⊞ Ethernet II, Src: Siemens_99:e9:40 (08:00:06:99:e9:40), Dst: Lenze_20:57:61 (00:0a:86:20:57:61)
⊞ Internet Protocol Version 4, Src: 172.31.200.1 (172.31.200.1), Dst: 172.31.200.2 (172.31.200.2)
⊞ User Datagram Protocol, Src Port: 49157 (49157), Dst Port: 9011 (9011)
⊞ Distributed Computing Environment / Remote Procedure Call (DCE/RPC) Request, Seq: 3, Serial: 0, Frag: 0, FragLen: 94, [Re
⊟ PROFINET IO, Write
    Operation: Write (3)
    [Response in frame: 1202]
    ArgsMaximum: 74
    ArgsLength: 74
  ⊞ Array: Max: 74, Offset: 0, Size: 74
  ⊞ IODWriteReqHeader: Seq:1, Api:0x0, Slot:0x0/0x1, Len:10
    User Specified Data: 10 bytes
```

```
0030  00 00 00 00 a0 de 97 6c  d1 11 82 71 00 01 94 00   .......l ...q....
0040  01 06 01 00 a0 de 97 6c  d1 11 82 71 00 a0 24 42   .......l ...q..$B
0050  df 7d 08 00 00 00 00 00  10 10 81 15 08 00 06 99   .}...... ........
0060  e9 40 43 14 00 00 01 00  00 00 03 00 00 00 03 00   .@C..... ........
0070  ff ff ff ff 5e 00 00 00  00 00 4a 00 00 00 4a 00   ....^... ..J...J.
0080  00 00 4a 00 00 00 00 00  00 00 4a 00 00 00 00 08   ..J..... ..J.....
0090  00 3c 01 00 00 01 a6 ce  91 6c 3c 55 a1 49 ac 25   .<...... .l<U.I.%
00a0  27 85 31 da c3 b4 00 00  00 00 00 00 00 01 00 00   '.1..... ........
00b0  00 2f 00 00 00 0a 00 00  00 00 00 00 00 00 00 00   ./...... ........
00c0  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 01   ........ ........
00d0  00 01 10 00 5f c2 00 00                            ...._...
```

User Data (pn.user_data), 10 bytes | Packets: 3494 Displayed: 3494 Marked: 0 Dropped: 0 | Profile: Default

In the following acyclic telegrams the Profinet Master polls the 9400 Profinet module whether the parameter request has already been processed or executed at the 94xx.


Realtek 10/100/1000 Ethernet NIC [Wireshark 1.6.2 (SVN Rev 38931 from /trunk-1.6)]
File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help
Filter:
Expression... Clear Apply

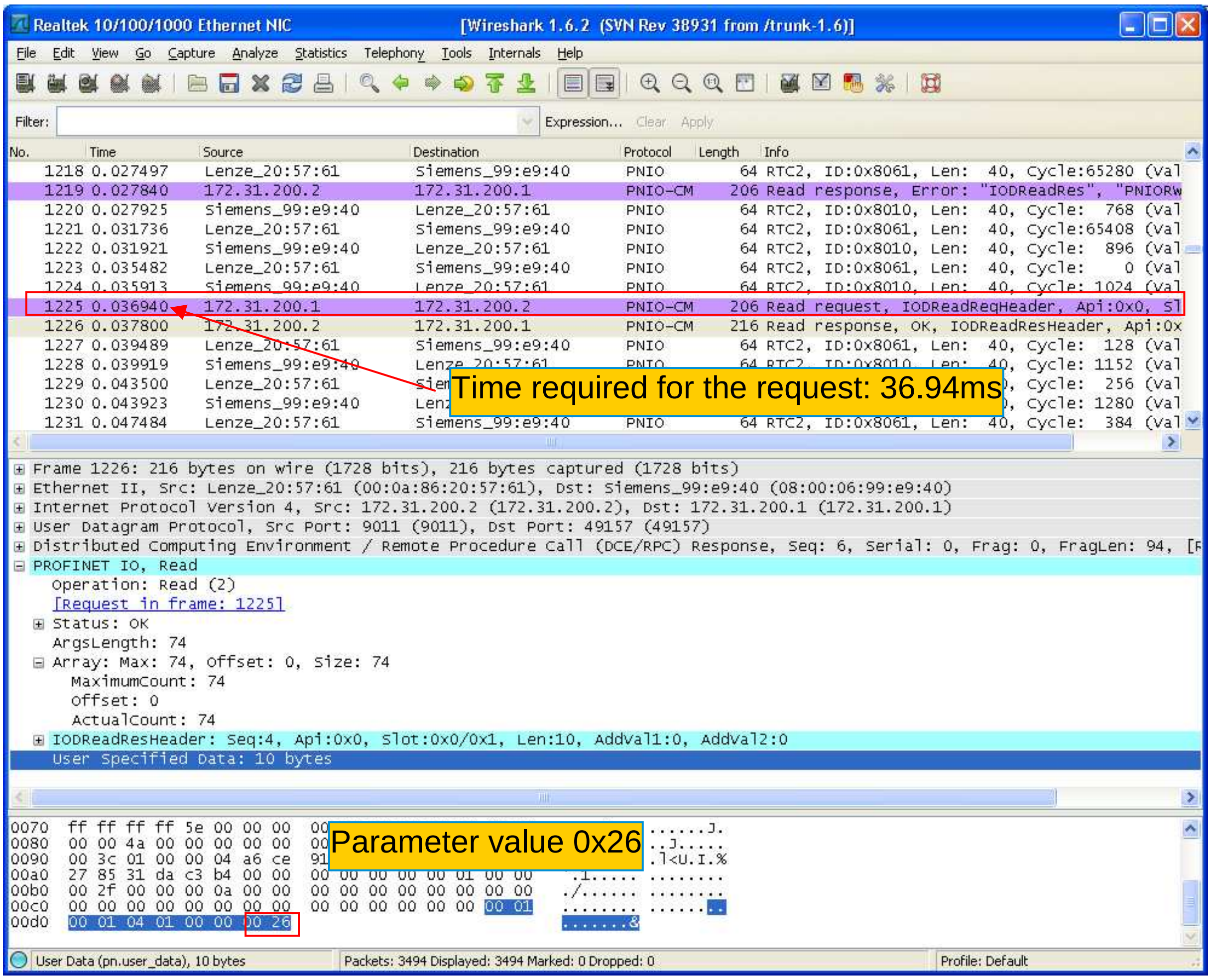
```
No.   Time      Source              Destination         Protocol Length Info
 1209 0.012946  172.31.200.1        172.31.200.2        PNIO-CM   206 Read request, IODReadReqHeader, Api:0x0, Sl
 1210 0.013774  172.31.200.2        172.31.200.1        PNIO-CM   206 Read response, Error: "IODReadRes", "PNIORW
 1211 0.015493  Lenze_20:57:61      Siemens_99:e9:40    PNIO       64 RTC2, ID:0x8061, Len:  40, Cycle:64896 (Val
 1212 0.015926  Siemens_99:e9:40    Lenze_20:57:61      PNIO       64 RTC2, ID:0x8010, Len:  40, Cycle:  384 (Val
 1213 0.019513  Lenze_20:57:61      Siemens_99:e9:40    PNIO       64 RTC2, ID:0x8061, Len:  40, Cycle:65024 (Val
 1214 0.019931  Siemens_99:e9:40    Lenze_20:57:61      PNIO       64 RTC2, ID:0x8010, Len:  40, Cycle:  512 (Val
 1215 0.023484  Lenze_20:57:61      Siemens_99:e9:40    PNIO       64 RTC2, ID:0x8061, Len:  40, Cycle:65152 (Val
 1216 0.023919  Siemens_99:e9:40    Lenze_20:57:61      PNIO       64 RTC2, ID:0x8010, Len:  40, Cycle:  640 (Val
 1217 0.026952  172.31.200.1        172.31.200.2        PNIO-CM   206 Read request, IODReadReqHeader, Api:0x0, Sl
 1218 0.027497  Lenze_20:57:61      Siemens_99:e9:40    PNIO       64 RTC2, ID:0x8061, Len:  40, Cycle:65280 (Val
 1219 0.027840  172.31.200.2        172.31.200.1        PNIO-CM   206 Read response, Error: "IODReadRes", "PNIORW
 1220 0.027925  Siemens_99:e9:40    Lenze_20:57:61      PNIO       64 RTC2, ID:0x8010, Len:  40, Cycle:  768 (Val
 1221 0.031736  Lenze_20:57:61      Siemens_99:e9:40    PNIO       64 RTC2, ID:0x8061, Len:  40, Cycle:65408 (Val
 1222 0.031921  Siemens_99:e9:40    Lenze_20:57:61      PNIO       64 RTC2, ID:0x8010, Len:  40, Cycle:  896 (Val
```

```
⊞ Frame 1217: 206 bytes on wire (1648 bits), 206 bytes captured (1648 bits)
⊞ Ethernet II, Src: Siemens_99:e9:40 (08:00:06:99:e9:40), Dst: Lenze_20:57:61 (00:0a:86:20:57:61)
⊞ Internet Protocol Version 4, Src: 172.31.200.1 (172.31.200.1), Dst: 172.31.200.2 (172.31.200.2)
⊞ User Datagram Protocol, Src Port: 49157 (49157), Dst Port: 9011 (9011)
⊞ Distributed Computing Environment / Remote Procedure Call (DCE/RPC) Request, Seq: 5, Serial: 0, Frag: 0, FragLen: 84,
⊟ PROFINET IO, Read
    Operation: Read (2)
    [Response in frame: 1219]
    ArgsMaximum: 74
    ArgsLength: 64
  ⊟ Array: Max: 74, Offset: 0, Size: 64
      MaximumCount: 74
      Offset: 0
      ActualCount: 64
```

```
0000  00 0a 86 20 57 61 08 00  06 99 e9 40 08 00 45 00   ... Wa.. ...@..E.
0010  00 c0 71 e9 00 00 1e 11  42 01 ac 1f c8 01 ac 1f   ..q..... B.......
0020  c8 02 c0 05 23 33 00 ac  28 6a 04 00 20 00 10 00   ....#3.. (j.. ...
0030  00 00 00 00 a0 de 97 6c  d1 11 82 71 00 01 94 00   .......l ...q....
0040  01 06 01 00 a0 de 97 6c  d1 11 82 71 00 a0 24 42   .......l ...q..$B
0050  df 7d 08 00 00 00 00 00  10 10 81 15 08 00 06 99   .}...... ........
0060  e9 40 43 14 00 00 01 00  00 00 05 00 00 00 02 00   .@C..... ........
0070  ff ff ff ff 54 00 00 00  00 00 4a 00 00 00 40 00   ....T... ..J...@.
0080  00 00 4a 00 00 00 00 00  00 00 40 00 00 00 00 09   ..J..... ..@.....
0090  00 3c 01 00 00 03 a6 ce  91 6c 3c 55 a1 49 ac 25   .<...... .l<U.I.%
00a0  27 85 31 da c3 b4 00 00  00 00 00 00 00 01 00 00   '.1..... ........
00b0  00 2f 00 00 00 0a 00 00  00 00 00 00 00 00 00 00   ./...... ........
```

File: "d:\DOCUME~1\HarmsMA\LOCALS~1\Temp... Packets: 3494 Displayed: 3494 Marked: 0 Dropped: 0 Profile: Default

The 9400 Profinet module returns a negative response by displaying an error as long as the parameter request has been executed in the 94xx.


Realtek 10/100/1000 Ethernet NIC
[Wireshark 1.6.2 (SVN Rev 38931 from /trunk-1.6)]
File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help
Filter:
Expression... Clear Apply
Profile: Default

```
No.   Time      Source             Destination        Protocol Length Info
 1218 0.027497  Lenze_20:57:61     Siemens_99:e9:40   PNIO       64 RTC2, ID:0x8061, Len:  40, Cycle:65280 (Val
 1219 0.027840  172.31.200.2       172.31.200.1       PNIO-CM   206 Read response, Error: "IODReadRes", "PNIORW
 1220 0.027925  Siemens_99:e9:40   Lenze_20:57:61     PNIO       64 RTC2, ID:0x8010, Len:  40, Cycle:  768 (Val
 1221 0.031736  Lenze_20:57:61     Siemens_99:e9:40   PNIO       64 RTC2, ID:0x8061, Len:  40, Cycle:65408 (Val
 1222 0.031921  Siemens_99:e9:40   Lenze_20:57:61     PNIO       64 RTC2, ID:0x8010, Len:  40, Cycle:  896 (Val
 1223 0.035482  Lenze_20:57:61     Siemens_99:e9:40   PNIO       64 RTC2, ID:0x8061, Len:  40, Cycle:    0 (Val
 1224 0.035913  Siemens_99:e9:40   Lenze_20:57:61     PNIO       64 RTC2, ID:0x8010, Len:  40, Cycle: 1024 (Val
 1225 0.036940  172.31.200.1       172.31.200.2       PNIO-CM   206 Read request, IODReadReqHeader, Api:0x0, Sl
 1226 0.037800  172.31.200.2       172.31.200.1       PNIO-CM   216 Read response, OK, IODReadResHeader, Api:0x
 1227 0.039489  Lenze_20:57:61     Siemens_99:e9:40   PNIO       64 RTC2, ID:0x8061, Len:  40, Cycle:  128 (Val
 1228 0.039919  Siemens_99:e9:40   Lenze_20:57:61     PNIO       64 RTC2, ID:0x8010, Len:  40, Cycle: 1152 (Val
 1229 0.043500  Lenze_20:57:61     Sie                                                       , Cycle:  256 (Val
 1230 0.043923  Siemens_99:e9:40   Len                                                       , Cycle: 1280 (Val
 1231 0.047484  Lenze_20:57:61     Siemens_99:e9:40   PNIO       64 RTC2, ID:0x8061, Len:  40, Cycle:  384 (Val
```

Time required for the request: 36.94ms

```
⊞ Frame 1226: 216 bytes on wire (1728 bits), 216 bytes captured (1728 bits)
⊞ Ethernet II, Src: Lenze_20:57:61 (00:0a:86:20:57:61), Dst: Siemens_99:e9:40 (08:00:06:99:e9:40)
⊞ Internet Protocol Version 4, Src: 172.31.200.2 (172.31.200.2), Dst: 172.31.200.1 (172.31.200.1)
⊞ User Datagram Protocol, Src Port: 9011 (9011), Dst Port: 49157 (49157)
⊞ Distributed Computing Environment / Remote Procedure Call (DCE/RPC) Response, Seq: 6, Serial: 0, Frag: 0, FragLen: 94, [R
⊟ PROFINET IO, Read
    Operation: Read (2)
    [Request in frame: 1225]
  ⊞ Status: OK
    ArgsLength: 74
  ⊟ Array: Max: 74, Offset: 0, Size: 74
      MaximumCount: 74
      Offset: 0
      ActualCount: 74
  ⊞ IODReadResHeader: Seq:4, Api:0x0, Slot:0x0/0x1, Len:10, AddVal1:0, AddVal2:0
    User Specified Data: 10 bytes
```

```
0070  ff ff ff ff 5e 00 00 00  00                        ......J.
0080  00 00 4a 00 00 00 00 00  00                        ..J.....
0090  00 3c 01 00 00 04 a6 ce  91                        .l<U.I.%
00a0  27 85 31 da c3 b4 00 00  00 00 00 00 00 01 00 00   .1...... ........
00b0  00 2f 00 00 00 0a 00 00  00 00 00 00 00 00 00 00   ./...... ........
00c0  00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 01   ........ ........
00d0  00 01 04 01 00 00 00 26                            .......&
```

Parameter value 0x26

User Data (pn.user_data), 10 bytes
Packets: 3494 Displayed: 3494 Marked: 0 Dropped: 0

If the parameter request has been executed in the 9400, the 9400 Profinet module transmits a response. In this case the read parameter job has been acknowledged positively with the parameter value 38dec (0x26).