# How to debug a HTTP POST request

In some applications the DIL/NetPC DNP/9265 act as a HTTP-based data source. In this case the DNP/9265 captures data from external devices over a UART, CAN, SPI, or I2C interface and transfers these data with a HTTP POST request to an external web server or a cloud-based web service.

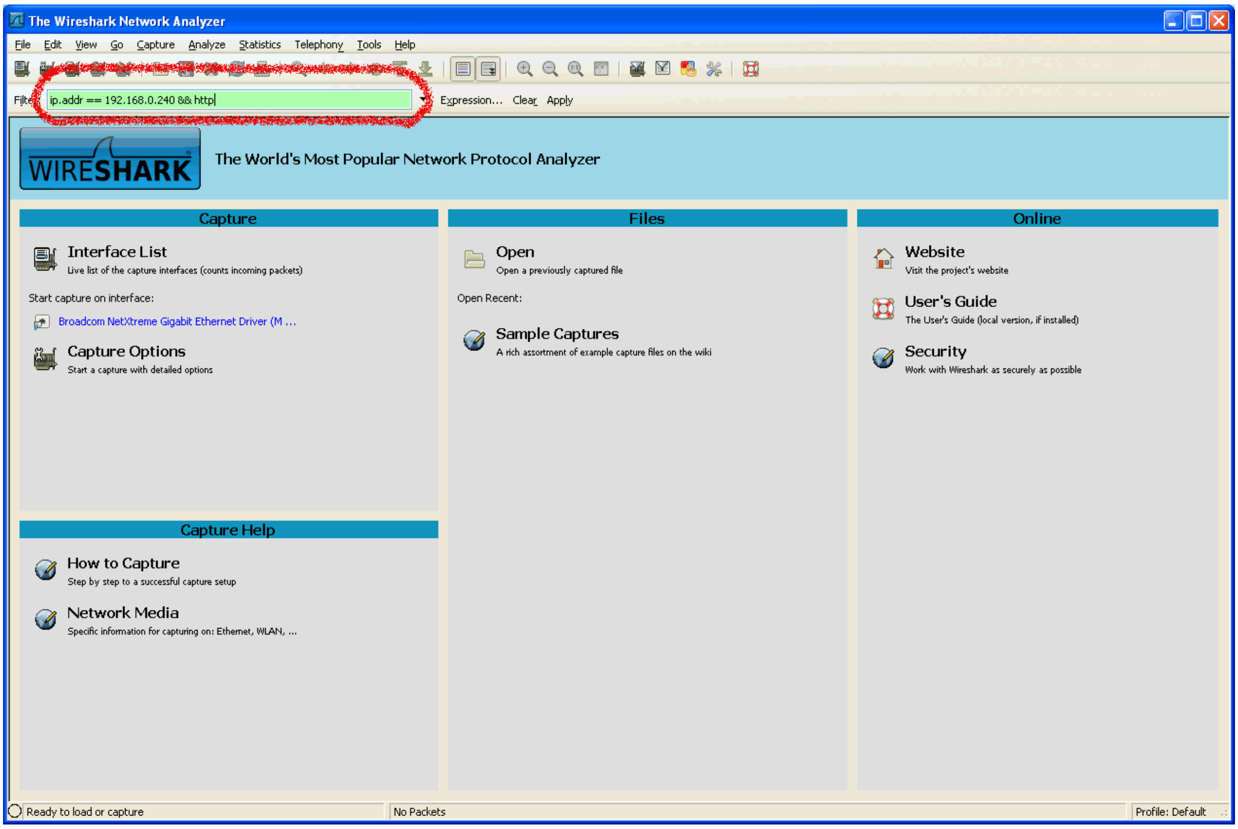
Under some debugging circumstances it can be necessary to visualize the data fields of the HTTP POST request which goes from the DNP/9265 Ethernet LAN interface to the external web server or the cloud-based web service.

- **1. Step**: Make sure that your PC runs a HTTP server (e.g. *Apache* form the Apache Software Foundation, please see http://www.apache.org/). Then change the IP address of the DNP/9265 HTTP POST requester software to the IP address of your PC.

- **2. Step**: Run the *Wireshark* network protocol analyzer on your PC system. Then enter the following filter rule

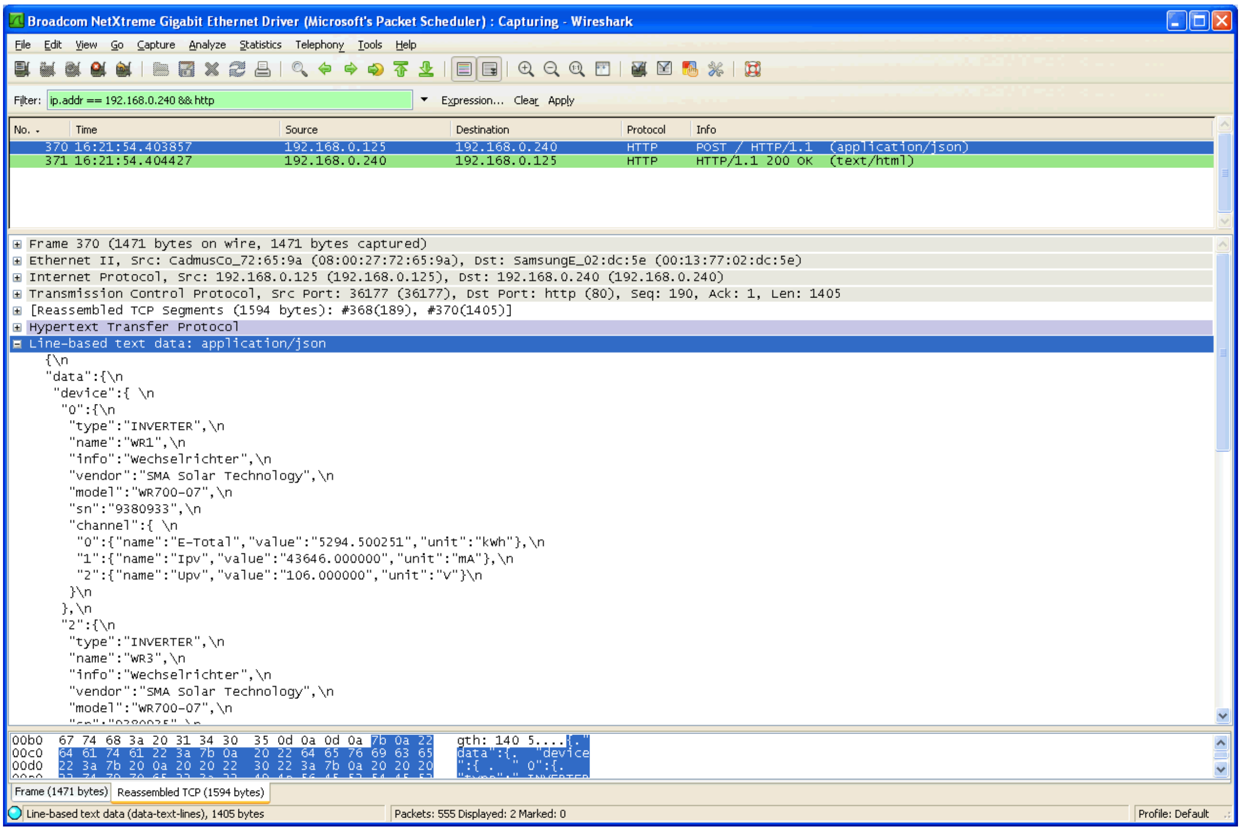
  ```
  ip.addr == 192.168.0.240 && http
  ```

  to the *Wireshark* filter bar (192.168.0.240 is in this sample the IP address of the PC – replace this address with the IP address of your PC). The filter bar allows you to enter a filter string that restricts which packets are displayed in the *Wireshark* summary window.


The Wireshark Network Analyzer
File Edit View Go Capture Analyze Statistics Telephony Tools Help
Filter:
Expression... Clear Apply
WIRESHARK
The World's Most Popular Network Protocol Analyzer
Capture
Interface List
Live list of the capture interfaces (counts incoming packets)
Start capture on interface:
Broadcom NetXtreme Gigabit Ethernet Driver (M ...
Capture Options
Start a capture with detailed options
Capture Help
How to Capture
Step by step to a successful capture setup
Network Media
Specific information for capturing on: Ethernet, WLAN, ...
Files
Open
Open a previously captured file
Open Recent:
Sample Captures
A rich assortment of example capture files on the wiki
Online
Website
Visit the project's website
User's Guide
The User's Guide (local version, if installed)
Security
Work with Wireshark as securely as possible
Ready to load or capture
No Packets
Profile: Default

Filter: ip.addr == 192.168.0.240 && http

- **3. Step**: Activate the *Wireshark* capture mode and capture some DNP/9265 HTTP POST request packets. Then stop the capture mode.


Broadcom NetXtreme Gigabit Ethernet Driver (Microsoft's Packet Scheduler) : Capturing - Wireshark
File Edit View Go Capture Analyze Statistics Telephony Tools Help
Expression... Clear Apply
Frame (1471 bytes)
Reassembled TCP (1594 bytes)
Profile: Default

Filter: ip.addr == 192.168.0.240 && http

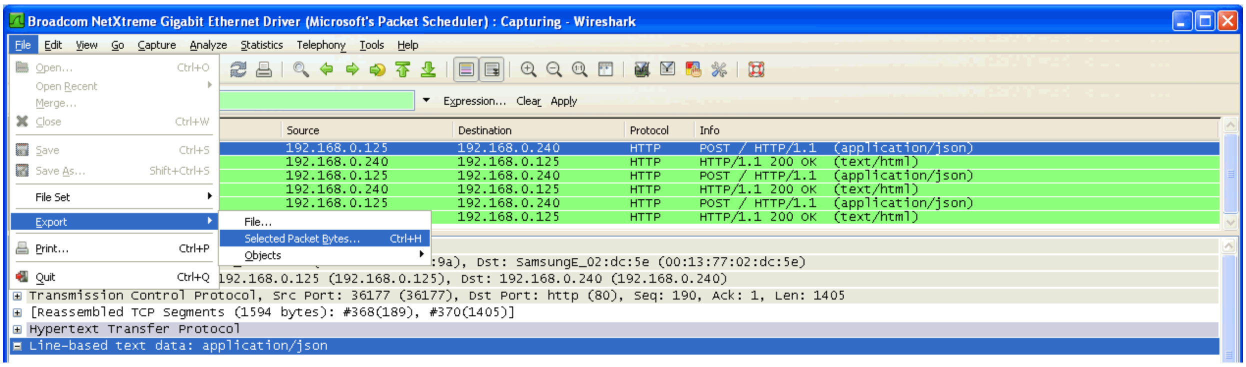
```
No. -  Time             Source          Destination     Protocol  Info
  370 16:21:54.403857   192.168.0.125   192.168.0.240   HTTP      POST / HTTP/1.1  (application/json)
  371 16:21:54.404427   192.168.0.240   192.168.0.125   HTTP      HTTP/1.1 200 OK  (text/html)
```

```
⊞ Frame 370 (1471 bytes on wire, 1471 bytes captured)
⊞ Ethernet II, Src: CadmusCo_72:65:9a (08:00:27:72:65:9a), Dst: SamsungE_02:dc:5e (00:13:77:02:dc:5e)
⊞ Internet Protocol, Src: 192.168.0.125 (192.168.0.125), Dst: 192.168.0.240 (192.168.0.240)
⊞ Transmission Control Protocol, Src Port: 36177 (36177), Dst Port: http (80), Seq: 190, Ack: 1, Len: 1405
⊞ [Reassembled TCP Segments (1594 bytes): #368(189), #370(1405)]
⊞ Hypertext Transfer Protocol
⊟ Line-based text data: application/json
    {\n
    "data":{\n
     "device":{ \n
      "0":{\n
       "type":"INVERTER",\n
       "name":"WR1",\n
       "info":"Wechselrichter",\n
       "vendor":"SMA Solar Technology",\n
       "model":"WR700-07",\n
       "sn":"9380933",\n
       "channel":{ \n
        "0":{"name":"E-Total","value":"5294.500251","unit":"kWh"},\n
        "1":{"name":"Ipv","value":"43646.000000","unit":"mA"},\n
        "2":{"name":"Upv","value":"106.000000","unit":"V"}\n
       }\n
      },\n
      "2":{\n
       "type":"INVERTER",\n
       "name":"WR3",\n
       "info":"Wechselrichter",\n
       "vendor":"SMA Solar Technology",\n
       "model":"WR700-07",\n
```

```
00b0  67 74 68 3a 20 31 34 30  35 0d 0a 0d 0a 7b 0a 22   gth: 140 5....{."
00c0  64 61 74 61 22 3a 7b 0a  20 22 64 65 76 69 63 65   data":{.  "device
00d0  22 3a 7b 20 0a 20 20 22  30 22 3a 7b 0a 20 20 20   ":{ .  " 0":{.
```

Line-based text data (data-text-lines), 1405 bytes | Packets: 555 Displayed: 2 Marked: 0

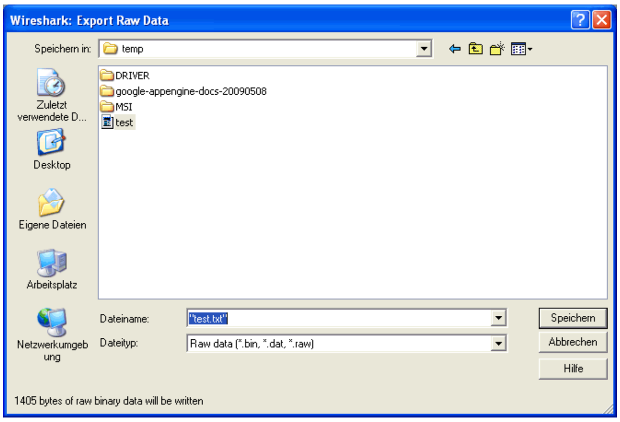
- **4. Step:** Select in the summary window one packet with a DNP/9265 HTTP POST request. Then use the *Wireshark* menu item *File => Export => Selected Packet Bytes.*


Broadcom NetXtreme Gigabit Ethernet Driver (Microsoft's Packet Scheduler) : Capturing - Wireshark
File Edit View Go Capture Analyze Statistics Telephony Tools Help
Open... Ctrl+O
Open Recent
Merge...
Close Ctrl+W
Save Ctrl+S
Save As... Shift+Ctrl+S
File Set
Export
Print... Ctrl+P
Quit Ctrl+Q
File...
Selected Packet Bytes... Ctrl+H
Objects
Expression... Clear Apply

```
Source          Destination     Protocol  Info
192.168.0.125   192.168.0.240   HTTP      POST / HTTP/1.1  (application/json)
192.168.0.240   192.168.0.125   HTTP      HTTP/1.1 200 OK  (text/html)
192.168.0.125   192.168.0.240   HTTP      POST / HTTP/1.1  (application/json)
192.168.0.240   192.168.0.125   HTTP      HTTP/1.1 200 OK  (text/html)
192.168.0.125   192.168.0.240   HTTP      POST / HTTP/1.1  (application/json)
                192.168.0.125   HTTP      HTTP/1.1 200 OK  (text/html)
```

```
:9a), Dst: SamsungE_02:dc:5e (00:13:77:02:dc:5e)
192.168.0.125 (192.168.0.125), Dst: 192.168.0.240 (192.168.0.240)
⊞ Transmission Control Protocol, Src Port: 36177 (36177), Dst Port: http (80), Seq: 190, Ack: 1, Len: 1405
⊞ [Reassembled TCP Segments (1594 bytes): #368(189), #370(1405)]
⊞ Hypertext Transfer Protocol
⊟ Line-based text data: application/json
```

- **5. Step:** Save the HTTP request data to an external file (*Wireshark Export Raw Data*).



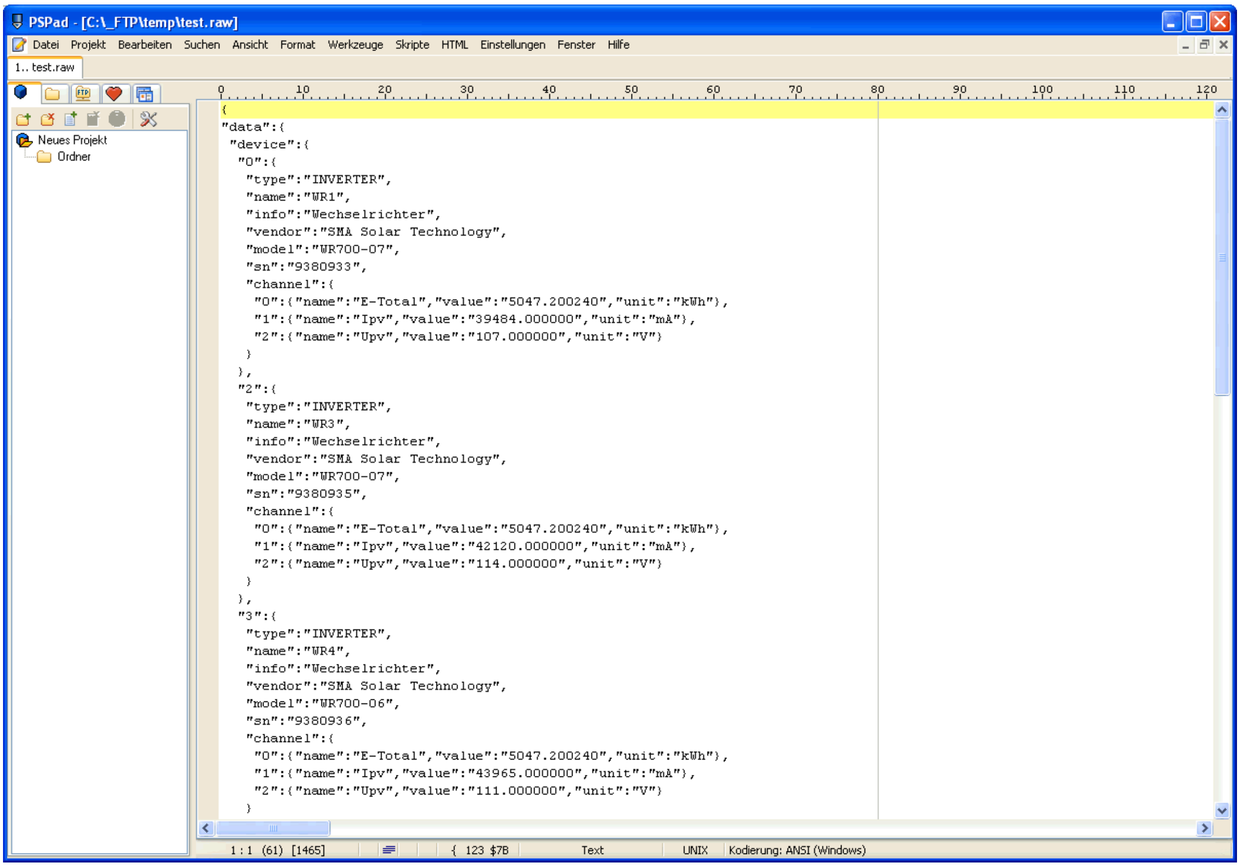
Speichern in: temp

Dateiname: "test.txt"

Dateityp: Raw data (*.bin, *.dat, *.raw)

1405 bytes of raw binary data will be written

- **6. Step:** View the new data file. If the file contains plain text the *Wireshark* export data file can be viewed with any text editor. Otherwise use an editor with hex output (e. g. *PSPad Hex*).


PSPad - [C:_FTP\temp\test.raw]
Datei Projekt Bearbeiten Suchen Ansicht Format Werkzeuge Skripte HTML Einstellungen Fenster Hilfe
1.. test.raw
Neues Projekt
Ordner
1 : 1 (61) [1465]
{ 123 $7B
Text
UNIX
Kodierung: ANSI (Windows)

```
{
"data":{
 "device":{
  "0":{
   "type":"INVERTER",
   "name":"WR1",
   "info":"Wechselrichter",
   "vendor":"SMA Solar Technology",
   "model":"WR700-07",
   "sn":"9380933",
   "channel":{
    "0":{"name":"E-Total","value":"5047.200240","unit":"kWh"},
    "1":{"name":"Ipv","value":"39484.000000","unit":"mA"},
    "2":{"name":"Upv","value":"107.000000","unit":"V"}
   }
  },
  "2":{
   "type":"INVERTER",
   "name":"WR3",
   "info":"Wechselrichter",
   "vendor":"SMA Solar Technology",
   "model":"WR700-07",
   "sn":"9380935",
   "channel":{
    "0":{"name":"E-Total","value":"5047.200240","unit":"kWh"},
    "1":{"name":"Ipv","value":"42120.000000","unit":"mA"},
    "2":{"name":"Upv","value":"114.000000","unit":"V"}
   }
  },
  "3":{
   "type":"INVERTER",
   "name":"WR4",
   "info":"Wechselrichter",
   "vendor":"SMA Solar Technology",
   "model":"WR700-06",
   "sn":"9380936",
   "channel":{
    "0":{"name":"E-Total","value":"5047.200240","unit":"kWh"},
    "1":{"name":"Ipv","value":"43965.000000","unit":"mA"},
    "2":{"name":"Upv","value":"111.000000","unit":"V"}
   }
```

**Please note:** In this sample the DNP/9265 HTTP POST request contains JSON-based data of a photovoltaic system.

That’s all.