



## Tip of the Month :

- How find a problem yourself or report a problem if you can't ...

# Finding a Problem Yourself

- When to look at a log file:
  - Configuration problems that prevent a server from
    - *Starting*
    - *Running correctly*
  - Runtime problems that occur spontaneously
    - *Crash*
    - Client receives “*access denied*”
    - *Synchronization* problems
      - e.g. client suddenly stops receiving data, but the server is still running: was the clock set back?
    - etc.

# [ Finding a Problem Yourself ]

- When to use runtime debug tools
  - Application is running but not behaving properly
    - Constant or frequent link timeouts
    - High CPU load
    - Other specific link errors
      - access denied
      - illegal (something)
      - etc.
  - You're just curious what the application is doing ...

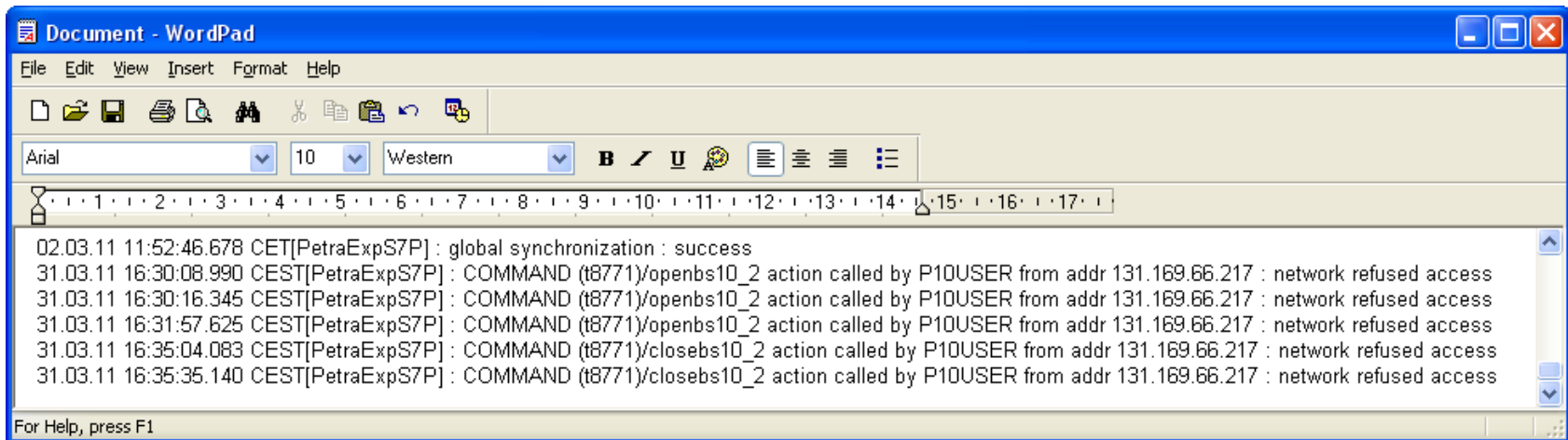
# Server Log Files

- fec.log (aka fec.log.0 in java)
  - Location determined by:
    - Environment variable “**FEC\_LOG**” (1<sup>st</sup>)
    - Environment variable “**FEC\_HOME**” (2<sup>nd</sup>)
    - Working directory (3<sup>rd</sup>)
    - *Appended and rotated (fec.bak)*
- cdi.log
  - Location determined by:
    - Environment variable “**CDI\_HOME**” (1<sup>st</sup>)
    - Environment variable “**FEC\_HOME**” (2<sup>nd</sup>)
    - Working directory (3<sup>rd</sup>)
    - *Recreated at each startup*

# [ Server Log Files ]

- fec.log
  - Configuration entries
  - Commands (by default)
    - Property and caller (prior to dispatch)
    - Reasons for refusal (i.e. if 'access denied')
  - Time synchronization information
  - Alarm information
  - History information
  - Any 'user' added entries
    - via feclog() API

# Server Log Files



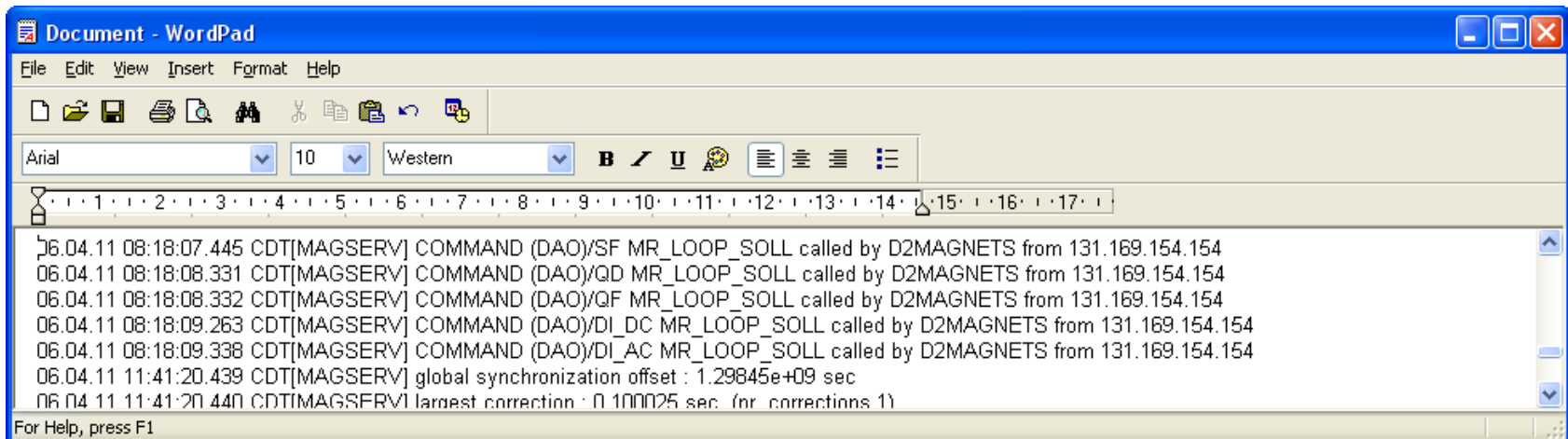
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```
02.03.11 11:52:46.678 CET[PetraExpS7P] : global synchronization : success
31.03.11 16:30:08.990 CEST[PetraExpS7P] : COMMAND (t8771)/openbs10_2 action called by P10USER from addr 131.169.66.217 : network refused access
31.03.11 16:30:16.345 CEST[PetraExpS7P] : COMMAND (t8771)/openbs10_2 action called by P10USER from addr 131.169.66.217 : network refused access
31.03.11 16:31:57.625 CEST[PetraExpS7P] : COMMAND (t8771)/openbs10_2 action called by P10USER from addr 131.169.66.217 : network refused access
31.03.11 16:35:04.083 CEST[PetraExpS7P] : COMMAND (t8771)/closebs10_2 action called by P10USER from addr 131.169.66.217 : network refused access
31.03.11 16:35:35.140 CEST[PetraExpS7P] : COMMAND (t8771)/closebs10_2 action called by P10USER from addr 131.169.66.217 : network refused access
```

For Help, press F1



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```
06.04.11 08:18:07.445 CDT[MAGSERV] COMMAND (DAO)/SF MR_LOOP_SOLL called by D2MAGNETS from 131.169.154.154
06.04.11 08:18:08.331 CDT[MAGSERV] COMMAND (DAO)/QD MR_LOOP_SOLL called by D2MAGNETS from 131.169.154.154
06.04.11 08:18:08.332 CDT[MAGSERV] COMMAND (DAO)/QF MR_LOOP_SOLL called by D2MAGNETS from 131.169.154.154
06.04.11 08:18:09.263 CDT[MAGSERV] COMMAND (DAO)/DI_DC MR_LOOP_SOLL called by D2MAGNETS from 131.169.154.154
06.04.11 08:18:09.338 CDT[MAGSERV] COMMAND (DAO)/DI_AC MR_LOOP_SOLL called by D2MAGNETS from 131.169.154.154
06.04.11 11:41:20.439 CDT[MAGSERV] global synchronization offset : 1.29845e+09 sec
06.04.11 11:41:20.440 CDT[MAGSERV] largest correction : 0.100025 sec. (nr. corrections 1)
```

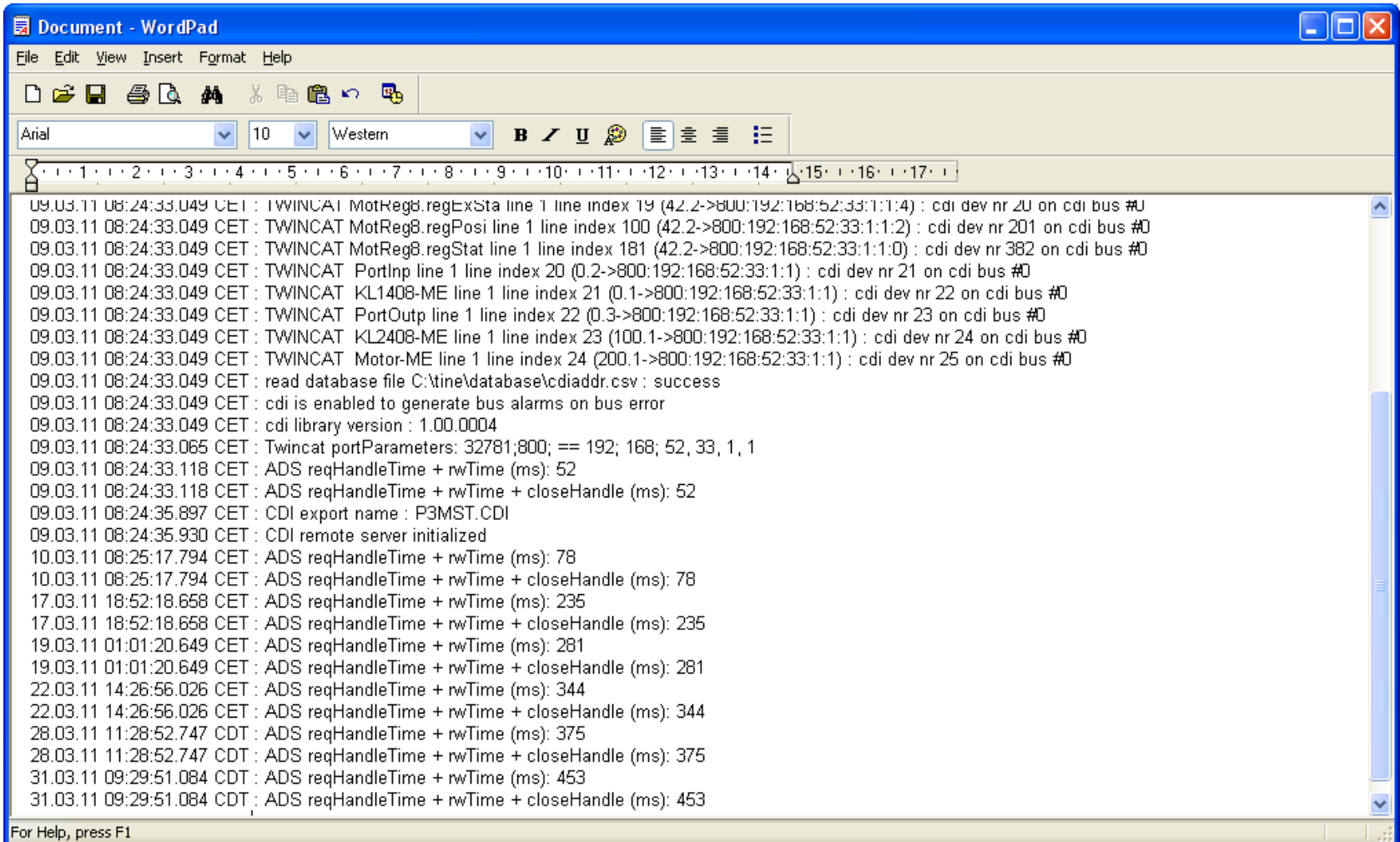
For Help, press F1

# [ Server Log Files ]

---

- cdi.log
  - Configuration entries
  - Bus/Hardware errors
  - Some CDI link information
  - Bus plug information

# Server Log Files



```
09.03.11 08:24:33.049 CET : TWINCA1 MotReg8.regExSta line 1 line index 19 (42.2->800:192:168:52:33:1:1:4) : cdi dev nr 20 on cdi bus #0
09.03.11 08:24:33.049 CET : TWINCAT MotReg8.regPosi line 1 line index 100 (42.2->800:192:168:52:33:1:1:2) : cdi dev nr 201 on cdi bus #0
09.03.11 08:24:33.049 CET : TWINCAT MotReg8.regStat line 1 line index 181 (42.2->800:192:168:52:33:1:1:0) : cdi dev nr 382 on cdi bus #0
09.03.11 08:24:33.049 CET : TWINCAT PortInp line 1 line index 20 (0.2->800:192:168:52:33:1:1) : cdi dev nr 21 on cdi bus #0
09.03.11 08:24:33.049 CET : TWINCAT KL1408-ME line 1 line index 21 (0.1->800:192:168:52:33:1:1) : cdi dev nr 22 on cdi bus #0
09.03.11 08:24:33.049 CET : TWINCAT PortOutp line 1 line index 22 (0.3->800:192:168:52:33:1:1) : cdi dev nr 23 on cdi bus #0
09.03.11 08:24:33.049 CET : TWINCAT KL2408-ME line 1 line index 23 (100.1->800:192:168:52:33:1:1) : cdi dev nr 24 on cdi bus #0
09.03.11 08:24:33.049 CET : TWINCAT Motor-ME line 1 line index 24 (200.1->800:192:168:52:33:1:1) : cdi dev nr 25 on cdi bus #0
09.03.11 08:24:33.049 CET : read database file C:\tine\database\cdiaddr.csv : success
09.03.11 08:24:33.049 CET : cdi is enabled to generate bus alarms on bus error
09.03.11 08:24:33.049 CET : cdi library version : 1.00.0004
09.03.11 08:24:33.065 CET : Twincat portParameters: 32781;800; == 192; 168; 52; 33; 1, 1
09.03.11 08:24:33.118 CET : ADS reqHandleTime + rwTime (ms): 52
09.03.11 08:24:33.118 CET : ADS reqHandleTime + rwTime + closeHandle (ms): 52
09.03.11 08:24:35.897 CET : CDI export name : P3MST.CDI
09.03.11 08:24:35.930 CET : CDI remote server initialized
10.03.11 08:25:17.794 CET : ADS reqHandleTime + rwTime (ms): 78
10.03.11 08:25:17.794 CET : ADS reqHandleTime + rwTime + closeHandle (ms): 78
17.03.11 18:52:18.658 CET : ADS reqHandleTime + rwTime (ms): 235
17.03.11 18:52:18.658 CET : ADS reqHandleTime + rwTime + closeHandle (ms): 235
19.03.11 01:01:20.649 CET : ADS reqHandleTime + rwTime (ms): 281
19.03.11 01:01:20.649 CET : ADS reqHandleTime + rwTime + closeHandle (ms): 281
22.03.11 14:26:56.026 CET : ADS reqHandleTime + rwTime (ms): 344
22.03.11 14:26:56.026 CET : ADS reqHandleTime + rwTime + closeHandle (ms): 344
28.03.11 11:28:52.747 CDT : ADS reqHandleTime + rwTime (ms): 375
28.03.11 11:28:52.747 CDT : ADS reqHandleTime + rwTime + closeHandle (ms): 375
31.03.11 09:29:51.084 CDT : ADS reqHandleTime + rwTime (ms): 453
31.03.11 09:29:51.084 CDT : ADS reqHandleTime + rwTime + closeHandle (ms): 453
```

For Help, press F1



# Runtime Debugging

- Use 'attachfec'

- See users meeting from Sep 3, 2010

([http://adweb.desy.de/mcs/TINE\\_Users\\_Meeting/2010Sep03/Release4News.pdf](http://adweb.desy.de/mcs/TINE_Users_Meeting/2010Sep03/Release4News.pdf))

- Attaches to

- FECS (normal case)

- `attachfec P3MST.0`

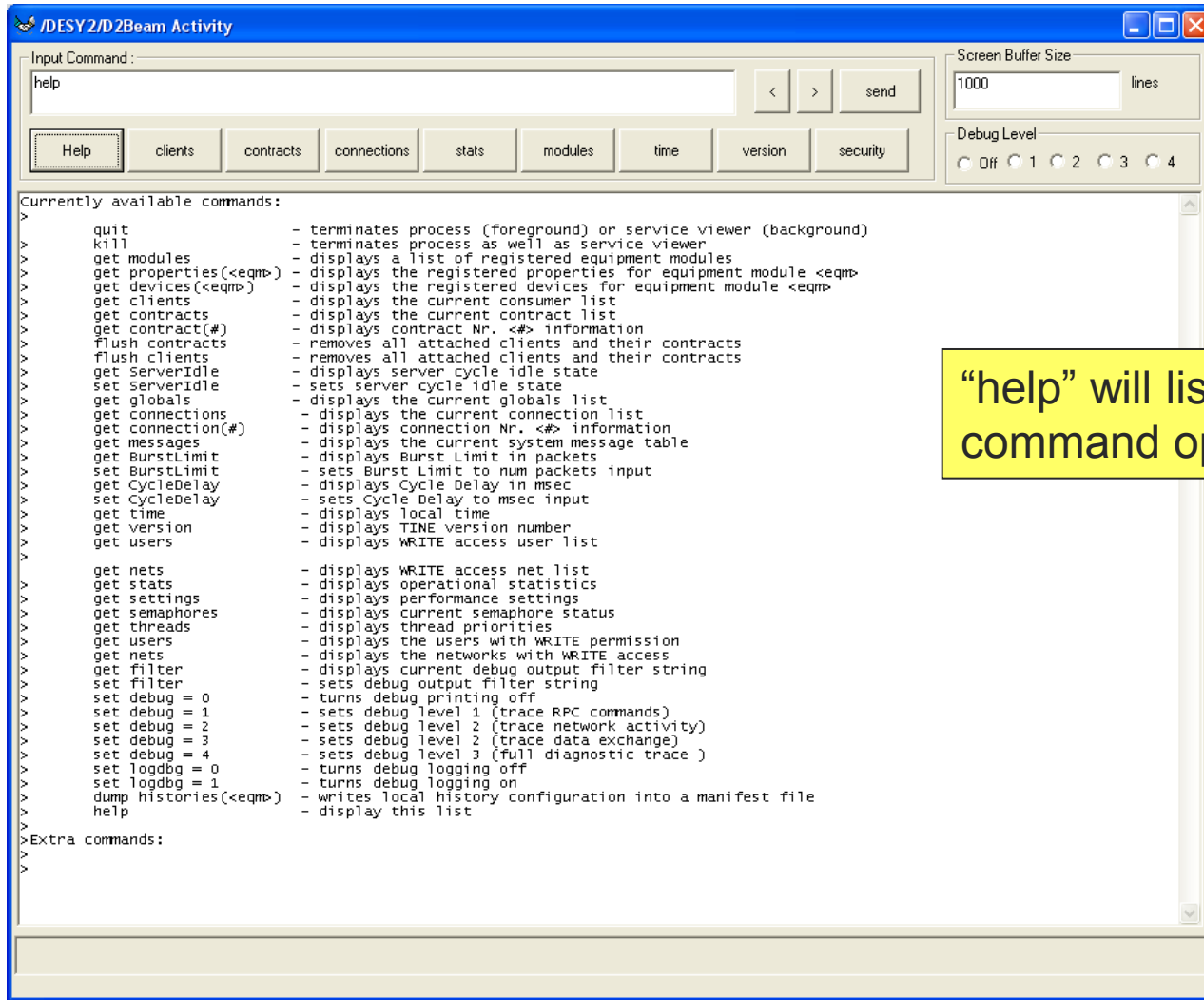
- attaches via local pipe to FEC named P3MST.0 i.e. to a pipe named P3MST.0.ipc

- `attachfec /PETRA/Scrapers`

- attaches via TCP to FEC process which is managing the server /PETRA/Scrapers

- **NOTE:** Java servers must use this variant (or enter debug mode via the 'spider')

# Attachfec

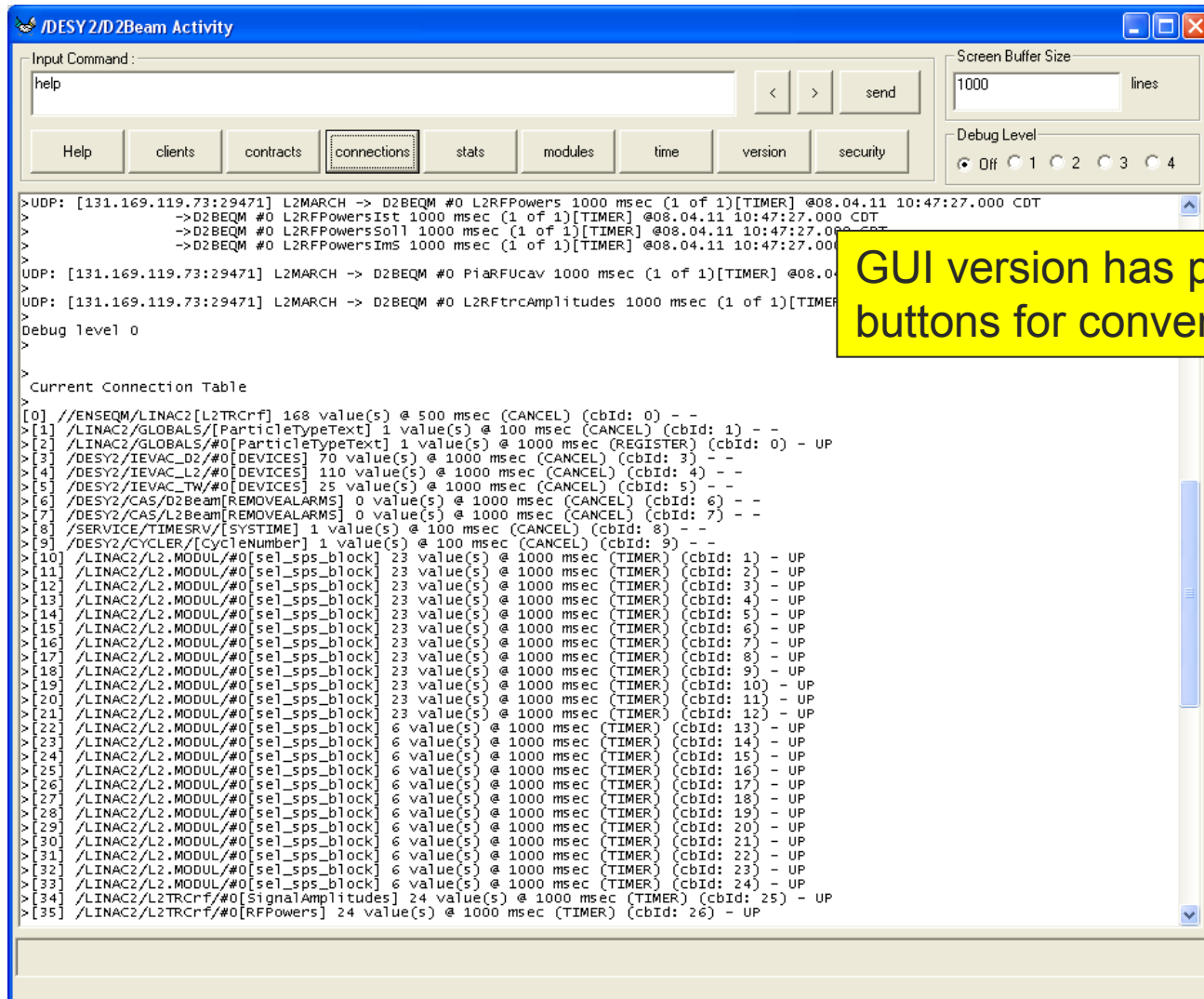


The screenshot shows a window titled "/DESY 2/D 2Beam Activity". At the top, there is an "Input Command:" field containing the text "help". Below this field are navigation buttons: "Help" (highlighted), "clients", "contracts", "connections", "stats", "modules", "time", "version", and "security". To the right of the input field are "Screen Buffer Size" (set to 1000 lines) and "Debug Level" (set to Off). The main area of the window displays the output of the "help" command, listing various available commands and their functions. The list includes commands like "quit", "kill", "get modules", "get properties", "get devices", "get clients", "get contracts", "get contract", "flush contracts", "flush clients", "get ServerIdle", "set ServerIdle", "get globals", "get connections", "get connection", "get messages", "get BurstLimit", "set BurstLimit", "get CycleDelay", "set CycleDelay", "get time", "get version", "get users", "get nets", "get stats", "get settings", "get semaphores", "get threads", "get users", "get nets", "get filter", "set filter", "set debug", and "dump histories". Each command is followed by a brief description of its function. At the bottom of the list, there is an "Extra commands:" section which is currently empty.

```
Currently available commands:
>
> quit - terminates process (foreground) or service viewer (background)
> kill - terminates process as well as service viewer
> get modules - displays a list of registered equipment modules
> get properties(<eqm>) - displays the registered properties for equipment module <eqm>
> get devices(<eqm>) - displays the registered devices for equipment module <eqm>
> get clients - displays the current consumer list
> get contracts - displays the current contract list
> get contract(#) - displays contract Nr. <#> information
> flush contracts - removes all attached clients and their contracts
> flush clients - removes all attached clients and their contracts
> get ServerIdle - displays server cycle idle state
> set ServerIdle - sets server cycle idle state
> get globals - displays the current globals list
> get connections - displays the current connection list
> get connection(#) - displays connection Nr. <#> information
> get messages - displays the current system message table
> get BurstLimit - displays Burst Limit in packets
> set BurstLimit - sets Burst Limit to num packets input
> get CycleDelay - displays Cycle Delay in msec
> set CycleDelay - sets Cycle Delay to msec input
> get time - displays local time
> get version - displays TINE version number
> get users - displays WRITE access user list
>
> get nets - displays WRITE access net list
> get stats - displays operational statistics
> get settings - displays performance settings
> get semaphores - displays current semaphore status
> get threads - displays thread priorities
> get users - displays the users with WRITE permission
> get nets - displays the networks with WRITE access
> get filter - displays current debug output filter string
> set filter - sets debug output filter string
> set debug = 0 - turns debug printing off
> set debug = 1 - sets debug level 1 (trace RPC commands)
> set debug = 2 - sets debug level 2 (trace network activity)
> set debug = 3 - sets debug level 2 (trace data exchange)
> set debug = 4 - sets debug level 3 (full diagnostic trace )
> set logdbg = 0 - turns debug logging off
> set logdbg = 1 - turns debug logging on
> dump histories(<eqm>) - writes local history configuration into a manifest file
> help - display this list
>
>Extra commands:
>
>
```

“help” will list available command options

# Attachfec



The screenshot shows a terminal window titled "/DESY2/D2Beam Activity". The window has a blue title bar and a standard Windows-style interface. At the top, there is an "Input Command:" field containing the text "help". To the right of this field are navigation buttons: a left arrow, a right arrow, and a "send" button. Below the input field is a row of buttons: "Help", "clients", "contracts", "connections" (which is highlighted with a dashed border), "stats", "modules", "time", "version", and "security". To the right of the main window area, there are two control panels. The top one is labeled "Screen Buffer Size" and has a text box with "1000" and the word "lines" to its right. The bottom one is labeled "Debug Level" and has radio buttons for "Off", "1", "2", "3", and "4", with "Off" selected. The main area of the window contains a terminal output showing various UDP commands and their responses, such as "UDP: [131.169.119.73:29471] L2MARCH -> D2BEQM #0 L2RFPowers 1000 msec (1 of 1)[TIMER] @08.04.11 10:47:27.000 CDT". Below the terminal output, there is a section titled "Current Connection Table" followed by a list of connection entries, each with a line number in brackets, a path, a value, a delay, and a status, such as "[0] //ENSEQM/LINAC2/[L2TRCrf] 168 value(s) @ 500 msec (CANCEL) (cbId: 0) - -".

GUI version has pre-defined buttons for convenience

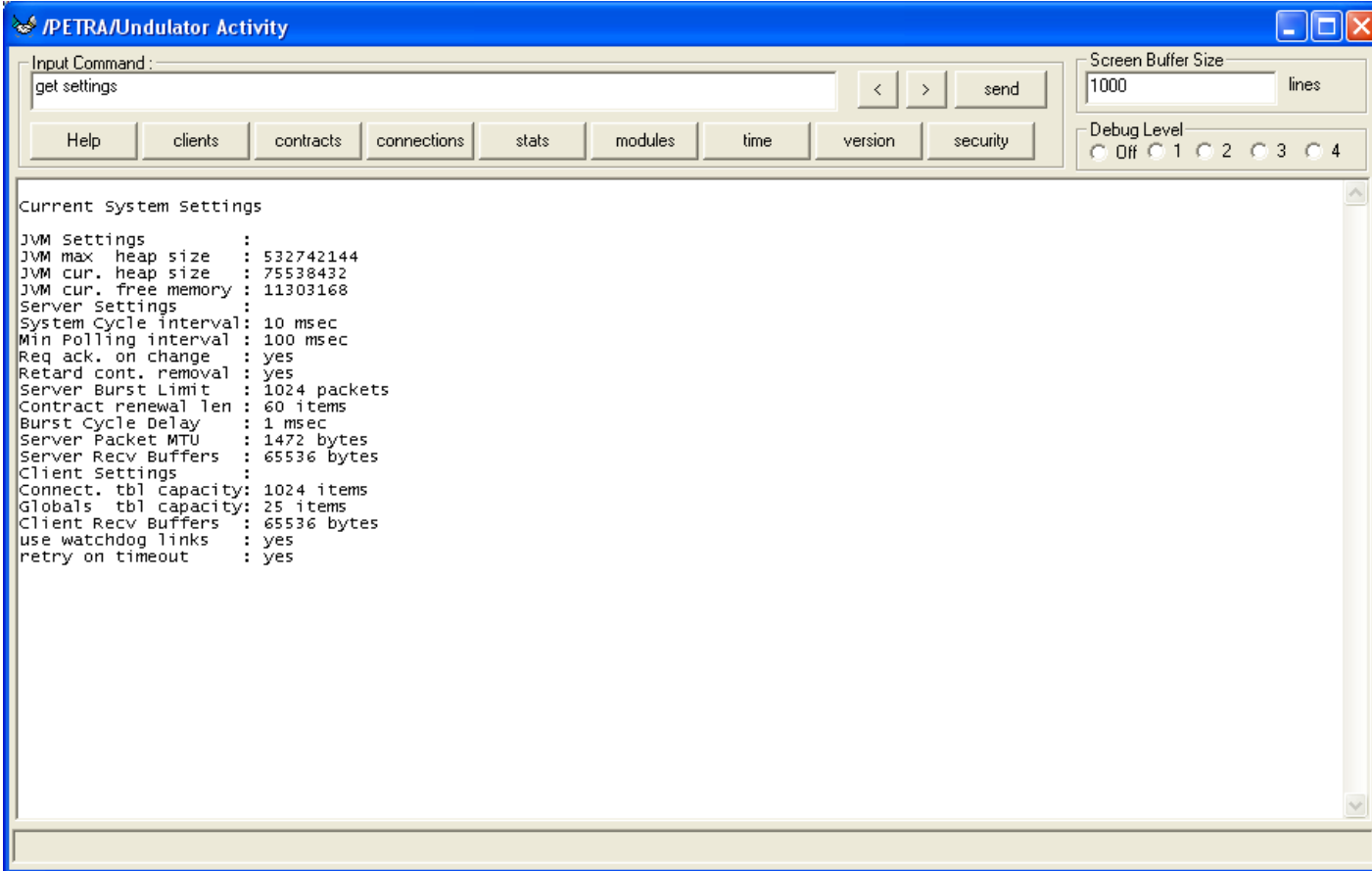
# Attachfec

The screenshot shows a terminal window titled "/DESY 2/D2Beam Activity". The window has a blue title bar and a standard Windows-style interface. At the top, there is an "Input Command:" field containing the text "get settings". To the right of this field are navigation buttons (left arrow, right arrow, and "send") and a "Screen Buffer Size" control set to "1000 lines". Below the input field is a row of menu buttons: "Help", "clients", "contracts", "connections", "stats", "modules", "time", "version", and "security". To the right of these buttons is a "Debug Level" control with radio buttons for "Off", "1", "2", "3", and "4", where "Off" is selected.

The main area of the terminal displays the output of the "get settings" command, showing various system and server parameters. A yellow callout box with a black border is overlaid on the terminal text, containing the instruction "Type other command in the input frame".

```
>Incomplete transfers: 0
>Client Work Area      : 65536 bytes
>Client Cycle Idle    : FALSE
>System Polling intvl: 10 msec
>System Idle time     : 10 msec
>CPU usage             : 3 percent
>Average Cycles/sec   : 149 HZ
>Max Cycles/sec       : 358 HZ
>Contract Data Stale  : 0 counts
>Delivery stale       : 1 counts
>
>
>Server Settings      :
>
>Server Work Area     : 128000 bytes
>System Cycle interval: 10 msec
>Min Polling interval: 10 msec
>Contract tbl capacity: 1000 items
>Contract renewal len : 60 items
>Client tbl capacity  : 100 items
>Req ack. on change   : yes
>Retard cont. removal: yes
>Server Burst Limit   : 1000 packets
>Burst Cycle Delay    : 20 msec
>Server Packet MTU    : 1472 bytes
>TCP maximum msg size : 100000000 bytes
>TCP tbl capacity     : 32 items
>Server Send Buffers  : 500000 bytes
>Server Recv Buffers  : 250000 bytes
>Server Scheduling    : eager
>Scheduler interval   : 0 msec
>Server tasks         : not re-entrant
>Server cycle thread  : separate
>transport thread     : separate
>Allow remote exit    : no
>Allow remote init    : no
>Allow remote reset   : no
>
>Client Settings      :
>Client Work Area     : 65536 bytes
>Connect. tbl capacity: 5000 items
>Client Burst Limit   : 1000 packets
>Client Send Buffers  : 250000 bytes
>Client Recv Buffers  : 500000 bytes
>Client Recv Queue    : 0 items
>use loopback addr    : no
>use watchdog links   : yes
>allow common links   : yes
>retry on timeout     : yes
>
>
```

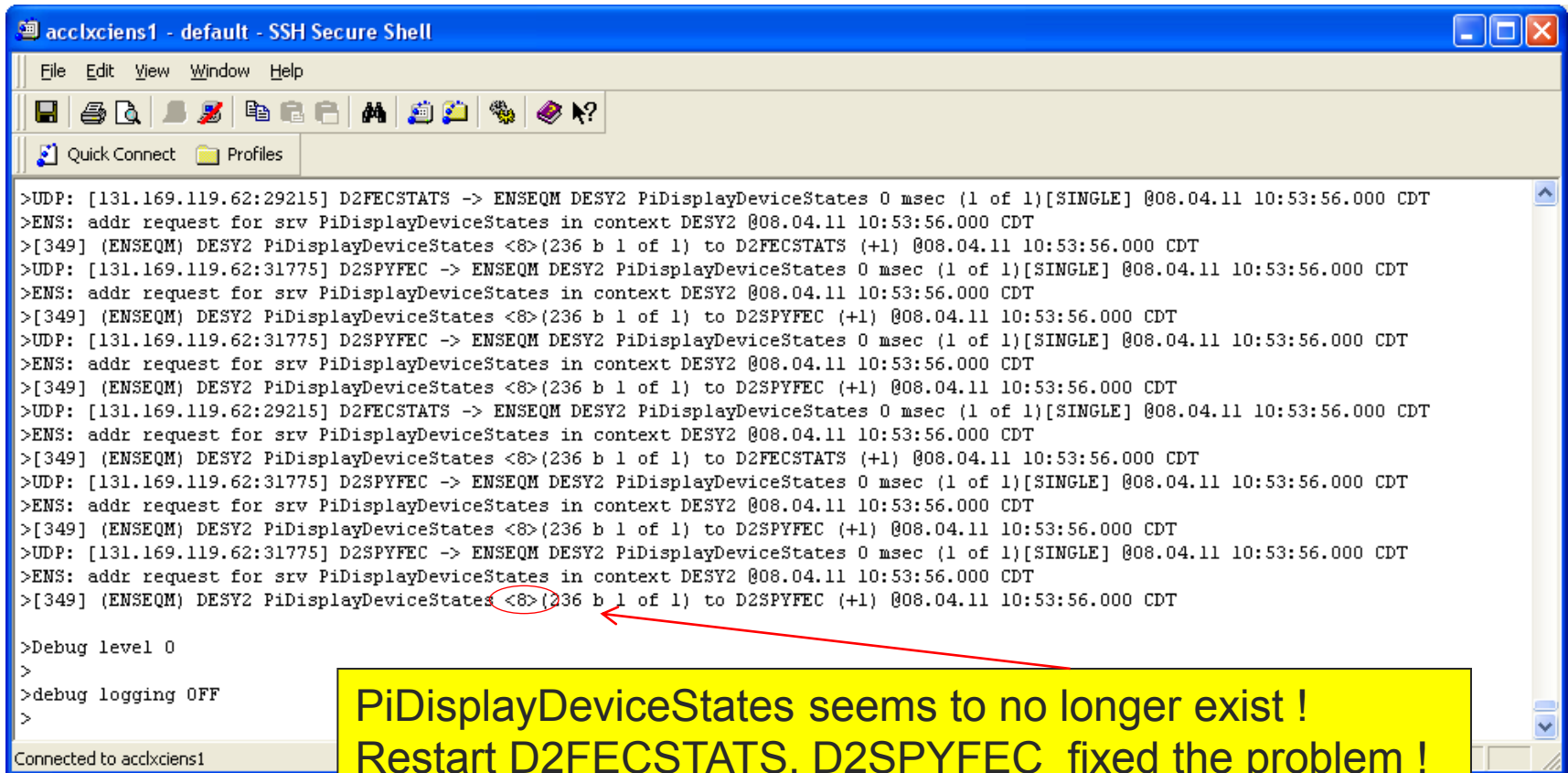
# Attachfec (to a java server)



The screenshot shows a window titled "/PETRA/Undulator Activity" with a blue title bar. The window contains an "Input Command" field with "get settings" entered, and a "send" button. Below the input field are several menu buttons: "Help", "clients", "contracts", "connections", "stats", "modules", "time", "version", and "security". To the right of the input field, there is a "Screen Buffer Size" field set to "1000" lines and a "Debug Level" section with radio buttons for "Off", "1", "2", "3", and "4". The main area of the window displays the following text:

```
Current System Settings
JVM Settings      :
JVM max heap size : 532742144
JVM cur. heap size : 75538432
JVM cur. free memory : 11303168
Server Settings  :
System Cycle interval: 10 msec
Min Polling interval: 100 msec
Req ack. on change : yes
Retard cont. removal : yes
Server Burst Limit : 1024 packets
Contract renewal len : 60 items
Burst Cycle Delay   : 1 msec
Server Packet MTU   : 1472 bytes
Server Recv Buffers : 65536 bytes
Client Settings    :
Connect. tbl capacity: 1024 items
Globals tbl capacity: 25 items
Client Recv Buffers : 65536 bytes
use watchdog links  : yes
retry on timeout    : yes
```

# attachfec ENS



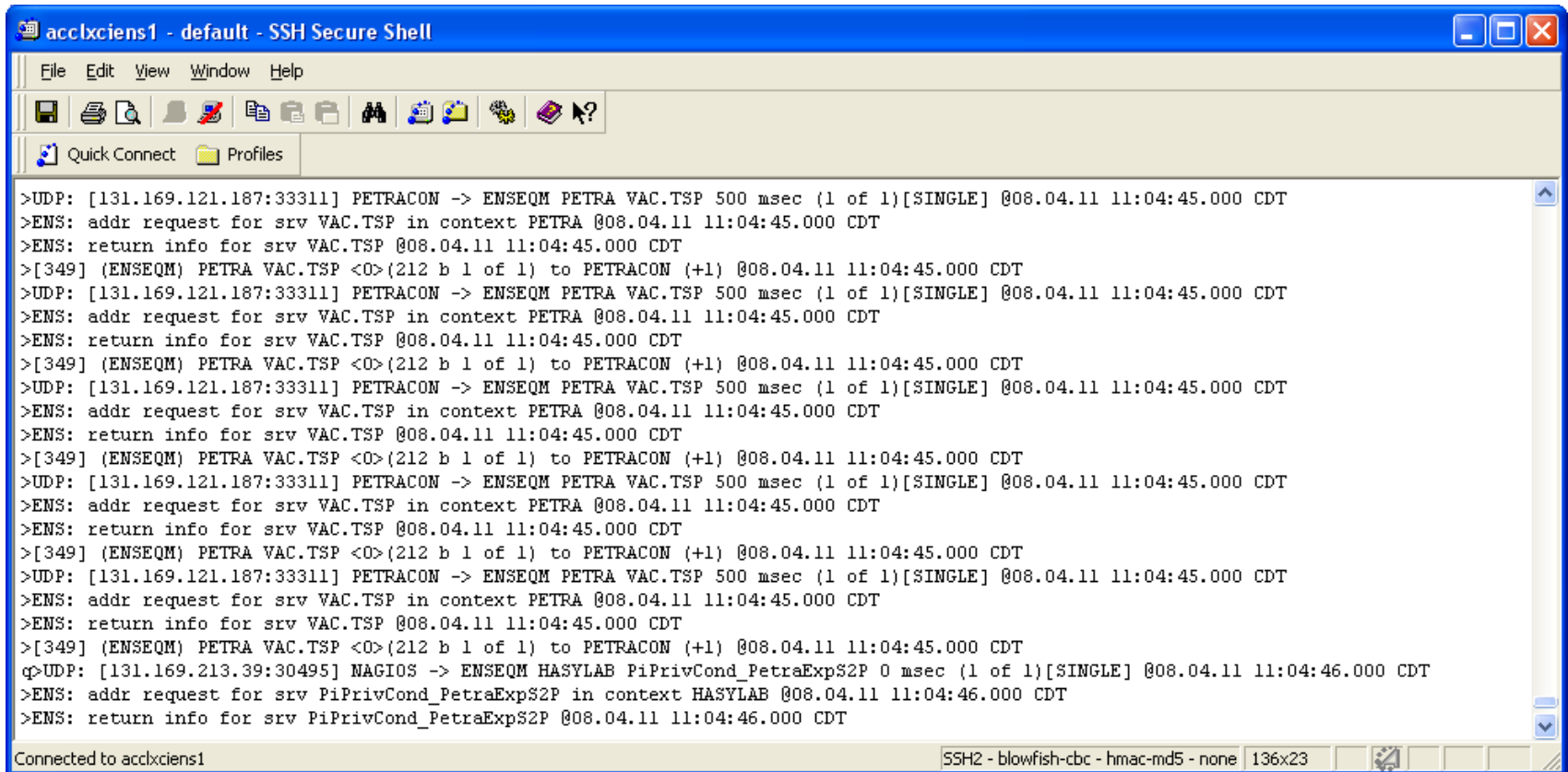
```
acclxciens1 - default - SSH Secure Shell
File Edit View Window Help
Quick Connect Profiles
>UDP: [131.169.119.62:29215] D2FECSTATS -> ENSEQM DESY2 PiDisplayDeviceStates 0 msec (1 of 1)[SINGLE] @08.04.11 10:53:56.000 CDT
>ENS: addr request for srv PiDisplayDeviceStates in context DESY2 @08.04.11 10:53:56.000 CDT
>[349] (ENSEQM) DESY2 PiDisplayDeviceStates <8>(236 b 1 of 1) to D2FECSTATS (+1) @08.04.11 10:53:56.000 CDT
>UDP: [131.169.119.62:31775] D2SPYFEC -> ENSEQM DESY2 PiDisplayDeviceStates 0 msec (1 of 1)[SINGLE] @08.04.11 10:53:56.000 CDT
>ENS: addr request for srv PiDisplayDeviceStates in context DESY2 @08.04.11 10:53:56.000 CDT
>[349] (ENSEQM) DESY2 PiDisplayDeviceStates <8>(236 b 1 of 1) to D2SPYFEC (+1) @08.04.11 10:53:56.000 CDT
>UDP: [131.169.119.62:31775] D2SPYFEC -> ENSEQM DESY2 PiDisplayDeviceStates 0 msec (1 of 1)[SINGLE] @08.04.11 10:53:56.000 CDT
>ENS: addr request for srv PiDisplayDeviceStates in context DESY2 @08.04.11 10:53:56.000 CDT
>[349] (ENSEQM) DESY2 PiDisplayDeviceStates <8>(236 b 1 of 1) to D2FECSTATS (+1) @08.04.11 10:53:56.000 CDT
>UDP: [131.169.119.62:29215] D2FECSTATS -> ENSEQM DESY2 PiDisplayDeviceStates 0 msec (1 of 1)[SINGLE] @08.04.11 10:53:56.000 CDT
>ENS: addr request for srv PiDisplayDeviceStates in context DESY2 @08.04.11 10:53:56.000 CDT
>[349] (ENSEQM) DESY2 PiDisplayDeviceStates <8>(236 b 1 of 1) to D2FECSTATS (+1) @08.04.11 10:53:56.000 CDT
>UDP: [131.169.119.62:31775] D2SPYFEC -> ENSEQM DESY2 PiDisplayDeviceStates 0 msec (1 of 1)[SINGLE] @08.04.11 10:53:56.000 CDT
>ENS: addr request for srv PiDisplayDeviceStates in context DESY2 @08.04.11 10:53:56.000 CDT
>[349] (ENSEQM) DESY2 PiDisplayDeviceStates <8>(236 b 1 of 1) to D2SPYFEC (+1) @08.04.11 10:53:56.000 CDT

>Debug level 0
>
>debug logging OFF
>
Connected to acclxciens1
```

PiDisplayDeviceStates seems to no longer exist !  
Restart D2FECSTATS, D2SPYFEC fixed the problem !

Fix both D2FECSTATS and D2SPYFEC to remove entries that become 'non existent' !

# attachfec ENS



```
acclxciens1 - default - SSH Secure Shell
File Edit View Window Help
Quick Connect Profiles
>UDP: [131.169.121.187:33311] PETRACON -> ENSEQM PETRA VAC.TSP 500 msec (1 of 1)[SINGLE] @08.04.11 11:04:45.000 CDT
>ENS: addr request for srv VAC.TSP in context PETRA @08.04.11 11:04:45.000 CDT
>ENS: return info for srv VAC.TSP @08.04.11 11:04:45.000 CDT
>[349] (ENSEQM) PETRA VAC.TSP <0>(212 b 1 of 1) to PETRACON (+1) @08.04.11 11:04:45.000 CDT
>UDP: [131.169.121.187:33311] PETRACON -> ENSEQM PETRA VAC.TSP 500 msec (1 of 1)[SINGLE] @08.04.11 11:04:45.000 CDT
>ENS: addr request for srv VAC.TSP in context PETRA @08.04.11 11:04:45.000 CDT
>ENS: return info for srv VAC.TSP @08.04.11 11:04:45.000 CDT
>[349] (ENSEQM) PETRA VAC.TSP <0>(212 b 1 of 1) to PETRACON (+1) @08.04.11 11:04:45.000 CDT
>UDP: [131.169.121.187:33311] PETRACON -> ENSEQM PETRA VAC.TSP 500 msec (1 of 1)[SINGLE] @08.04.11 11:04:45.000 CDT
>ENS: addr request for srv VAC.TSP in context PETRA @08.04.11 11:04:45.000 CDT
>ENS: return info for srv VAC.TSP @08.04.11 11:04:45.000 CDT
>[349] (ENSEQM) PETRA VAC.TSP <0>(212 b 1 of 1) to PETRACON (+1) @08.04.11 11:04:45.000 CDT
>UDP: [131.169.121.187:33311] PETRACON -> ENSEQM PETRA VAC.TSP 500 msec (1 of 1)[SINGLE] @08.04.11 11:04:45.000 CDT
>ENS: addr request for srv VAC.TSP in context PETRA @08.04.11 11:04:45.000 CDT
>ENS: return info for srv VAC.TSP @08.04.11 11:04:45.000 CDT
>[349] (ENSEQM) PETRA VAC.TSP <0>(212 b 1 of 1) to PETRACON (+1) @08.04.11 11:04:45.000 CDT
φ>UDP: [131.169.213.39:30495] MAGIOS -> ENSEQM HASYLAB PiPrivCond_PetraExpS2P 0 msec (1 of 1)[SINGLE] @08.04.11 11:04:46.000 CDT
>ENS: addr request for srv PiPrivCond_PetraExpS2P in context HASYLAB @08.04.11 11:04:46.000 CDT
>ENS: return info for srv PiPrivCond_PetraExpS2P @08.04.11 11:04:46.000 CDT
Connected to acclxciens1 SSH2 - blowfish-cbc - hmac-md5 - none 136x23
```

Now much 'quieter', but what's going on with address requests for VAC.TSP ? (comes in sporadic blocks -> script?)

# How to Report a problem

- First step: Look at [tineforum.desy.de](http://tineforum.desy.de) and/or [tinetraacker.desy.de](http://tinetraacker.desy.de) to see if others have reported the same problem !
- Questions -> use [tineforum.desy.de](http://tineforum.desy.de) !
  - e.g. “how do I get a single value from an array property?”
  - e.g. “how to I configure my server to ...?”
- Bug/Error Reports -> use [tinetraacker.desy.de](http://tinetraacker.desy.de) !
  - Be as specific as possible in identifying the problem
  - Include steps to reproduce it.
  - Indicate the platform and versions used.
- If you must: send an email to [tine@desy.de](mailto:tine@desy.de)
  - this will be sent to several people who might be able to help !



# [ How to Report a Problem ]

- Avoid reports that say something like:
  - “I can’t communicate with any TINE servers! What am I doing wrong?”
    - => Problem not specifically described!
  - “TINE doesn’t work any more! It worked yesterday. What has changed?”
    - => Obviously not true in general!
  
- Imagine trying to answer your own questions yourself.
  - Avoid a long, iterative dialog with someone trying to determine what the specific problem is ...
    - Is it a client problem or a server problem?
    - Is it a specific client application or a specific server?
    - Is the application written in java, C, LabView, VB, .NET ?
    - What exactly are the symptoms?
    - Is it always reproducible?
    - etc.