



# Tip of the Week :

- Local Alarm and Archive Filtering

# [ Tip of the Week ]

- Managing local Resources (link tables)
  - What does 'resources exhausted' mean ?
  - Rich clients: the programmer usually has an eye on efficiency when he/she knows that a call to 'get' something is going over the net.
  - Historically: busy client applications might have a few 10s of data links.
  - Default connection table allows 1024 simultaneous links ...

# A Really Busy Rich Client

Example # 1

Operating LINAC II

Datei Optionen Hilfe

**Elektronen**

Bereit
449.8 MeV
0.01 mA
0.01 * 10 <sup>9</sup> Teilchen

H 13 125 MHz H 15  
V 11 SM11 SM17 V 17  
Strahlstrom Limiter 0.0 \* 10<sup>9</sup>  
Strahlstrom Limiter aktivieren  
H 10 H 18  
10.4 MHz PIA  
SM 7  
V 7  
BK\_05Inj  
H 4 Dipol QD QF SD SF H 24  
V 2 SM 3 SM 1 V 9  
Septum SE SI Q 10 Q 6 Q 4 Q 8 Q 12 12 11 10 -> 8 7 -> 6 5 -> 4 3  
H 1 H 27 H 11 H 2 H -10  
SM E SM I  
V 1 V -10  
SML 3 SML 10  
FODO  
A Q 7 B A Q 5 B  
Magnete 2 GUN 2  
Transfer 1 -> GUN 1  
IMR-L119 IMR-L13 IMR-L01mx IMA-L01mx IMA-L-9mx IMR-A07mx IMA-A07mx IMA-A05 IMR-A04mx IMA-A01

**Operating LINAC II**

Injektion Gun 1 Injektion Gun 2 Magnete Gun 2 Transfer Steerer LINAC 2 **Klystron 12** Pulse Display >>

KLYSTRON 12

Sled  
Klystron 224.0 KV 199.0 A  
Modulator RECHNER HV ein Trigger: ok nicht gebrückt  
HV des Modulators EIN AUS EIN BEREIT

Sled Delay	2.17375 µs
Attenuator	60.1 SKT
Phase	115.3 Grad
Delay	3.961 µs

Sled alle e-	1.83300 µs
Sled alle e+	1.03400 µs
Phase 1-5	
T-25	1.64710 µs
Pin Diode / Sled	0.48175 µs
Pin Diode Ende	2.44712 µs

**Servo** 1.4 98.0

Soll	Ist	SKT
27.5	27.7	

Continuous Store 27.5 Old Sync

57.12 Min. bis Gun aus

MCSW7DUVAL02 | 13.09.16 17:57:26 | Operations Mode [Betrieb] | Serverwahl [Default] [2]



# [ Tip of the Week ]

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- The connection table is a table (not an array list or linked list).
  - The lookups are faster and there is little or no fragmentation problem on platforms with poor MMUs (e.g. VxWorks).
- But hey, 1024 links ought to be enough for anyone!

# A Busy Panel Client

Example # 2

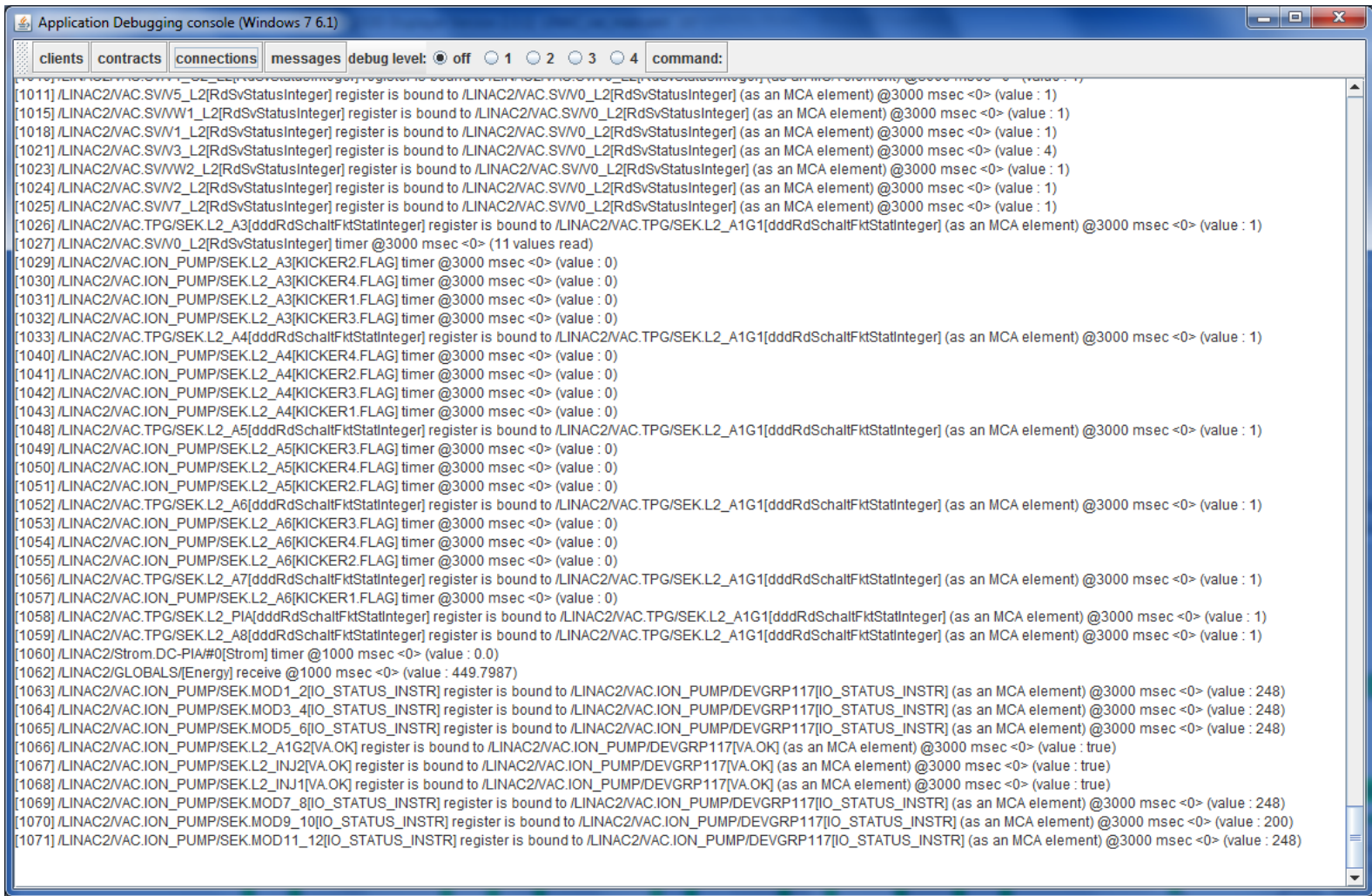
The screenshot displays the LINAC2\_Vakuu\_Overview software interface. At the top, it shows the file name 'LINAC2\_Vakuu\_Overview (LINAC\_vac\_main.xml) [jDDD Displayer Version 2.3.1 LINAC\_vac\_main.xml //]' and menu options: 'Datei Maschine(Linac 2) Optionen Hilfe'. Below the menu is a navigation bar with tabs for 'INJ2', 'A2', 'A3', 'A4', 'A5', 'A6', 'MOD', 'A7', 'PIA', 'A8', 'SEK.ALL', 'A1G1', 'A1G2', and 'INJ1'. The main interface is divided into three main sections:

- Top Left:** A graph showing vacuum pressure in mbar over time. The y-axis ranges from 0.0001 to 1.e-12. The x-axis lists various vacuum chamber locations like L2\_A1G1\_GUN1A, L2\_INJ2\_GP11, etc. A legend indicates the data is from '\VAC.ION\_PUMPF\\*P [mbar]'. A 'History mit P.' button is visible.
- Top Right:** A table listing vacuum chambers and their status. The table has columns for chamber name, HV EIN SEK, HV AUS SEK, and a status indicator. The status column shows values like '3.11E-9', '2.65E-9', etc. A 'IP Expert' button and a timestamp '2016-09-13 18:04:17' are also present.
- Center:** A schematic diagram of the particle accelerator. It shows a horizontal line representing the beam path, divided into sections (Sect. 2 to Sect. 12). Various components are labeled, including 'Gun1', 'Gun2', 'WG2', 'Konv.', and 'L-WEG'. Below the beam path, there are labels for 'Kly.1' through 'Kly.12' and 'SEK.MOD1\_2' through 'SEK.MOD11\_12'. A 'Tunnel Modulatorhalle' is indicated by a horizontal line. On the right, there are labels for 'SEK.L2\_A1G1' through 'SEK.L2\_A8' and 'SEK.L2\_PIA'. A 'Not Aus' indicator is also present.

At the bottom of the interface, there is a status bar showing 'MCSW7DUVAL02 | 13.09.16 18:04:16 | Operations Mode [Betrieb] | Serverwahl [Default] | [3]KeineImDiater'. A 'MIN GP Überwachung' button with a 'Reset' sub-button is located in the bottom left corner. The status bar also displays '449.80 GeV' and '0.000 mA'.

# Its Connection Table

Example # 2



# [ Tip of the Week ]

- The same thing might happen in a C client.
  - Also: Single synchronous links keep an entry in the connection table for up to 2 seconds after the call has completed !

```
for (int i=0; i<5000; i++)  
{  
    sprintf(dev, "/XFEL/Someserver/Device_%d", i);  
    ExecLink (dev, "SomeProperty", &dout, &din, CA_READ);  
}
```

This might cause problems unless you 'do something' ...



# [ Tip of the Week ]

- If you know you've got an 'extreme' case then ...

## C-Lib :

```
void SetConnectionTableCapacity ( int value )
```

Sets the maximum number of entries in the connection table.

A client's connections are managed and maintained in a connection table. The size of this table is pre-allocated at initialization time. This allows for fast lookups, since a connection ID is simply an entry into the table. If it is known that the client will need a large number of simultaneous links then this value should be set accordingly at initialization time.

### Parameters:

*value* is the requested Client API Callsonnection table size

**Default:** 1000 (Or define CLIENTLIST\_CAPACITY in project.def)

### See also:

[GetConnectionTableCapacity\(\)](#)

## Java (TLinkFactory) :

```
static public int setMaximumNumberOfLinks(int numberOfLinks)
```

Jddd an ddd set these to 5000 (10000 ?)