TINE Release 4.0 News
(April 19, 2013: That was the month that was !)
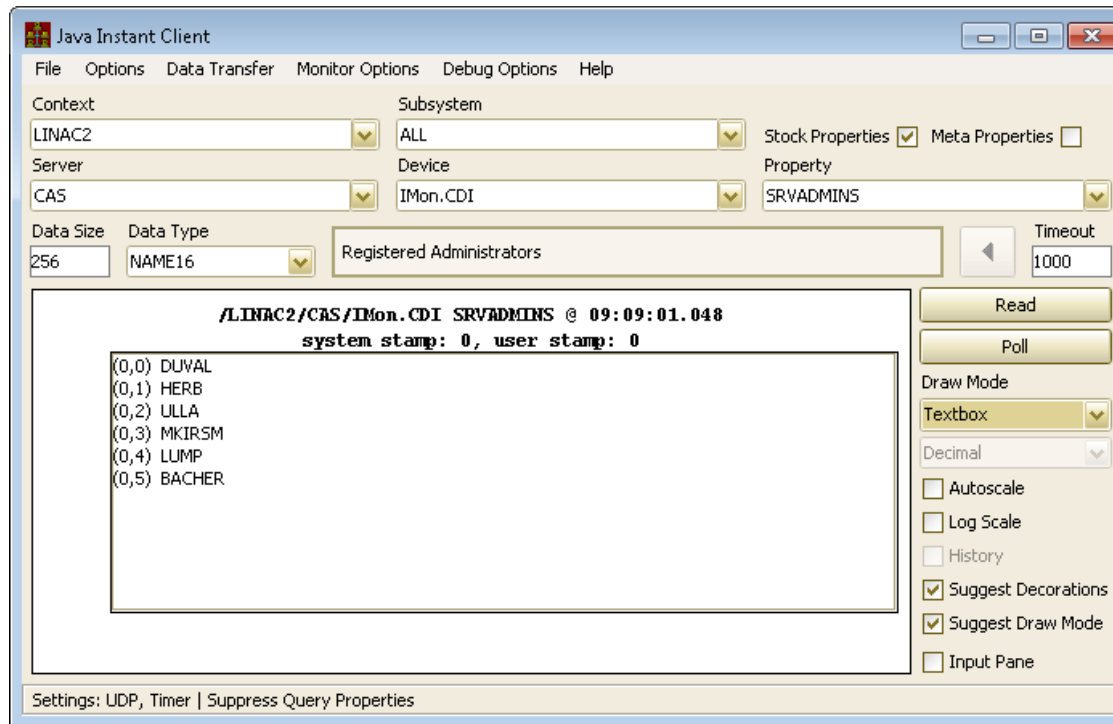
"What a long, strange trip it's been …."

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- Notable Embellishments/Bug fixes
  - C-Lib: srvlog()
    - int srvlog(char *filename,char *tag,char *text,...)
    - (create and) write to a log file of your choice.
  - SetAlarm()
    - Alarms not set if device is marked 'off-line'
      - See Stock property "DEVONLINE" and device configuration.
  - Globals
    - Keyword + context can now be sent and received
      - Previously: context was determined by the context of the globals server.
      - BUT: /LINAC2/CYCLER sends globals in context
        - LINAC2, DESY2, PETRA, REGAE

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- Stock property "SRVADMINS"
  - Lists users with 'administrative rights'.
  - Central services …

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- New contract coercion:
  - Fix a contract's output
    - Apply access CA_FORCEOUTPUT to the property registration
    - Callers are *coerced* to use the registered data type and size!
      - Issue:
        - Property delivers 100 float values
        - Caller asks for 1000 double values
        - Server converts float values to double values and returns only 100 values
        - BUT server is possibly servicing multiple contracts for essentially the same thing!
        - Can become an issue for large payloads (video frames).
  - *Make all callers ask for the same data the same way!*

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- Forced output coercion (continued):
  - length requested != length registered OR format requested != format registered
    - Return 'invalid_datarequest' and send proper length and format to caller.
    - Currently:
      - Length requested > length registered
        - Coerce the contract and continue (caller doesn't notice)
        - Caller's buffer is okay to use
        - Length requested < length registered OR format != format registered
        - Caller received the error code
        - Caller's buffer NOT okay to use
    - Planned:
      - Always coerce, but buffer incoming data separately and convert at the client

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- Pass 'real' micro-seconds in data timestamps
  - was truncating to *milli*-seconds
    - both client and server (and has been since release 2.0 in the '90s)
  - Globals timestamps still pass milliseconds
    - Update to microseconds during long shutdown.

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- Theater of the bizarre
  - TINE time synchronization, VxWorks and ntp.
    - TINE time synchronization designed to adjust data timestamps (not the clock) to the '100' msec level.
      - Must see the 'same correction' *5 times in a row* ! (slope of an active ntp correction taken into account).
      - Usually applicable at the level of seconds or maybe minutes (some windows machines)
      - Linux machines with ntp are generally very well synchronized
      - *VxWorks boot starts at 0* (Jan 1, 1970)
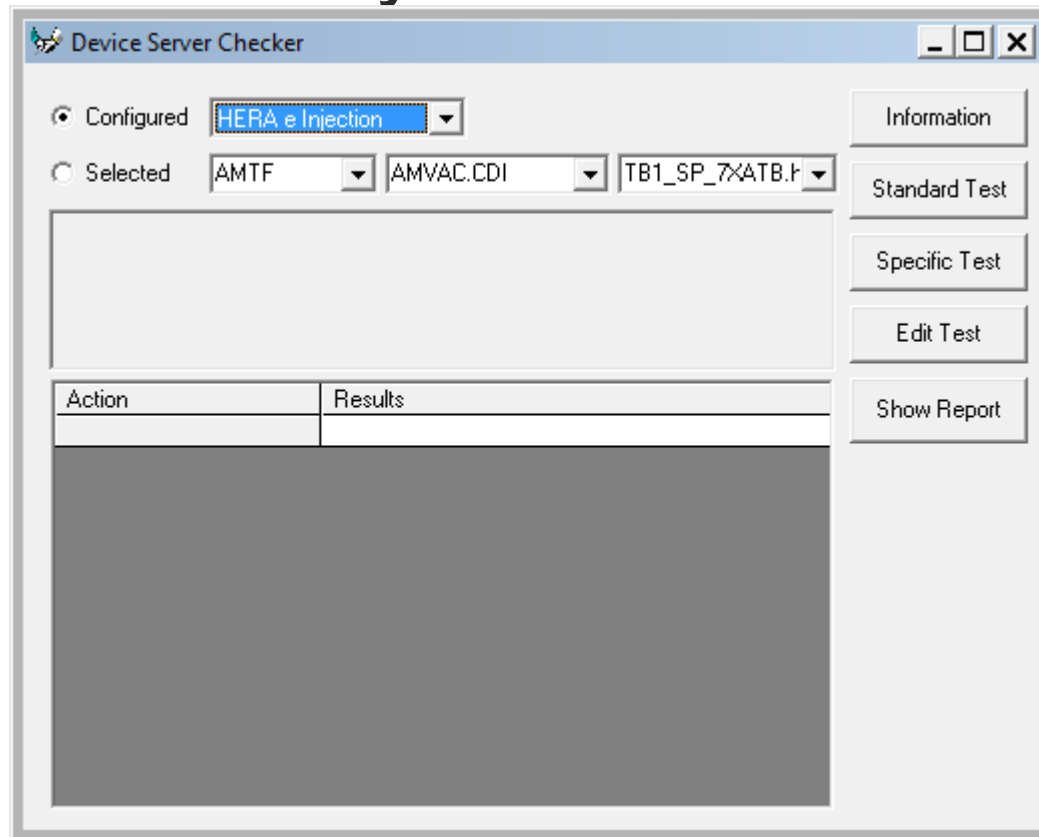
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- VxWorks
  - Post release 4.2.8
    - makes a single call to the TINE time server at start time and sets the clock to the value received.
    - applies the time synchronization as needed (if it receives the multicast).
  - Recent usage of ntp task on VxWorks
    - Led to a 'correction' of -268435456 (!?!)
      - => 1938
  - Caused missed cycles and other chaos.
  - Disable the extra time synchronization for VxWorks servers using ntp !

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- Server self tests
  - Stock property 'SRVSELFTEST' available since release 3.0
    - Reads and returns ascii contents of a file called 'selftest.csv'
    - As of 4.3.6 will also look for 'selftest.xml' if the '.csv' variety is not available.
    - Stock property does nothing else. It's just a long text string.

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- In the old days …

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- Self checking : the next generation
  - Server gives instructions (steps) on how to best 'test me'.
  - Need to consider (some subset) of machine states
    - off
    - running_idle
    - running_studies
    - running_user
    - running = (running_idle|running_studies|running_user)
  - And other permissions
    - beam_permission

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- Self checking : the next generation
  - Really is 'just a spread sheet'
    - Don't 'xml' this !
  - Example of testing a motor server:

Property	Device	SizeOut	FormatOut	DataTgt	DataMask	SizeIn	FormatIn	DataIn	TimeOut	Wait	Access	Tolerance	Required
Position	Motor1	1	double	$1		0	NULL		0.5		READ		
Move.START	Motor1	0	NULL		1	0	double	$1+1.0	0.5		WRITE		!running
Move.STATUS	Motor1	1	int32	0	0xfffe	0	NULL		1	5	MONITOR	0	!running
Move.START	Motor1	0	NULL			1	double	$1-1.0	0.5		WRITE		!tunning
Move.STATUS	Motor1	1	int32	0	0xfffe	0	NULL		1	5	MONITOR	0	!rUnning

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- Other important checking :
  - The 'Server Report' !
  - See the new central service features !

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- **Epics2Tine news**
  - The alarm mapping now works !
- **Doocs2Tine news**
  - Initial tests of multi-channel mapping in a doocs server were successful !
    - Doocs server notes which 'locations' offer the same (scalar) property and
      - register a 'group device
      - register each device as an element of this group
      - participate in MCA coercion …

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Now on to **TINE STUDIO** …