



TINE Release 4.0 News

(Jan 12, 2015: That was the month that was !)

“What a long, strange trip it’s been”

[Release 4.5.2]

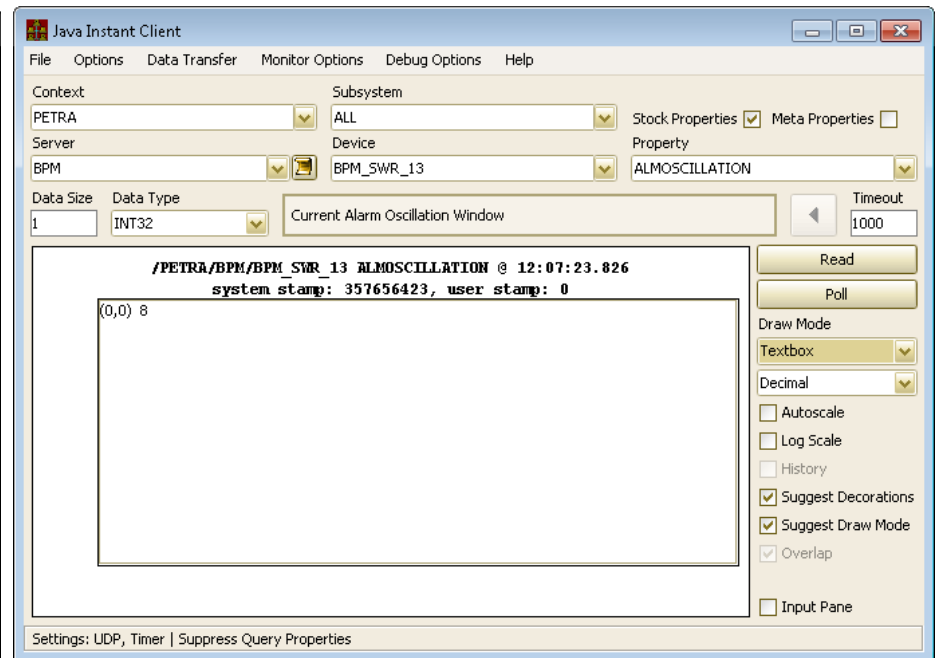
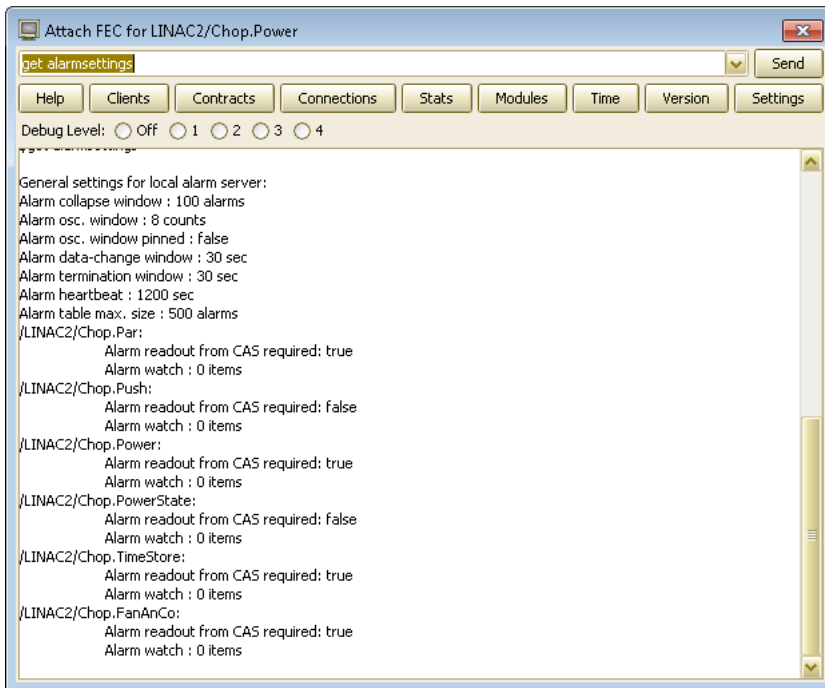
- Noteworthy Bug-fixes and Embellishments (C-Library)
 - Several 'event-driven' exotic performance issues
 - See 'TINE at 200 Hz' presentation.

[Release 4.5.2]

- Noteworthy Bug-fixes and Embellishments (C-Lib, Java-Lib)
 - Easier access to alarm settings.
 - Previously: only via API calls!
 - [Almsettings.csv](#) or [ALARM_SETTINGS](#) tag in fec.xml
 - Console: get 'alarmsettings', get/set almoscillation, get/set almcollapse
 - Stock properties: "ALMOSCILLATION", "ALMCOLLAPSE"

Release 4.5.2

Noteworthy Bug-fixes and Embellishments



[Release 4.5.2]

- **Noteworthy Bug-fixes and Embellishments (DOOCS-related)**
 - Issue with simultaneous links to multi-channel single element with mixed transport modes (CM_SINGLE vs. CM_TIMER) now fixed.
 - **SystemInit()**, **RegisterFecInformation()** modified to return success if called multiple times with same information.
 - Initial call performs requested action.
 - Work-around for the Lars F. >1400 open files problem.
 - Need 'early tine-registration' hook in doocs server.
 - New routine: **TineLoadDynamically()**
 - Circumvent 'cleanup' problem with MatLab on mac.

[Release 4.5.2]

■ New Multicast Scheme

- quasi backwards-compatible:
 - old clients can receive multicasts from new servers IF new server configured to still use *legacy multicast rules*.
 - clients learn multicast scheme of target server from ENS.
 - n.b. any *multicast maps* applied on a target address basis.
 - *You shouldn't need this if you're ALL-modern!*

[Release 4.5.2]

- Why multicast?
 - Same data needed by multiple clients.
 - Large performance payoff when
 - Large payloads (video, large arrays)
 - Very large number of clients
 - **Globals**: (100s of clients -> FECs are clients too!)
 - *Producer-Consumer*
 - Global parameters
 - (beam current, energy, state, etc.)
 - Time synchronization ('**SYSTIME**' global)
 - Data are tagged with timestamp (synchronized to ~100 ms)
 - Cycle Number
 - Data are tagged with cycle (pulse) number.

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- Why multicast?
 - Server-specific
 - *Publish-Subscribe (Publish-Consume?)*
 - Any Time Server can deliver data per multicast.
 - Client can request multicast
 - Apply **CM_NETWORK** to the transport mode.
 - Server can coerce multicast
 - Client required to access a property via multicast (happens under the hood).
 - Apply **CA_NETWORK** to access in property registration.
 - Examples:
 - Video, Many MSK servers (pulses, waveforms).

[Release 4.5.2]

- Short history of Multicast @DESY
 - **TINE Release 3.xx** first control system to use multicast (2000, 2001)
 - 3 groups:
 - 238.1.1.0 (globals : producer-consumer)
 - 238.1.1.1 (server-specific: publish-subscribe)
 - 238.1.1.2 (address query)

[Release 4.5.2]

- Short history of Multicast @DESY
 - TINE Release 4.xx (2007)
 - many groups:
 - 238.1.1.2 (address query)
 - Can't know the host address of the respondent before he responds.
 - IPv4 address a.b.c.d -> 238.1.c.d
 - e.g. 131.169.c.d -> 238.1.c.d
 - Each host has a well defined multicast group.

[Release 4.5.2]

- Short history of Multicast @DESY
 - *What about 192.168.c.d ?*
 - Various ideas to use the 2nd byte
 - When to use '238.2.c.d'
 - Multicast maps also make use of the 2nd byte.
 - Summer 2014: decision to '*do it right*' (or at least '*do it better*').

[Release 4.5.2]

- Short history of Multicast @DESY
 - TINE Release 4.5.2 (2015)
 - IPv4 host address
 - a.b.c.d -> 239.b.c.d
 - covers conflicts among
 - 131.169.c.d
 - 192.168.c.d
 - 141.34.c.d
 - 10.1.c.d
 - '239' -> multicasts stay on site!

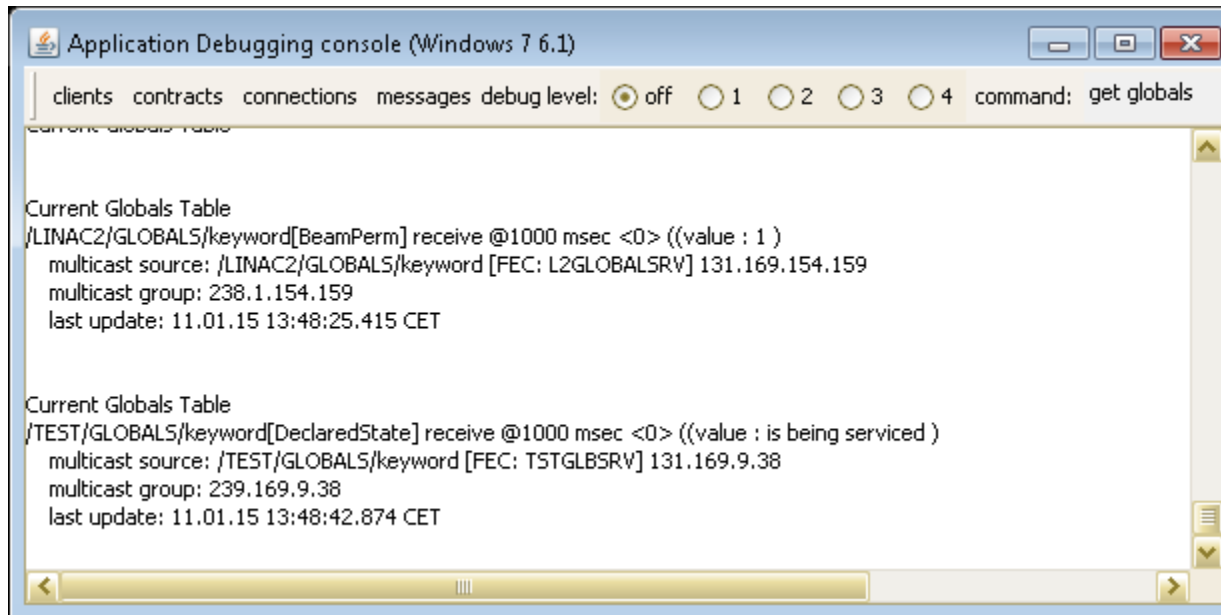
[Release 4.5.2]

- **Status:**
 - All servers using 4.5.2 (and above) use modern rules by default.
 - To override:
 - API: `SetUseMCastLegacyRules(TRUE);`
 - env: `set TINE_LEGACY_MULTICAST=TRUE`
 - Clients learn from server address which multicast group to join.
 - @DESY: globals servers for all contexts configured to stick with legacy rules for now.
 - except: 'TEST'
 - MSK is in control of the 'CYCLER' for most contexts
 - except: 'FLASH', 'XFEL'.
 - @MCS-1: Device servers appear to be using the latest `tine.jar` but not the latest `tine32.dll`, `tine64.dll` ...

Release 4.5.2

- Diagnostics:

- Console command 'get globals' now reports the multicast group:



```
Application Debugging console (Windows 7 6.1)
clients contracts connections messages debug level:  off  1  2  3  4 command: get globals

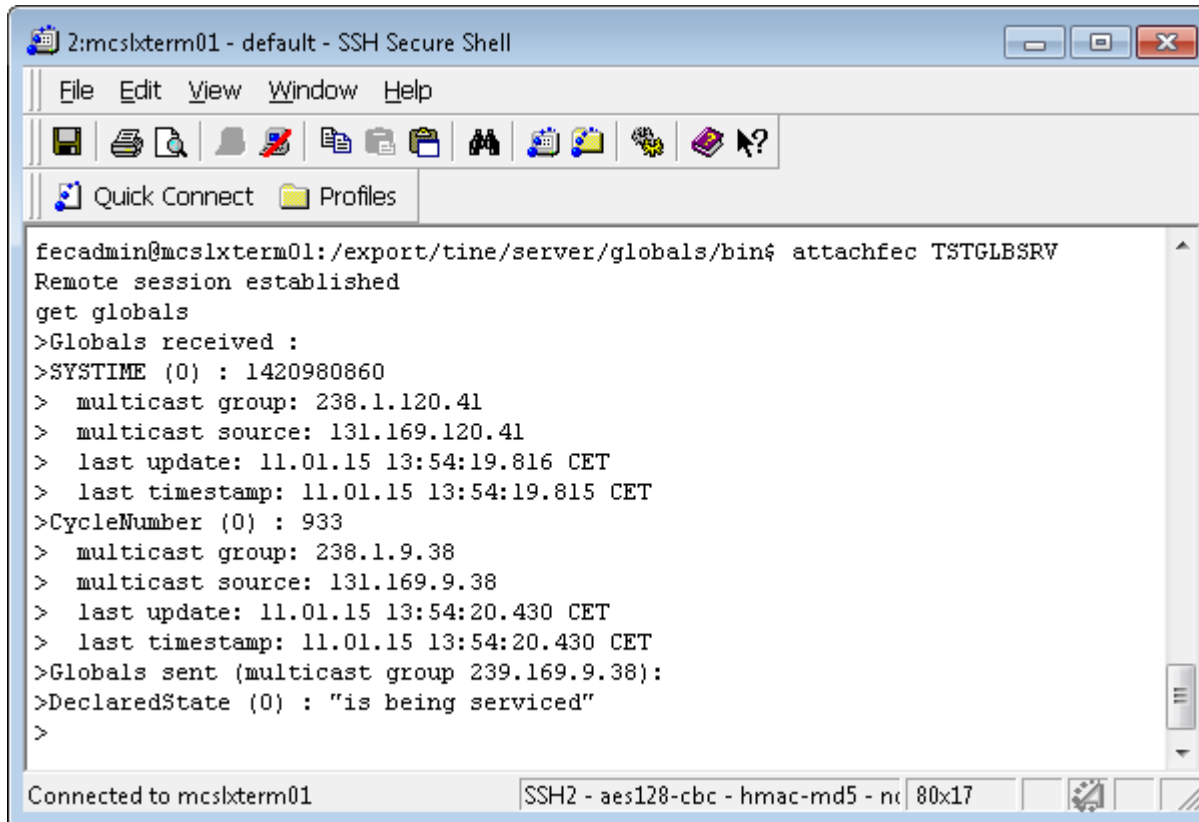
Current Globals Table
/LINAC2/GLOBALS/keyword[BeamPerm] receive @1000 msec <0> ((value : 1 )
multicast source: /LINAC2/GLOBALS/keyword [FEC: L2GLOBALSRV] 131.169.154.159
multicast group: 238.1.154.159
last update: 11.01.15 13:48:25.415 CET

Current Globals Table
/TEST/GLOBALS/keyword[DeclaredState] receive @1000 msec <0> ((value : is being serviced )
multicast source: /TEST/GLOBALS/keyword [FEC: TSTGLBSRV] 131.169.9.38
multicast group: 239.169.9.38
last update: 11.01.15 13:48:42.874 CET
```

**Client-side
application
(Instant Client)**

Release 4.5.2

- Diagnostics:
 - Console command 'get globals' now reports the multicast group:



```
fecadmin@mcslxterm01:/export/tine/server/globals/bin$ attachfec TSTGLBSRV
Remote session established
get globals
>Globals received :
>SYSTIME (0) : 1420980860
> multicast group: 238.1.120.41
> multicast source: 131.169.120.41
> last update: 11.01.15 13:54:19.816 CET
> last timestamp: 11.01.15 13:54:19.815 CET
>CycleNumber (0) : 933
> multicast group: 238.1.9.38
> multicast source: 131.169.9.38
> last update: 11.01.15 13:54:20.430 CET
> last timestamp: 11.01.15 13:54:20.430 CET
>Globals sent (multicast group 239.169.9.38):
>DeclaredState (0) : "is being serviced"
>
```

**Server-side
(/TEST/GLOBALS
via attachfec)**