TINE Release 4.0 News
(Sept 29, 2014: That was the month that was !)

"What a long, strange trip it's been …."

Release 4.5.0

- **Bug-fixes and Embellishments**
  - *Save/Restore*
    - now works with most data types !
      - CF_STRUCT, CF_IMAGE, CF_SPECTRUM, …
      - Note: property needs to registered 'attribute' style:
        - input data type/size = output data type/size
      - Useful for e.g. property "Trace.Reference".
    - At restore time: the DTYPE input object (usually 'din') contains the *last saved time* as the dTimeStamp field.

Release 4.5.0

- **Bug-fixes and Embellishments**
  - Link 'access' attribute 'CA_FIXTIMESTAMP'
    - AttachLink("/XFEL/SomeServer/SomeDevice", "SomeProperty", dout, din, CA_READ|CA_FIXTIMESTAMP, 1000, cb, CM_DATACHANGE);
    - If you can't trust the incoming timestamp (for whatever reason).
  - Or use API 'FixLnkTimeStamp(int lid)' after the fact.
  - Various issues with CF_INT64 have been repaired.

Release 4.5.0

- **Bug-fixes and Embellishments**
  - Connectivity issues resolved:
    - A couple of problems involving 'CM_DATACHANGE' when the data have NOT changed:
      - Ungraceful close of client process + restart of same process within a heartbeat (usually 1 minute).
        - Server likely sees same client (with same port) re-attaching for no apparent reason.
    - Single-element redirected Multi-Channel link
      - Often sees 2 X success + no datachange prior to 'fire-callback' decision: -> no callback.

Release 4.5.0

- **Bug-fixes and Embellishments**
  - Connectivity issue improved:
    - A terminated Multi-Channel-Array Link will delay termination for 2 seconds.
      - Issue: last single element link closes will signal the parent MCA link to close
      - But: what if just selected another 'item' in a GUI combo box?
        - Don't want to stop the parent link only to re-learn and reopen it milliseconds later !

Release 4.5.0

- **Bug-fixes and Embellishments**
  - Security:
    - ACLs:
      - Check group membership once/hour if groups are used as 'user' security.
        - e.g. "mhfe"
  - "SRVLOGFILE", "BINLOGFILE"
    - was open to whatever the logged in user could access.
    - No Heartbleed !
      - Via API or Environment can set access to
        - LOG_SCAN_NONE, LOG_SCAN_FEC (default), or LOG_SCAN_FULL
      - LOG_SCAN_FEC: just the FEC_HOME and FEC_LOG directories and sub-directories

Release 4.5.0

- **Bug-fixes and Embellishments**
  - "SRVRESET" now accepts an 'idle time' in seconds prior to re-initialization.

  - Many other tweaks (as Karol) concerning persistence over calls to EQM dispatch handler.

Release 4.5.0

- **IPv6 'ready'**
  - Libs now use IPv6 socket API
    - Still have IPv4 everywhere
    - Not yet 'tested' under real IPv6 conditions !
  - Major stop toward TINE 5.0
  - *Still to come:* new multicast scheme implementation.
    - If IP address of sender is "a.b.c.d" (ipv4) then his multicast group is "239.b.c.d".

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- Utilities: Asynchronous Listener
  - Used in LabView, MatLab, IDL, tineRepeater, etc.
    - i.e. where callbacks are awkward or impractical.
  - Adjust 'idle time' according to payload
    - Larger payload -> smaller idle time
      - Don't want discarded links (especially those with large payloads) to needlessly be sent and received.
  - Assign system and user data stamps in API calls.

Release 4.4.5

- doocs2tine matters …
  - Context decoration
    - **Rule 1:** Subsystem decorated contexts will remove the subsystem at registration if subsystem not explicitly given.
    - **Rule 2:** "_TEST", "_SIM" map to ".TEST", ".SIM"
    - e.g. "TTF2.RF" -> context "TTF2", subsystem "RF"
    - *Exceptions:* "context.TEST", "context.SIM", "context.EXT"
    - Recently confronted with "XFEL_SIM.DIAG"

Release 4.4.5

- doocs2tine matters …
  - clearing alarms on a DOOCS server
    - Server clears his alarms at CAS @ boot
    - If this succeeds then:
      - Yes there is a CAS for me!
      - => don't 'remove alarms from local list' until CAS has read them. (Remember this is a 'pull' system).
        - If 'username' = the FEC name of CAS then he has read the alarms and I can clear them!
    - DOOCS server don't like to see the FEC Name so:
      - If talking to doocs server: change the assigned user name back to the process owner.
      - Oops! Problem.
        - alarms are never cleared from the list!
    - Solution: CAS ALWAYS uses the FEC Name as user name!

Release 4.4.5

- doocs2tine matters …
  - The doocs history data types are now mapped to CF_HISTORY.

Release 4.4.5

- Event Triggers:
  - SendEventTriggerEx() now takes an extra parameter : 'options'

```
int SendEventTriggerEx ( char *  dev,
                         char *  cmt,
                         int     triggerLevel,
                         int     triggerTime,
                         int     rangeStart,
                         int     rangeStop,
                         int     rangeMax,
                         int     options
                       )
```

API break!

Sends a Post-Mortem (i.e. event) Trigger to the designated Post-Mortem Server.

By making this call, a configured Post-Mortem Server can be sent a trigger initializing the collection of data for the data set specified.

Parameters:

devname specifies, at a minimum, the event trigger to be acquired. If given in this manner (typically from a server process), the standard event server for the registered context of the server process is assumed. e.g. "bpm-intlk" specifies the trigger "bpm-intlk" for the standard event server for the registered context of the server issuing the event trigger. Otherwise an event-trigger appending full device name is assumed, e.g. "/PETRA/EVENTSTORE/bpm-intlk".

cmt is any accompanying comment text which should be associated with the post-mortem event. This is typically the reason for the event archive (which modules signalled the alarm, or tripped the interlock, etc.).

triggerLevel is the level at which the post-mortem event is initialized. Typically a value of "1" should be used to signify beginning at the first step. If a value of "-1" is passed, the post-mortem event will forward the trigger to all other post-mortem servers indentifying itself as the initializer. Other post-mortem servers which may or may not have missed the event can then either react or not according to some pre-coded event critiera. A value of "0" has no effect, and values greater than "1" will step the data recording sequence at a higher (usually unknown) level.

triggerTime can be used to specify a specific time of trigger if desired. A value of '0' will signal the event system to obtain a trigger time from the event server. This is the generally the best policy.

rangeStart provides the beginning of a system-stamp (or time-stamp) range to use when obtaining data from a server's local history. A positive value signals the system to treat the input as a system stamp specification. A negative value or '0' signals the system to apply treat the rangeStart value as an offset to the provided 'triggerTime' as to use the input as a time stamp specification.

rangeStop provides the end of a system-stamp (or time-stamp) range to use when obtaining data froma a server's local history. If rangeStop is less that rangeStart, then the value given is used as an increment to apply to the given rangeStart (with a maximum cutoff at 1000). In other words, if rangeStop < rangeStart then rangeStop = rangeStart + rangeStop.

rangeMax provides a maximum number of sequence entries to obtain over the range provided. A negative value will negate the range specifcations entirely. A value of '0' will signal the system to use a default maximum (typically = 100).

options provides additional 'flags' to define trigger criteria. Currently, the only available option is EVNT_TRIGGER_USE_USERSTAMP which signals the event server to focus on the 'user' data stamp (and not the system stamp) in the range specifications.

Returns:
0 if successful, otherwise a TINE completion code which can be interpreted by a call to GetLastLinkError().

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```
// send trigger 'bpmintlk' to event server for MY context
cc = SendEventTriggerEx("bpmintlk",cmt,1,0,0,0,-1,0);

// the above is equivalent to the simple call
cc = SendEventTrigger("bpmintlk",cmt,1);

...

// send trigger '/PETRA/EVENTSTORE/rfcavity1' i.e. context is specified in the trigger
cc = SendEventTriggerEx("/PETRA/EVENTSTORE/rfcavity1",cmt,1,0,0,0,-1,0);

...

// send trigger '/PETRA/EVENTSTORE/pscintlk' i.e. context is specified in the trigger
// use 'now' as the time of trigger and search from now minus 5 seconds to now + 5 secs and
// look for system stamp = '123456789', and others incrementing by '1' each step for up to '1000' steps.
cc = SendEventTriggerEx("/PETRA/EVENTSTORE/pscintlk",cmt,1,0,123456789,1,1000,0);

...

// send trigger '/PETRA/EVENTSTORE/pscintlk' i.e. context is specified in the trigger
// use '141148397' as the time of trigger and search from 141148392 to 141148402 and
// look for system stamp = '123456789', and others incrementing by '1' each step for up to '1000' steps.
cc = SendEventTriggerEx("/PETRA/EVENTSTORE/pscintlk",cmt,1,1411483977,123456789,1,1000,0);

...

// send trigger '/PETRA/EVENTSTORE/pscintlk' i.e. context is specified in the trigger
// use '141148397' as the time of trigger
// look for UTC time stamp = '141148397' minus '60', and others incrementing by '1' each step for up to '100' steps.
cc = SendEventTriggerEx("/PETRA/EVENTSTORE/pscintlk",cmt,1,1411483977,-60,1,100,0);

...

// send trigger '/PETRA/EVENTSTORE/pscintlk' i.e. context is specified in the trigger
// use '141148397' as the time of trigger and search from 141148392 to 141148402 and
// look for user stamp = '12345', and others incrementing by '1' each step for up to '1000' steps.
cc = SendEventTriggerEx("/PETRA/EVENTSTORE/pscintlk",cmt,1,1411483977,12345,1,1000,EVNT_TRIGGER_USE_USERSTAMP);
```

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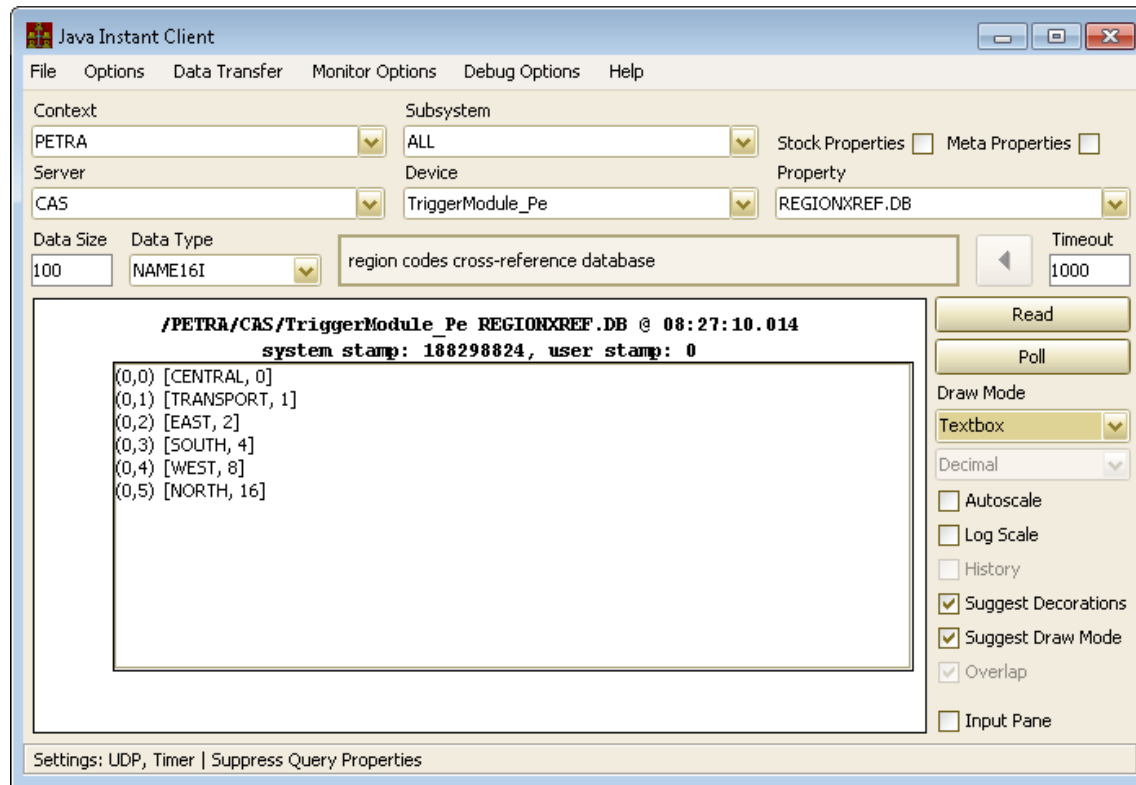**Alarm Regions: there!**
(but configuration and naming conventions are important !)

Release 4.4.0: Alarm Regions

- server configures or *learns* region information for its devices
  - API, devices.csv, or fec.xml
  - Ask CAS at startup
- device alarm can then carry region information.

Release 4.4.0: Alarm Regions

- CAS manages region information

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Release 4.4.0: Alarm Regions

- Either:
  - 1) the server programmer/responsible person *configures the region information*
  - 2) a *naming convention* is adhered to !

Release 4.5.0

- New Stock Properties:
  - "DEVREGION"

Release 4.5.0

- Cool things to be reported on later:
  - IDL interface to TINE
    - Soeren Grunewald (HASYLAB)
  - Incredibly fast data acquisition
    - Long-term bursts @ 200 Hz
    - Marina Nikolova (EMBL)