



TINE Release 5.x.x News

(Sep. 19, 2019: That was the year that was !)

“What a long, strange trip it’s been”

[Release 5.0.0]

- Last Release 4 release: 4.6.3.
- Release 4 issues
 - As discussed in collaboration Meeting 2012 ...
 - IPv6 functional in 4.6.3
 - Additional information in protocol headers
 - Client Request Header
 - pid
 - user type
 - specific version fully identified
 - message size -> int32 vs. int16
 - endianness
 - character encoding

[Release 5.0.0]

- Release 4 issues (continued)
 - Additional information in protocol headers (continued)
 - Server Response Header
 - size in elements
 - contract data size (data format already there)
 - aids in resolving CF_DEFAULT
 - message size -> int32 vs. int16
 - endianness
 - character encoding

[Release 5.0.0]

- Release 4 issues (continued)
 - compatibility with C++ (and STL or MFC)
 - (obviously not relevant for java)
 - explicit format codes for ...
 - CF_UINT8, CF_UINT16, CF_UINT32, CF_UINT64
 - auto re-sizing of client side connection table
 - (but not for VxWorks)
 - refactoring
 - some rationalization of variable names
 - so that the core team can trudge through the code more easily.

[Release 5.0.0]

- New Headers => *New Major Release!*
 - Old and New must be able to interact seamlessly!
 - R4 client <-> R5 server
 - will speak R4 and the server understands that !
 - R5 client <-> R4 server
 - either learns from the ENS that it should speak R4
 - or receives 'illegal_protocol' and backs off.
 - And don't forget R5 client <-> R5 server ...

[Release 5.0.0]

- Notes:

- New headers in place

- 'header size' field => extensible in theory

- So far:

- endianness still fixed as *little endian*

- so big endian guys are still always swapping

- encoding still fixed as *ascii*

- property data can do what it wants but

- address names, etc. are still *ascii*

[Release 5.0.0]

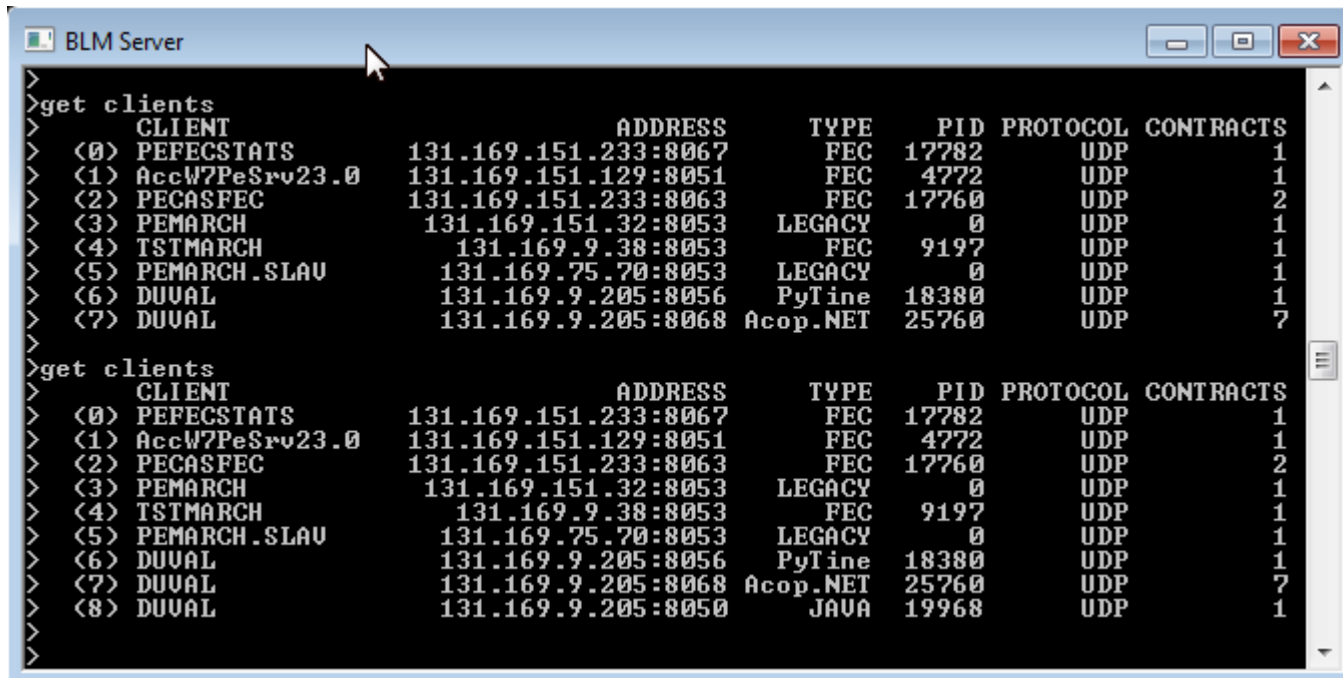
- Solutions ...
 - IPv6 is in place (as of 4.6.3)
 - dual stack if both supported
 - ethernet card can still prefer IPv4

```
fecadmin@mcslxterm01:/export/tine/server/gens/bin$ attachfec FECSIM.MSTR
Remote session established
get clients
v CLIENT ADDRESS TYPE PID PROTOCOL CONTRACTS
v (0) mcslxterm01.20 ::ffff:131.169.9.38|8051 FEC 9337 UDP6 1
v (1) TSTCASFEC ::ffff:131.169.9.38|8071 FEC 9257 UDP6 1
v (2) TSTMARCH ::ffff:131.169.9.38|8053 FEC 9197 UDP6 7
v (3) RGGLOBALSRV ::ffff:131.169.153.213|8063 FEC 25347 UDP6 1
v (4) FECSIM.MSTR ::ffff:131.169.9.38|8056 FEC 9435 UDP6 1
v (5) DUVAL ::ffff:131.169.9.38|8080 CMDLINE 9455 UDP6 1
v
```

Release 5.0.0

Solutions ...

- pid and application type now available at the server side ...
- can trap work-around logic based on application type ...



```
BLM Server
>
>get clients
> CLIENT ADDRESS TYPE PID PROTOCOL CONTRACTS
> (0) PEPECSTATS 131.169.151.233:8067 FEC 17782 UDP 1
> (1) AccW7PeSrv23.0 131.169.151.129:8051 FEC 4772 UDP 1
> (2) PECASFEC 131.169.151.233:8063 FEC 17760 UDP 2
> (3) PEMARCH 131.169.151.32:8053 LEGACY 0 UDP 1
> (4) TSTMARCH 131.169.9.38:8053 FEC 9197 UDP 1
> (5) PEMARCH.SLAU 131.169.75.70:8053 LEGACY 0 UDP 1
> (6) DUVAL 131.169.9.205:8056 PyTine 18380 UDP 1
> (7) DUVAL 131.169.9.205:8068 Acop.NET 25760 UDP 7
>
>get clients
> CLIENT ADDRESS TYPE PID PROTOCOL CONTRACTS
> (0) PEPECSTATS 131.169.151.233:8067 FEC 17782 UDP 1
> (1) AccW7PeSrv23.0 131.169.151.129:8051 FEC 4772 UDP 1
> (2) PECASFEC 131.169.151.233:8063 FEC 17760 UDP 2
> (3) PEMARCH 131.169.151.32:8053 LEGACY 0 UDP 1
> (4) TSTMARCH 131.169.9.38:8053 FEC 9197 UDP 1
> (5) PEMARCH.SLAU 131.169.75.70:8053 LEGACY 0 UDP 1
> (6) DUVAL 131.169.9.205:8056 PyTine 18380 UDP 1
> (7) DUVAL 131.169.9.205:8068 Acop.NET 25760 UDP 7
> (8) DUVAL 131.169.9.205:8050 JAVA 19968 UDP 1
>
```


[Release 5.0.0]

- Solutions ...
 - The '**CF_DEFAULT**' problem

Client says: I've got 128 bytes and I'll take whatever data type you want to send ...

Server says: Here's a Text string with 15 characters

Client now thinks: the contract should be for 15 text characters ...

- Release 4 returned the data type and some number of bytes
- Release 5 returns the data type and the proper contract size (64 bytes and not 15 !)

[Release 5.0.0]

■ Solutions ...

- Much fewer macro #defines
 - e.g. out_of_range is now part of an enum
 - no more clashes with STL or MFC.
- C++
 - Can make use of a namespace wrapper or not ...

```
namespace tine  
{  
    #include "tine.h"  
}
```

```
int cc = tine::link_not_open;  
cc = tine::TErrorList::link_blacklisted;  
int f = tine::TFormat::CF_BITFIELD64;  
tine::DTYPE dout;  
DTYPEZERO(dout);  
int bfmt = BFMT(tine::CF_FLOAT);  
  
printf("error string : %s\n", tine::cc2str(cc));  
printf("dout fmt : %s\n", tine::GetFormatAsString(dout.dFormat));  
  
tine::SystemInit(TRUE);  
tine::RegisterEquipmentModule("MyServer", "MYEQM", 1, NULL, NULL, NU
```

[Release 5.0.0]

- Command line tools with more explicit error messages ...

```
tget /TEST/ABCDF/device66 Property23  
attempted tget: target server = "/TEST/ABCDF/device66" property =  
"Property23" (format: DEFAULT, size: 0)
```

Error: the requested target address could not be found (request will be blacklisted)

```
tget /PETRA/VAC.ION_PUMP/OL153.77 P  
attempted tget: target server = "/PETRA/VAC.ION_PUMP/OL153.77"  
property = "P" (format: DEFAULT, size: 0)
```

Error: requested property is not exported by the server or service (request will be blacklisted)

[Release 5.0.0]

■ Solutions

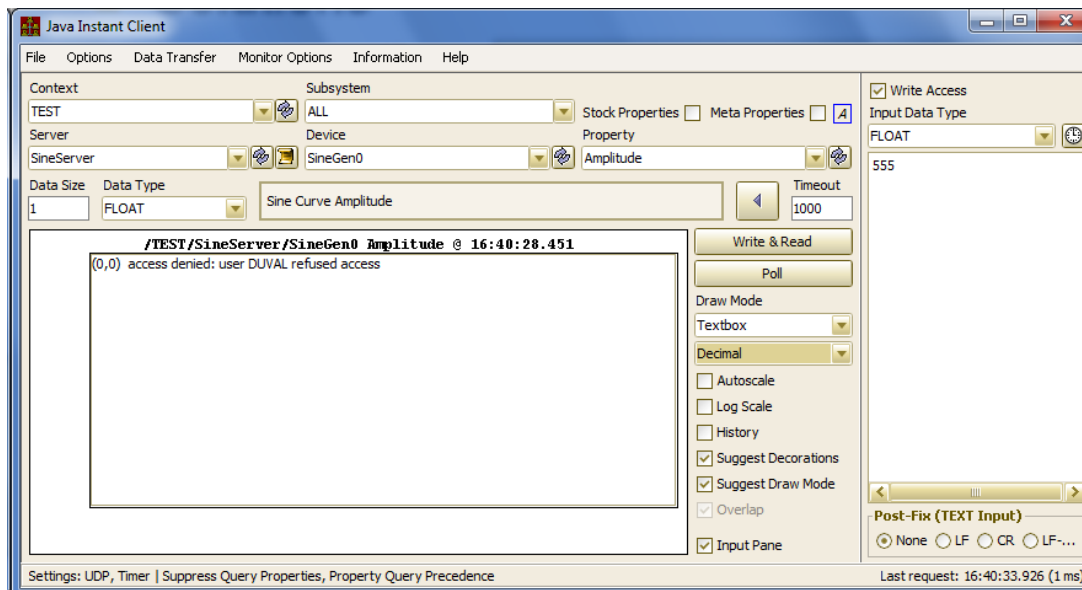
- new routine: `SetAllowAutoGrowConnectionTable(true/false)`
 - default = true
 - still a good idea to fix this at startup
 - not available for VxWorks ...
- access denied: more explicit info

Release 5.0.0

- access denied ...
 - more explicit information

```
tputget /TEST/SineServer/SineGen7 Amplitude 444.3
attempted tputget: target server = "/TEST/SineServer/SineGen7" property = "Amplitude" (format: double,
size: 1)
```

Error: call was refused by the security subsystem

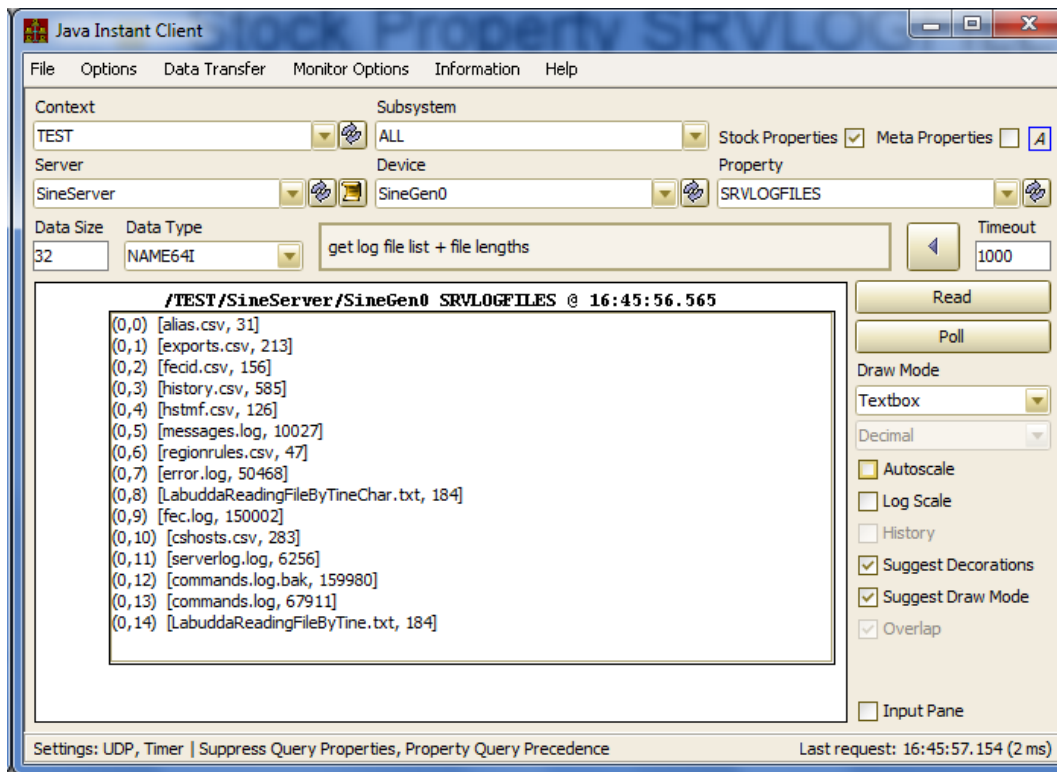


[Release 5.0.0]

- Longstanding ‘permissions’ problem with cache and manifest files on linux/mac ...
 - /var/lib/tine/cache/
 - All files need to be written with everyone allowed !
 - Problem with e.g. tget + local repeater when local repeater started from a different user !

Release 5.0.0

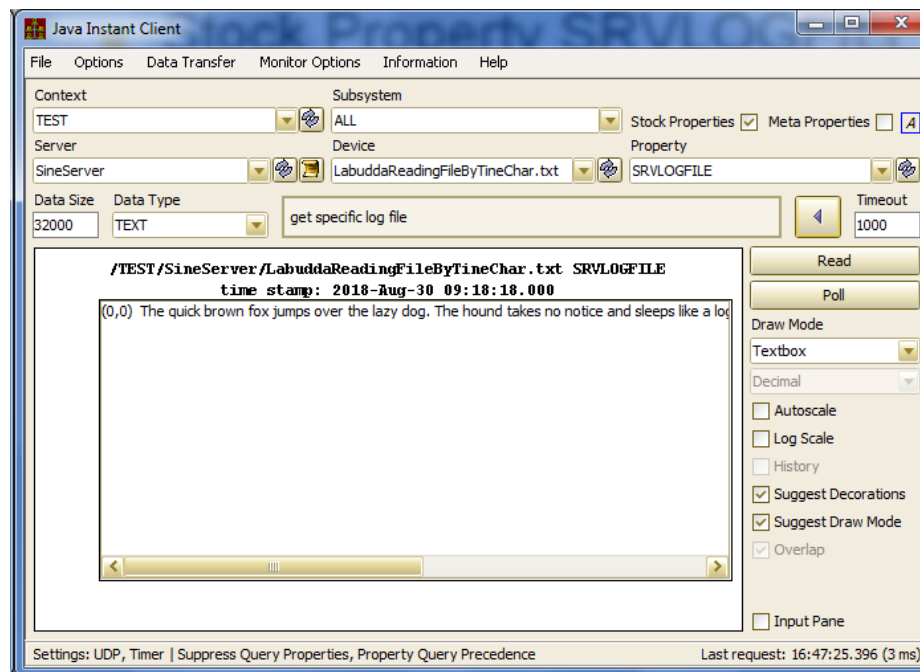
- Stock Property SRVLOGFILES
 - Overloaded with format NAME64I



File name and
Size in bytes ...

Release 5.0.0

- Stock Property SRVLOGFILE
 - Overloaded with format Int32 : gives current file size
 - Sets timestamp to last modified time.



[Release 5.0.0]

- Upgrade strategy
 - As much testing with Unit Servers as possible
 - R5 Unit Client with R4 Unit Server
 - R4 Unit Client with R5 Unit Server
 - Adiabatic testing during Machine Studies
 - (I owe Gajendra several rounds of his favorite beverage ...)
 - several hiccups ...

[Release 5.0.0]

- Long standing bug found related to large TCP/IP transfers
 - Client to server as input !
 - R4 : response header is only the 1st two bytes
 - R5: response header is now 48 bytes.
 - Need the get the complete header before knowing how big the entire message is.
 - R4: It's possible to just get 1 byte of the 1st two but this almost never happens
 - S. Weisse could see this happening on the client receiving large data sets from server ...
 - Ancient bug from the ISOLDE days, but fixed server -> client several years ago.
 - Alas: not properly fixed client -> server !
 - R5: it's much easier not to get all of the 48 bytes in the header.

**Jaka's calendar
server ...**

Remember: TCP is a stream and not a datagram ...

[Release 5.0.0]

- Forgotten logic bug ...
 - MCA single-element coercion came into being @ Release 4.0.11
 - R4 header carried the protocol level in 1 short
 - and thus can infer Release 4.
 - can carry the minor release and revision in another
 - And thus can infer 0 and 11 and test: *is >= 4.0.11*
 - Unfortunately :
 - $5 > 4$ but
 - $0.0 < 0.11$
- As of build id 5509:
 - Server: just test if \geq Release 4
 - Client: send minor release = revision = 99 to any Release 4 server ...

[Release 5.0.0]

- No real changes in the API
 - But always a good idea to recompile anything that uses time headers.
- Lessons learned
 - A few new unit tests in the Unit Server
 - There now a java Unit Client but
 - No Unit Server ! (anybody?)
 - When you shake things up, you might alter the time signature a bit and expose race conditions that were otherwise never an issue ...

[Release 5.0.0]

- Acop.NET status
 - Lots of new Acop.NET controls ...