

TINE CORE MEETING

23.1.2018

4.6.3

- default **HISTORY_HOME** is now the subdirectory 'HISTORY' under the FEC_HOME directory ...
 - existing HISTORY files moved if HISTORY_HOME is not otherwise set.
 - `GetLastStoredData()` – normally only used internally - now supports most data types.
- collapsed Alarms now terminate properly on a java server.

Bug-fix of the month ...

```
if (WaitForSystemMutex(hLinkTblMutex,gSystemTick*MUTEX_WAIT_AUGMENT) != 0) return -semapho
] if (nConnectionTableEntries == 0 && NameServerLoaded)
{ /* in case all active connections were closed and we're starting over ? */
nConnectionTableEntries = 1;
}
/* check to see if in connection Table */
] for (i=0; i<nConnectionTableEntries; i++)
{
if (conTbl[i] == NULL) continue; /* should be impossible ! */
if (i > 0 && slot == 0 &&
conTbl[i]->heartbeat < HBT_SUB_PENDING &&
conTbl[i]->needsNotification == FALSE &&
(time_t)conTbl[i]->starttime < (t - 2) && /* should be covered by the next check */
(time_t)conTbl[i]->timereq < (t - 2) && /* must be canceled for at least 2 secs */
] BASEMODE(conTbl[i]->mode) == CM_CANCEL)
{
slot =
```

Archiver : 'Reset Server' (called by DBM) cleans out the current connection table, reloads the database and 'starts over' ...

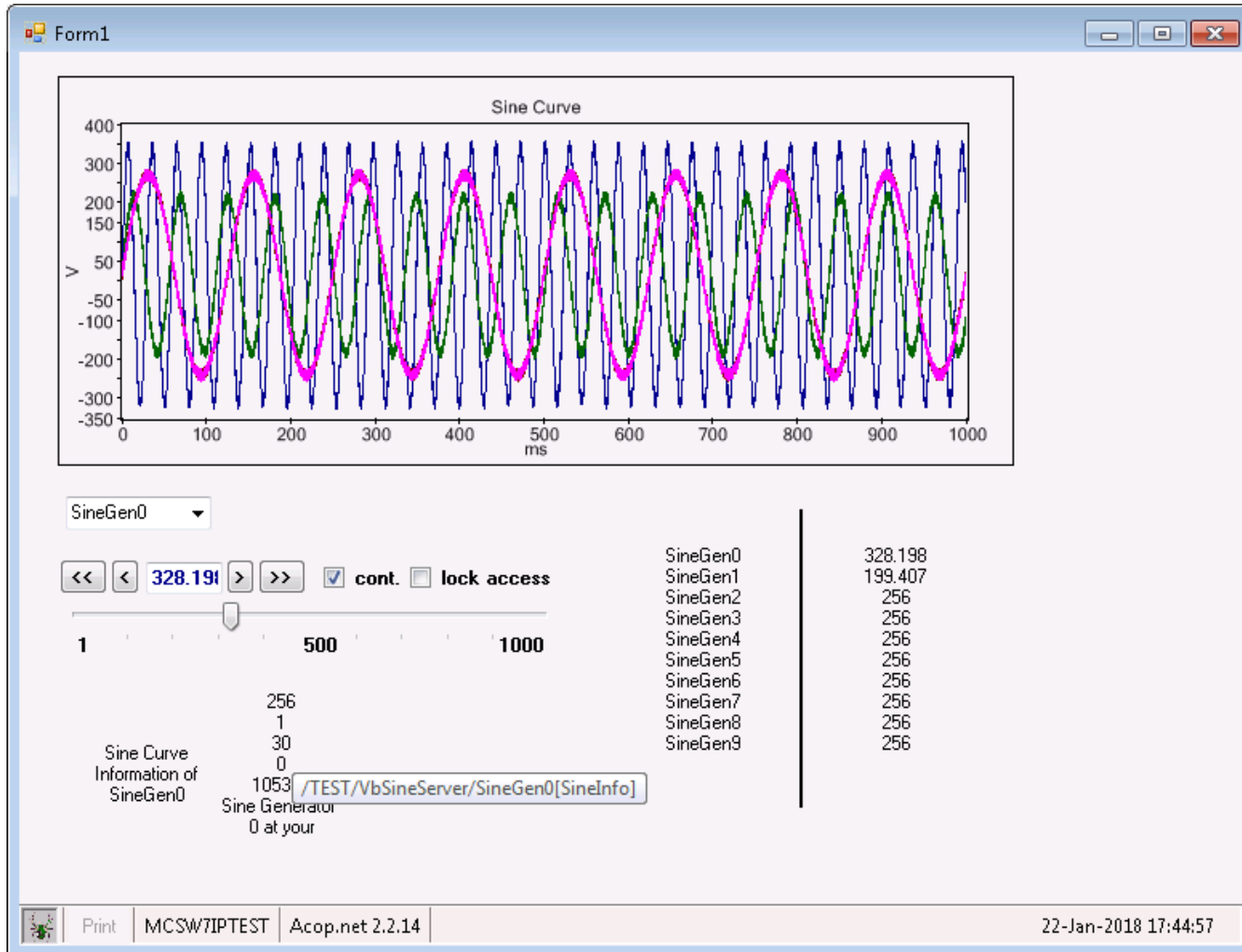
And it set nConnectionTableEntries = 0 !

4.6.3 and IPv6

- Much testing and tweaking
 - ...
- Works fine!
 - UDP6, TCP6, STREAM6, Multicast ...
- New environment variable **TINE_IPV6**
 - for testing ...
- Dual Stack :
 - two ways to go ...

```
#ifndef NETSRV_ADDR
# define NETSRV_ADDR "239.1.1.2"
#endif
#ifndef NETSRV_ADDR6
# define NETSRV_ADDR6 "ff05::0:0:0:0:1:1:2"
#endif
#define NETSRV_ADDR_LEGACY "238.1.1.2"
extern char *gtNetSrvAddr;
#ifndef MCAST_ADDR
# define MCAST_ADDR "239.1.1.1"
#endif
#ifndef MCAST_ADDR6
# define MCAST_ADDR6 "ff05::"
#endif
#define MCAST_ADDR_LEGACY "238.1.1.1"
extern char *gtMCastAddr;
#ifndef GCAST_ADDR6
# define GCAST_ADDR6 "ff05::"
#endif
#ifndef GCAST_ADDR
# define GCAST_ADDR "239.1.1.0"
#endif
#define GCAST_ADDR_LEGACY "238.1.1.0"
extern char *gtMCastAddrLegacy;
#ifndef MCAST_TTL
# define MCAST_TTL 16
#endif
```

Client talking IPv6 and IPv4 ...



4.6.3 and IPv6

- Either use distinct sockets for AF_INET and AF_INET6
or ...
- Use `addr_any` and turn `IPV6_V6ONLY` off !

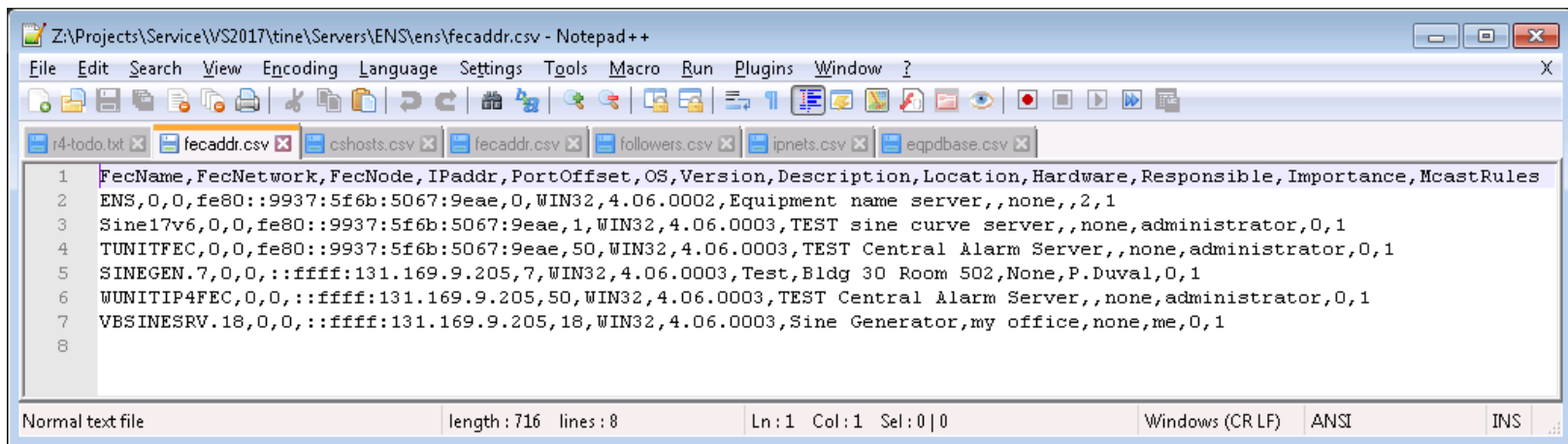
```
void setInAddrAny(SCKADR *sckadr)
{
    int fam = sckadr->ss_family;
    struct sockaddr_in *sa4 = (struct sockaddr_in *)sckadr;
    struct sockaddr_in6 *sa6 = (struct sockaddr_in6 *)sckadr;
    if (sckadr == NULL) return;
    if (fam == AF_INET) sa4->sin_addr.s_addr = INADDR_ANY;
    else sa6->sin6_addr = in6addr_any;
    return;
}

#ifdef FIX_IPV6_V6ONLY
    optval = 0; optlen = sizeof(optval);
    if (setsockopt(*s, IPPROTO_IPV6, IPV6_V6ONLY, (char*)&optval, optlen)) soerr("IPV6_V6ONLY");
#endif
```

- Same socket handles either kind of traffic ...

4.6.3 and IPv6

- ENS database (running on IPv6) looks like :



```
Z:\Projects\Service\VS2017\tine\Servers\ENS\ens\fecaddr.csv - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
r4-todo.txt x fecaddr.csv x cshosts.csv x fecaddr.csv x followers.csv x ipnets.csv x eqpbase.csv x
1 FecName,FecNetwork,FecNode,IPaddr,PortOffset,OS,Version,Description,Location,Hardware,Responsible,Importance,McastRules
2 ENS,0,0,fe80::9937:5f6b:5067:9eae,0,WIN32,4.06.0002,Equipment name server,,none,,2,1
3 Sine17v6,0,0,fe80::9937:5f6b:5067:9eae,1,WIN32,4.06.0003,TEST sine curve server,,none,administrator,0,1
4 TUNITFEC,0,0,fe80::9937:5f6b:5067:9eae,50,WIN32,4.06.0003,TEST Central Alarm Server,,none,administrator,0,1
5 SINEGEN.7,0,0,::ffff:131.169.9.205,7,WIN32,4.06.0003,Test,Bldg 30 Room 502,None,P.Duval,0,1
6 WUNITIP4FEC,0,0,::ffff:131.169.9.205,50,WIN32,4.06.0003,TEST Central Alarm Server,,none,administrator,0,1
7 VBSINESRV.18,0,0,::ffff:131.169.9.205,18,WIN32,4.06.0003,Sine Generator,my office,none,me,0,1
8
Normal text file length: 716 lines: 8 Ln: 1 Col: 1 Sel: 0|0 Windows (CR LF) ANSI INS
```

- IPv4 clients get an IPv4 address
 - (without the leading “::ffff:”)
- IPv6 clients get an IPv6 address (a real one or a mapped IPv4 address
 - (with the leading “::ffff:”)

4.6.3 and IPv6

- What to do when a dual-stack IPv6 server registers itself with the ENS ?
 - The ENS sees the IPv6 address
 - There is no systematic IPv4 address assignment (e.g.) :
 - Link-local IPv6 Address : fe80::7c89:716f:a87f:38da%11(Preferred)
 - IPv4 Address. : 131.169.9.205(Preferred)
 - Proposal:
 - do an interface scan and discover the bound IPv6 and IPv4 preferred addresses
 - Use IPv6 address (if TINE_IPV6=TRUE) and send the IPv4 address along as well ...

4.6.3 and IPv6

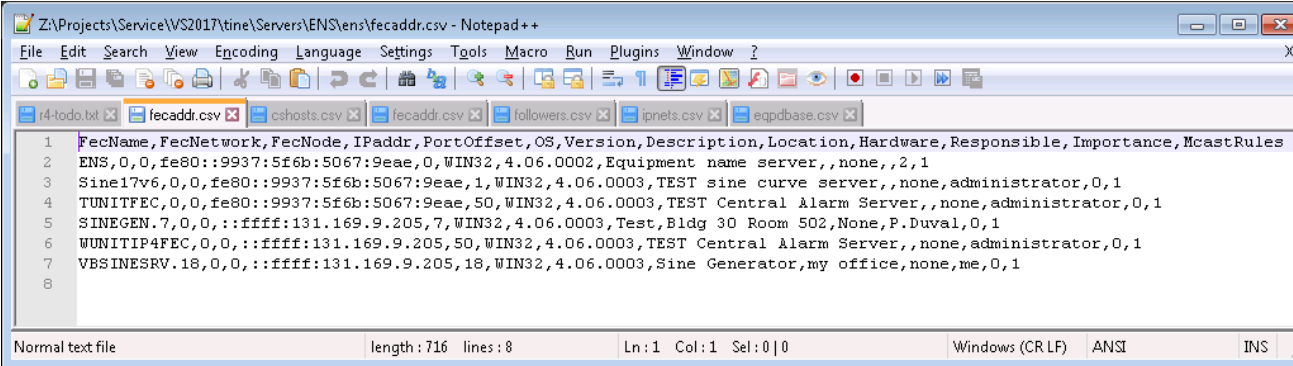
- A server sends the ENS the following at startup :

```
typedef struct
{
    char fecName[FEC_NAME_SIZE]; /**< FEC name */
    FecNetAdr netAdr;            /**< network addr info */
    FecLclAdr lclAdr;           /**< local addr info (pipe, mmf) */
    char strAdr[ADDR_SIZE_IPV6]; /**< addr info as string */
    SINT32 portOffset;          /**< port offset */
    SINT32 inetProtocol;        /**< inet protocol type */
    SINT32 tineProtocol;        /**< tine protocol level */
    SINT32 addrFlags;           /**< optional address information */
} FecAddrStruct;
```

- Use the 'lclAdr' field (8 free bytes and empty for plug-and-play registration) to carry the IPv4 address info !

4.6.3 and IPv6

- Modernize the fecaddr.csv header. Currently:



```
1 FecName, FecNetwork, FecNode, IPAddr, PortOffset, OS, Version, Description, Location, Hardware, Responsible, Importance, McastRules
2 ENS, 0, 0, fe80::9937:5f6b:5067:9eae, 0, WIN32, 4.06.0002, Equipment name server, , none, , 2, 1
3 Sine17v6, 0, 0, fe80::9937:5f6b:5067:9eae, 1, WIN32, 4.06.0003, TEST sine curve server, , none, administrator, 0, 1
4 TUNITFEC, 0, 0, fe80::9937:5f6b:5067:9eae, 50, WIN32, 4.06.0003, TEST Central Alarm Server, , none, administrator, 0, 1
5 SINEGEN.7, 0, 0, ::ffff:131.169.9.205, 7, WIN32, 4.06.0003, Test, Bldg 30 Room 502, None, P. Duval, 0, 1
6 WUNITIP4FEC, 0, 0, ::ffff:131.169.9.205, 50, WIN32, 4.06.0003, TEST Central Alarm Server, , none, administrator, 0, 1
7 VBSINESRV.18, 0, 0, ::ffff:131.169.9.205, 18, WIN32, 4.06.0003, Sine Generator, my office, none, me, 0, 1
8
```

- FecNetwork and FecNode -> IpxAddr and MacAddr
 - Once used in the ‘good old days’ of IPX ...
- IPAddr -> synonym for IPv4addr
- IPv6addr => NEW Column !
- In the above
 - ‘IPAddr’ will be the ‘IPv6Addr’ column
 - ‘IPv4Addr’ will appear and contain e.g. ‘131.169.9.205’ etc.

4.6.3 and IPv6

- Java code needs to be tweaked but 'almost' works as it is now ...
- Acop.NET news ?

Still To Do ...

- Release 5.0 ...