NSM2

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Trigger/DAQ workshop at Yonsei

NSM2 version 1997

- **Stricter version control**
  - **New feature:** minimum required version = 1997
  - Anything will lower version will not start from the beginning
  - In daq_slc master branch, deployed through cvmfs
  - Nobody so far complained / questioned

- **No real bug fix yet**
  - Only small update in log file output and log file name
  - Still crashing time to time, but it is expected

Three known problems

- **nsmd2 start-up problem**
  - When multiple nodes are started simultaneously
  - Occurs mostly in COPPERs

- **timeout handling**
  - "timeout" message often seen in nsmd2 log file when nsmd2 crashes

- **corrupt data**
  - corrupt data received by master nsmd2, remote host may have a problem, but the receiver host aborts

How to reproduce (1)

- ● a tmux session for
  >10 COPPERs + a ROPC

- ● start nsmd2 at once

- ● check nsminfo2 / log files

at a certain probability,
some nsmd2 does not start up

```
nakao@cdc01(890)% nsminfo2 -p 8120
NSM network v1.9.97 started at 2019.08.27-10:47:22 (10m43s ago) gen=1
NSMD daemon v1.9.98 started at 2019.08.27-10:47:22 (10m43s ago) priority=1
MASTER(1) at cdc01, DEPUTY(9) at cpr2001, I'm the MASTER nsmd
NSMD shmkey = 8120, ip = 192.168.10.1, pid = 27775
      created 10m43s ago, last updated 0s ago (up-to-date)
CON 2   nid=-1  pid=-1    sock=6  rtim=10m43s ev=10m39s host=cpr2010
CON 3   nid=-1  pid=-1    sock=7  rtim=10m43s ev=10m39s host=cpr2007
CON 4   nid=-1  pid=-1    sock=8  rtim=10m43s ev=10m39s host=cpr2003
CON 5   nid=-1  pid=-1    sock=9  rtim=10m43s ev=10m39s host=cpr2006
CON 6   nid=-1  pid=-1    sock=10 rtim=10m43s ev=10m39s host=cpr2011
CON 7   nid=-1  pid=-1    sock=11 rtim=10m43s ev=10m39s host=cpr2002
CON 8   nid=-1  pid=-1    sock=12 rtim=10m43s ev=10m38s host=cpr2005
CON 9   nid=-1  pid=-1    sock=13 rtim=10m43s ev=10m38s host=cpr2001 D
CON 10  nid=-1  pid=-1    sock=14 rtim=10m43s ev=10m38s host=cpr2013
CON 11  nid=-1  pid=-1    sock=15 rtim=10m43s ev=10m38s host=cpr2009
CON 12  nid=-1  pid=-1    sock=16 rtim=10m43s ev=10m38s host=cpr2012
CON 13  nid=-1  pid=-1    sock=17 rtim=10m43s ev=10m38s host=cpr2008
CON 14  nid=-1  pid=-1    sock=18 rtim=10m43s ev=10m38s host=cpr2004
nakao@cdc01(891)%
```

```
nakao@cpr2001(895)% cd daq/nsm2/nakao-1998-sl5/nsm2/daemon
nakao@cpr2001(896)% ./nsmd2 -p 8120 -h $HOST

nakao@cpr2002(895)% cd daq/nsm2/nakao-1998-sl5/nsm2/daemon
nakao@cpr2002(896)% ./nsmd2 -p 8120 -h $HOST

nakao@cpr2003(895)% cd daq/nsm2/nakao-1998-sl5/nsm2/daemon
nakao@cpr2003(896)% ./nsmd2 -p 8120 -h $HOST

nakao@cpr2004(895)% cd daq/nsm2/nakao-1998-sl5/nsm2/daemon
nakao@cpr2004(896)% ./nsmd2 -p 8120 -h $HOST

nakao@cpr2005(895)% cd daq/nsm2/nakao-1998-sl5/nsm2/daemon
nakao@cpr2005(896)% ./nsmd2 -p 8120 -h $HOST

nakao@cpr2006(895)% cd daq/nsm2/nakao-1998-sl5/nsm2/daemon
nakao@cpr2006(896)% ./nsmd2 -p 8120 -h $HOST

nakao@cpr2007(895)% cd daq/nsm2/nakao-1998-sl5/nsm2/daemon
nakao@cpr2007(896)% ./nsmd2 -p 8120 -h $HOST

nakao@cpr2008(895)% cd daq/nsm2/nakao-1998-sl5/nsm2/daemon
nakao@cpr2008(896)% ./nsmd2 -p 8120 -h $HOST

nakao@cpr2009(895)% cd daq/nsm2/nakao-1998-sl5/nsm2/daemon
nakao@cpr2009(896)% ./nsmd2 -p 8120 -h $HOST

nakao@cpr2010(895)% cd daq/nsm2/nakao-1998-sl5/nsm2/daemon
nakao@cpr2010(896)% ./nsmd2 -p 8120 -h $HOST

nakao@cpr2011(895)% cd daq/nsm2/nakao-1998-sl5/nsm2/daemon
nakao@cpr2011(896)% ./nsmd2 -p 8120 -h $HOST

nakao@cpr2012(895)% cd daq/nsm2/nakao-1998-sl5/nsm2/daemon
nakao@cpr2012(896)% ./nsmd2 -p 8120 -h $HOST

nakao@cpr2013(895)% cd daq/nsm2/nakao-1998-sl5/nsm2/daemon
nakao@cpr2013(896)% ./nsmd2 -p 8120 -h $HOST

nakao@cdc01(896)% cd daq/nsm2/nakao-1998-sl6/nsm2/daemon
nakao@cdc01(897)% ./nsmd2 -p 8120 -h $HOST

[cpr] 0:tcsh*                                    cdc01 Aug27日 10:56:17
```

NSM2 version 1998

- **Fix 1 — momentary deputy**

  - Master/deputy rapidly changes during many reassignments

  - Sometimes nsmd2 receives a message from another nsmd2 which was a master/deputy but not any more

  - This message is invalid, and nsmd2 was aborted when receiving it

  - But this message can be simply ignored, since the reason is known

- **Fix 2 — select timeout**

  - `nsmd_tcprecv` is called when there is in-coming event in `select`

  - `nsmd_tcprecv` calls `select` again before every `read` (sound redundant, but it is in a loop for `EINTR/EAGAIN`)

  - return code of the second `select` was not correctly checked — `read` is called even when `select` times out

  - `EINTR` should not happen since no signal is expected

  - Probably `EAGAIN` happens (resource temporarily unavailable)

Status of NSM2 1998

- Fixes are made, and the simultaneous startup works better
- But there was still some start-up failure
- Then the KEK site power shutdown interrupted the work, and not yet resumed

Plan

- ASAP: finish nsm2-1998 debug and commit into git
- Minimum required version will be kept to be 1997
- Plan for further debug
  - Analyze the log files of 1997/1998 since log messages were improved
  - If not happening, analyze the already collected huge NSM2 log
- If problem is found and fixed, version 1999 will be made
- If nsm2 1999 works fine, update it to nsm2 2000 (version 2.000) with minimum required version = 1999