# ptp4l config:

*[global]*

*sanity\_freq\_limit 0*

*step\_threshold 0.000002*

*tx\_timestamp\_timeout 10*

*twoStepFlag 1*

*slaveOnly 1                             See Note 1. Purposefully running in slaveOnly mode. It can be done from -s option of ptp4l as well*

 *[TI] Recommend to not force BC to be slave.*

*#logMinPdelayReqInterval 0
#logMinDelayReqInterval 0           Keeping all of these as default (commented), and same on all devices in the domain as mentioned in ptp4l man page. These settings were causing announce timeouts due to different values in devices.
#logSyncInterval 0
#logAnnounceInterval 0*

*priority1 128*

*priority2 128*

*[eth2]*

*boundary\_clock\_jbod 1*

*egressLatency 726*

*ingressLatency 186*

*delay\_mechanism P2P*

*network\_transport L2*

*fault\_reset\_interval 0*

*[eth3]*

*boundary\_clock\_jbod 1*

*egressLatency 726*

*ingressLatency 186*

*delay\_mechanism P2P*

*network\_transport L2*

*fault\_reset\_interval 0*

Setup:

**eth2**: ptp4l master running on Ubuntu with priority 1, priority 2 = 127

**eth3**: A proper PTP device with priority1, priorty2 = 126 (it is highest priority master)

[TI] For eth2, do you force it to be master? If so, it should not be the case

If you do not force any device to be master, then this should be the final operation states.

The PTP device with priority1, priority2=126 will be the Grand Master.

The BC (eth3) will be slave and the PTP clock will be synchronized to the GrandMaster

The BC (eth2) will be master and use the same PTP clock as Eth3

The PTP4l running on Ubuntu will be slave and synchronized to the BC PTP clock which is synchronized to GrandMaster

If you force the ptp4l running on Ubuntu to be master only, then

The BC (eth2) will be slave and the PTP clock will be synchronized to the Ubuntu PTP4l

The BC (eth3) will be master and use the same PTP clock as Eth2

The PTP device with priority1, priority2=126 will be slave and synchronized to the BC PTP clock which is synchronized to Ubuntu PTP4l

# ptp4l log:

root@am57xx-evm:~# ptp4l -2 -P -f oc-eth2-eth3.cfg -s -m

ptp4l[949.797]: selected /dev/ptp1 as PTP clock

ptp4l[949.891]: port 1 (eth2): INITIALIZING to LISTENING on INIT\_COMPLETE                                                    ** eth2 state set to LISTENING**

ptp4l[949.970]: port 2 (eth3): INITIALIZING to LISTENING on INIT\_COMPLETE                                                     ** eth3 state set to LISTENING**

ptp4l[949.971]: port 0 (/var/run/ptp4l): INITIALIZING to LISTENING on INIT\_COMPLETE

ptp4l[950.449]: port 2: new foreign master 001d7f.fffe.109e41-1

ptp4l[950.506]: port 1: new foreign master 705a0f.fffe.41c000-1

[  950.529183] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0 [TI] Known EMAC issues, but they should not hurt the overall operations

ptp4l[950.526]: port 1: received SYNC without timestamp

[  951.529223] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[951.526]: port 1: received SYNC without timestamp

ptp4l[952.449]: selected best master clock 001d7f.fffe.109e41 on port 2

ptp4l[952.449]: port 2 (eth3): LISTENING to UNCALIBRATED on RS\_SLAVE                                              ** eth3 state LISTENING to UNCALIBRATED**

[  952.529276] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[952.528]: port 1: received SYNC without timestamp

ptp4l[953.451]: master offset        -33 s0 freq  -19526 path delay       221

[  953.529303] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[953.526]: port 1: received SYNC without timestamp

ptp4l[954.451]: master offset        -35 s2 freq  -19528 path delay       221

ptp4l[954.451]: port 2 (eth3): UNCALIBRATED to SLAVE on MASTER\_CLOCK\_SELECTED                        ** eth3 state UNCALIBRATED To SLAVE, i.e.,**

**PTP Sync started from the master on eth3**

ptp4l[954.507]: selected best master clock 001d7f.fffe.109e41 on port 2

ptp4l[954.507]: port 1: master state recommended in slave only mode

ptp4l[954.507]: port 1: defaultDS.priority1 probab[  954.529337] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ly misconfigured

ptp4l[954.532]: port 1: received SYNC without timestamp

ptp4l[955.451]: master offset        -36 s2 freq  -19564 path delay       221

[  955.529376] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[955.526]: port 1: received SYNC without timestamp

ptp4l[956.451]: master offset          0 s2 freq  -19539 path delay       221

[  956.529421] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[956.526]: port 1: received SYNC without timestamp

ptp4l[956.710]: port 1: announce timeout

ptp4l[956.710]: selected best master clock 001d7f.fffe.109e41 on port 2

ptp4l[957.451]: master offset         13 s2 freq  -19526 path delay       221

[  957.529460] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0              ** When both masters connected, PRUETH driver**

**reads timestamp as 0 from ICSS for the “not-selected” port.**

**See iep\_rx\_timestamp() in prueth.c and iep.c in kernel driver**

**code**

ptp4l[957.526]: port 1: received SYNC without timestamp                            ** Then, the resulting error in ptp4l daemon. This two errors should be**

**explained if there is any side effects.**

ptp4l[958.450]: master offset         15 s2 freq  -19520 path delay       221

[  958.529493] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[958.526]: port 1: received SYNC without timestamp

ptp4l[959.450]: master offset          2 s2 freq  -19528 path delay       221

[  959.529535] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[959.526]: port 1: received SYNC without timestamp

ptp4l[960.450]: master offset         -8 s2 freq  -19538 path delay       221

ptp4l[960.507]: selected best master clock 001d7f.fffe.109e41 on port 2

ptp4l[960.507]: port 1: master state recommended in slave only mode         ** Since daemon is in slaveOnly mode, I guess two ports and**

**slaveOnly mode are not compatible, though it seems**

**to be just a warning log**

ptp4l[960.507]: port 1: defaultDS.priority1 probab ly misconfigured              ** red-herring. See function port\_slave\_priority\_warning() in slave.c**

 **[ER] BC should not be configured as Slave only.**

[  960.529571] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[960.530]: port 1: received SYNC without timestamp

ptp4l[961.450]: master offset        -15 s2 freq  -19547 path delay       221

[  961.529610] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[961.526]: port 1: received SYNC without timestamp

ptp4l[962.450]: master offset         11 s2 freq  -19526 path delay       221

[  962.529615] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[962.526]: port 1: received SYNC without timestamp

[  963.133289] prueth pruss2\_eth eth3: Link is Down

ptp4l[963.163]: port 2: link down

ptp4l[963.164]: port 2 (eth3): SLAVE to FAULTY on FAULT\_DETECTED (FT\_UNSPECIFIED)         ** eth3 state SLAVE To FAULTY,**

**when eth3 cable is unplugged**

ptp4l[963.240]: selected best master clock 705a0f.fffe.41c000 on port 1

ptp4l[963.240]: running in a temporal vortex

ptp4l[963.240]: port 1 (eth2): LISTENING to UNCALIBRATED on RS\_SLAVE                                   ** eth2 state LISTENING to UNCALIBRATED,**

**as high priority master on eth3 is gone away**

ptp4l[964.520]: master offset    1701202 s0 freq  -19525 path delay     45028

ptp4l[965.520]: master offset    1702067 s1 freq  -18660 path delay     45028

ptp4l[966.520]: master offset       -235 s2 freq  -18895 path delay     45029

ptp4l[966.520]: port 1 (eth2): UNCALIBRATED to SLAVE on MASTER\_CLOCK\_SELECTED             ** eth2 state UNCALIBRATED To SLAVE, i.e.,**

**PTP Sync started from the master on eth2**

ptp4l[967.520]: master offset          8 s2 freq  -18723 path delay     45032

ptp4l[968.520]: master offset       -137 s2 freq  -18865 path delay     45044

ptp4l[969.520]: master offset        -87 s2 freq  -18856 path delay     45044

ptp4l[970.520]: master offset        -52 s2 freq  -18847 path delay     45056

ptp4l[971.521]: master offset         76 s2 freq  -18735 path delay     45057                                ** NO errors when only single master is connected**

ptp4l[972.520]: master offset         38 s2 freq  -18750 path delay     45059

ptp4l[973.520]: master offset        138 s2 freq  -18639 path delay     45059

ptp4l[974.520]: master offset       -118 s2 freq  -18853 path delay     45063

ptp4l[975.521]: master offset         71 s2 freq  -18700 path delay     45068

ptp4l[976.521]: master offset        -80 s2 freq  -18829 path delay     45063

ptp4l[977.521]: master offset        -56 s2 freq  -18829 path delay     45059

[  978.199453] prueth pruss2\_eth eth3: Link is Up - 100Mbps/Full - flow control off

ptp4l[978.202]: port 2: link up

ptp4l[978.290]: port 2 (eth3): FAULTY to LISTENING on INIT\_COMPLETE                                ** eth3 state FAULTY  to LISTENING To,**

**when eth3 cable is plugged in**

ptp4l[978.521]: master offset         54 s2 freq  -18736 path delay     45063

ptp4l[979.521]: master offset         49 s2 freq  -18725 path delay     45069

ptp4l[980.521]: master offset        -91 s2 freq  -18850 path delay     45070

ptp4l[981.521]: master offset         10 s2 freq  -18777 path delay     45074

ptp4l[982.521]: master offset         52 s2 freq  -18732 path delay     45074

ptp4l[983.521]: master offset       -110 s2 freq  -18878 path delay     45072

ptp4l[984.521]: master offset        205 s2 freq  -18596 path delay     45060

ptp4l[985.521]: master offset        -97 s2 freq  -18837 path delay     45060

ptp4l[985.758]: port 2: announce timeout

ptp4l[985.758]: selected best master clock 705a0f.fffe.41c000 on port 1

ptp4l[985.758]: running in a temporal vortex

ptp4l[986.521]: master offset        -38 s2 freq  -18807 path delay     45057

ptp4l[987.521]: master offset        -97 s2 freq  -18877 path delay     45057

ptp4l[988.521]: master offset        -26 s2 freq  -18835 path delay     45039

ptp4l[989.521]: master offset        229 s2 freq  -18588 path delay     45039

ptp4l[990.521]: master offset        -78 s2 freq  -18826 path delay     45039

ptp4l[991.521]: master offset         18 s2 freq  -18754 path delay     45034

ptp4l[991.779]: port 2: announce timeout

ptp4l[991.779]: selected best master clock 705a0f.fffe.41c000 on port 1

ptp4l[991.779]: running in a temporal vortex                                                                  **  this error is observed for eth2 master only.**

**See linuxptpt  clock\_update\_slave() in clock.c:**

**Seems to be  cause by originCurrentUTCOffset field in PTP announce message, which is 37 from this master;**

**while it is 36 from other master, where this error is not reported (See Note 2). This error could be master specific.**

**Any more details here to rectify would be helpful.**

ptp4l[992.521]: master offset        -13 s2 freq  -18779 path delay     45038

ptp4l[993.521]: master offset        -19 s2 freq  -18789 path delay     45038

ptp4l[994.521]: master offset         -4 s2 freq  -18780 path delay     45038

ptp4l[995.521]: master offset        -35 s2 freq  -18812 path delay     45033

ptp4l[996.521]: master offset          2 s2 freq  -18786 path delay     45038

ptp4l[997.521]: master offset         53 s2 freq  -18734 path delay     45038

ptp4l[998.522]: master offset        -33 s2 freq  -18804 path delay     45038

ptp4l[999.445]: port 2: announce timeout

ptp4l[999.445]: selected best master clock 705a0f.fffe.41c000 on port 1

ptp4l[999.445]: running in a temporal vortex

ptp4l[999.522]: master offset         -3 s2 freq  -18784 path delay     45038

ptp4l[1000.522]: master offset         46 s2 freq  -18736 path delay     45038

ptp4l[1001.522]: master offset         -4 s2 freq  -18772 path delay     45044

ptp4l[1002.522]: master offset        -31 s2 freq  -18800 path delay     45032

ptp4l[1003.522]: master offset        -85 s2 freq  -18864 path delay     45038

ptp4l[1004.522]: master offset         42 s2 freq  -18762 path delay     45038

ptp4l[1005.266]: port 2: new foreign master 001d7f.fffe.109e41-1[ 1005.277136] prueth pruss2\_eth eth3: invalid timestamp for rx msg 0

ptp4l[1005.280]: port 2: received SYNC without timestamp

ptp4l[1005.522]: master offset         36 s2 freq  -18755 path delay     45037

ptp4l[1006.134]: port 2: announce timeout

ptp4l[1006.135]: selected best master clock 705a0f.fffe.41c000 on port 1

ptp4l[1006.135]: running in a temporal vortex

[ 1006.278098] prueth pruss2\_eth eth3: invalid timestamp for rx msg 0

ptp4l[1006.275]: port 2: received SYNC without timestamp

ptp4l[1006.522]: master offset         13 s2 freq  -18768 path delay     45004

ptp4l[1007.267]: selected best master clock 001d7f.fffe.109e41 on port 2

ptp4l[1007.267]: port 1: master state recommended in slave only mode

ptp4l[1007.267]: port 1: defaultDS.priority1 probably misconfigured

ptp4l[1007.267]: port 1 (eth2): SLAVE to LISTENING on RS\_MASTER                       ** eth2 state SLAVE  to LISTENING, to switch to the high**

**priority master on eth3. Switching took 30 seconds**

ptp4l[1007.267]: port 2 (eth3): LISTENING to UNCALIBRATED on RS\_SLAVE           ** eth3 state LISTENING to UNCALIBRATED**

[ 1007.531360] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1007.528]: port 1: received SYNC without timestamp

ptp4l[1008.269]: master offset   -1733134 s0 freq  -18767 path delay       221

[ 1008.531335] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1008.528]: port 1: received SYNC without timestamp

ptp4l[1009.268]: master offset   -1733862 s1 freq  -19495 path delay       221

[ 1009.531411] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1009.528]: port 1: received SYNC without timestamp

ptp4l[1010.268]: master offset          6 s2 freq  -19489 path delay       221

ptp4l[1010.269]: port 2 (eth3): UNCALIBRATED to SLAVE on MASTER\_CLOCK\_SELECTED        ** eth3 state UNCALIBRATED To SLAVE, i.e.,**

**PTP Sync started from the master on eth3**

[ 1010.531413] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1010.528]: port 1: received SYNC without timestamp

ptp4l[1011.269]: master offset         -5 s2 freq  -19498 path delay       221

[ 1011.531477] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1011.528]: port 1: received SYNC without timestamp

ptp4l[1012.269]: master offset        -10 s2 freq  -19505 path delay       221

[ 1012.531516] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1012.528]: port 1: received SYNC without timestamp

ptp4l[1013.269]: master offset         -3 s2 freq  -19501 path delay       221

[ 1013.531555] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1013.528]: port 1: received SYNC without timestamp

ptp4l[1013.814]: port 1: announce timeout

ptp4l[1013.814]: selected best master clock 001d7f.fffe.109e41 on port 2

ptp4l[1014.269]: master offset          8 s2 freq  -19491 path delay       221

[ 1014.531590] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1014.528]: port 1: received SYNC without timestamp

ptp4l[1015.269]: master offset         -5 s2 freq  -19501 path delay       221

[ 1015.531631] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1015.528]: port 1: received SYNC without timestamp

ptp4l[1016.269]: master offset        -11 s2 freq  -19509 path delay       221

ptp4l[1016.507]: selected best master clock 001d7f.fffe.109e41 on port 2

ptp4l[1016.507]: port 1: master state recommended in slave only mode

ptp4l[1016.507]: port 1: defaultDS.priority1 pro[ 1016.531646] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

bably misconfigured

ptp4l[1016.532]: port 1: received SYNC without timestamp

ptp4l[1017.269]: master offset          4 s2 freq  -19497 path delay       221

[ 1017.531760] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1017.528]: port 1: received SYNC without timestamp

ptp4l[1018.269]: master offset          4 s2 freq  -19496 path delay       221

[ 1018.531726] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1018.528]: port 1: received SYNC without timestamp

ptp4l[1019.269]: master offset          0 s2 freq  -19499 path delay       221

[ 1019.531829] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1019.529]: port 1: received SYNC without timestamp

ptp4l[1019.824]: port 1: announce timeout

ptp4l[1019.824]: selected best master clock 001d7f.fffe.109e41 on port 2

ptp4l[1020.269]: master offset          4 s2 freq  -19495 path delay       222

[ 1020.531800] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1020.528]: port 1: received SYNC without timestamp

ptp4l[1021.269]: master offset         -3 s2 freq  -19500 path delay       221

[ 1021.531905] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1021.529]: port 1: received SYNC without timestamp

ptp4l[1022.269]: master offset         -3 s2 freq  -19501 path delay       221

ptp4l[1022.507]: selected best master clock 001d7f.fffe.109e41 on port 2

ptp4l[1022.507]: port 1: master state recommended in slave only mode

ptp4l[1022.507]: port 1: defaultDS.priority1 pro[ 1022.531876] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

bably misconfigured

ptp4l[1022.530]: port 1: received SYNC without timestamp

ptp4l[1023.270]: master offset         -2 s2 freq  -19501 path delay       221

[ 1023.531940] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1023.529]: port 1: received SYNC without timestamp

ptp4l[1024.270]: master offset        -13 s2 freq  -19513 path delay       221

[ 1024.531982] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1024.529]: port 1: received SYNC without timestamp

ptp4l[1025.270]: master offset        -12 s2 freq  -19516 path delay       221

[ 1025.532019] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1025.529]: port 1: received SYNC without timestamp

ptp4l[1026.270]: master offset         -8 s2 freq  -19515 path delay       221

[ 1026.532048] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1026.529]: port 1: received SYNC without timestamp

[ 1026.706337] prueth pruss2\_eth eth2: Link is Down

ptp4l[1026.740]: port 1: link down

ptp4l[1026.740]: port 1 (eth2): LISTENING to FAULTY on FAULT\_DETECTED (FT\_UNSPECIFIED)          ** eth2 state LISTENING To FAULTY,**

**when eth2 cable is unplugged**

ptp4l[1026.820]: selected best master clock 001d7f.fffe.109e41 on port 2

ptp4l[1027.270]: master offset         -2 s2 freq  -19512 path delay       221

ptp4l[1028.270]: master offset          2 s2 freq  -19508 path delay       221

ptp4l[1029.270]: master offset         -2 s2 freq  -19512 path delay       221

ptp4l[1030.270]: master offset         -7 s2 freq  -19517 path delay       221

ptp4l[1031.270]: master offset         -9 s2 freq  -19521 path delay       221                       ** NO errors when only single master is connected**

ptp4l[1032.272]: master offset        -10 s2 freq  -19525 path delay       221

ptp4l[1033.272]: master offset          4 s2 freq  -19514 path delay       221

ptp4l[1034.272]: master offset         -4 s2 freq  -19521 path delay       221

ptp4l[1035.272]: master offset         -2 s2 freq  -19520 path delay       222

ptp4l[1036.272]: master offset         -1 s2 freq  -19520 path delay       221

[ 1036.782868] prueth pruss2\_eth eth2: Link is Up - 100Mbps/Full - flow control off

ptp4l[1036.784]: port 1: link up

ptp4l[1036.870]: port 1 (eth2): FAULTY to LISTENING on INIT\_COMPLETE                   ** eth2 state FAULTY  to LISTENING To,**

**when eth2 cable is plugged in**

ptp4l[1037.272]: master offset         -4 s2 freq  -19523 path delay       221

[ 1037.532496] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1037.529]: port 1: received SYNC without timestamp

ptp4l[1038.272]: master offset          7 s2 freq  -19513 path delay       221

ptp4l[1038.507]: port 1: new foreign master 705a0f.fffe.41c000-1

[ 1038.532530] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1038.529]: port 1: received SYNC without timestamp

ptp4l[1039.272]: master offset         19 s2 freq  -19499 path delay       221

[ 1039.532633] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1039.529]: port 1: received SYNC without timestamp

ptp4l[1040.272]: master offset         -3 s2 freq  -19515 path delay       221

[ 1040.532605] prueth pruss2\_eth eth2: invalid timestamp for rx msg 0

ptp4l[1040.529]: port 1: received SYNC without timestamp

**Note 1**:

When running without slaveOnly flag (and without ptp4l option -s), errors “master state recommended in slave only mode” are not observed. Also, when both ports are connected, the port where low priority master is connected (eth2) changes state to MASTER (instead of LISTENING), and starts sending out Sync and Announce messages. These messages start to affect other PTP masters/slaves on the network. Here, observed that ptp4l master on Ubuntu became slave. This behavior may not be desirable. So, we should use slaveOnly mode.

[TI] We do not support two independent Masters in the system. Instead the BC selects the best master clock in the system and all the other PTP nodes are synchronized to it.

**Note 2**: PTP Frame from eth2 master that give “temporal vortex” error: