Prepared (also subject responsible if other)		No.		
Saurabh Pathak				
Approved	Checked	Date	Rev	Reference
		27-05-2020	Ver1.0	

MOP of External Clock Reference Problem on Huawei Site

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Activity Description

This activity is for E2E troubleshooting and alarm clearance of External Clock Reference Problem.

Attached is the details to be followed. As this need to be followed as guideline.

Alarm Name	External Clock Reference Problem
Alarm Description	The system clock may be unusable if the base station does not obtain the clock reference for a long period of time. As a result, the quality of services of the base station decreases, resulting in handover failure and call drop. In certain cases, the base station cannot provide services.
Possible Causes	1.If the clock reference is GPS clock, the GPS antenna may be faulty or the number of locked GPS satellites may be insufficient. 2.The clock reference is incorrectly configured. 3.If the clock reference is IPCLK, the IP clock link may fail. 4.If the clock reference is line clock, the transmission link between the base station and the clock reference may fail, or the frequency deviation between the clock reference and the local clock may be excessively large. 5.The hardware of the UMPT or main control board is faulty. 6.The clock reference is unavailable due to unacceptable quality. 7.The frequency of the clock reference is unstable

Activity Details

External Clock Reference alarm Information & Checking for corrective action

1. FME receive work order in WFM of GPS alarm as a corrective work order
2. FME accept WO as received/WO acceptance time should be below then 30 Min...
3. FME check the alarm with help of OMC by remote login of BTS and discuss with ZTM and senior engineer about resolution…
4. If possible FME visit site on same day otherwise will plan on next day (Need to verification Required Rigger can access Tower after reached site as per OHS Rules).
5. ZTM will suggest taking required Spare Material…

Site Movement & Spare Arrangement

1. FME arrange key of site from respective Infra partner.
2. FME take required materials to resolve the alarm (As per Remote Login Observation & ZTM suggestion) …
3. Now FME move to site and put WO in Travel state.

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Alarm issue Identification & Rectification

1. When FME reached at site, he put WO in progress state.
2. FME will login to the BTS & check External Clock Reference alarm.

```
ALARM  16950       Fault     Major          SRAN      26262    Hardware
     Sync serial No.  =  34853
          Alarm name  =  External Clock Reference Problem
   Alarm raised time  =  2020-04-22 07:40:37
       Location info  =  Specific Problem=Clock Reference Lost
  Alarm changed time  =  2020-04-26 07:45:51
      Root alarm CSN  =  17065
        Special info  =  RAT_INFO=GL, AFFECTED_RAT=GL, DID=NULL, Cumulative Duration(s)=200
       Special info1  =  AF_G=2G_MAT48, AF_L=MAT48
     Root Cause Flag  =  0
Correlative label type  =  2
                 LCK  =  2102310WYG6TH992054100004236
                 FCK  =  2102310WYG6TH9920541000042a9
                FMCK  =  2102310WYG6TH9920541000042a9
```

Procedure

Check for this alarm on the M2000.
Check whether this alarm is reported on a large number of base stations on the M2000.
Y => This alarm is reported on a large number of base stations due to poor transmission quality or faulty clock source. Go to sub-step b.
N => This alarm is reported only on a few base stations. Go to step 2.

Sub Step a.

Obtain the clock topology, and check the clock transmission link, clock configuration, or clock source as indicated by the possible alarm cause.
Wait 5 to 120 minutes. Check whether the alarm is cleared.
Y => The alarm is cleared. No further action is required.
N => The alarm is not cleared. Go to step 2
b.

Step 1.

Check for the correlated alarm on the M2000.
Check for the correlated alarm of the faulty clock board or port on the M2000.
26121 GPS Antenna Fault
26122 GPS Locked Satellites Insufficient
26120 GPS Clock Output Unavailable
26123 GPS Maintenance Link Failure
26263 IP Clock Link Failure
25800 E1/T1 Loss of Signal
25880 Ethernet Link Fault
25881 MAC Excessive Frame Error Rate
25883 ETHOAM 3AH Local Fault
25884 ETHOAM 3AH Remote Fault
25885 IP Address Conflict
26200 Board Hardware Fault
Y => The correlated alarm exists. Go to sub-step b.
N => The correlated alarm does not exist. Go to step 3.

Sub Step a.

Clear the correlated alarm with recommended actions.
Wait for 5 to 120 minutes. Check whether the alarm is cleared.
Y => The alarm is cleared. No further action is required.

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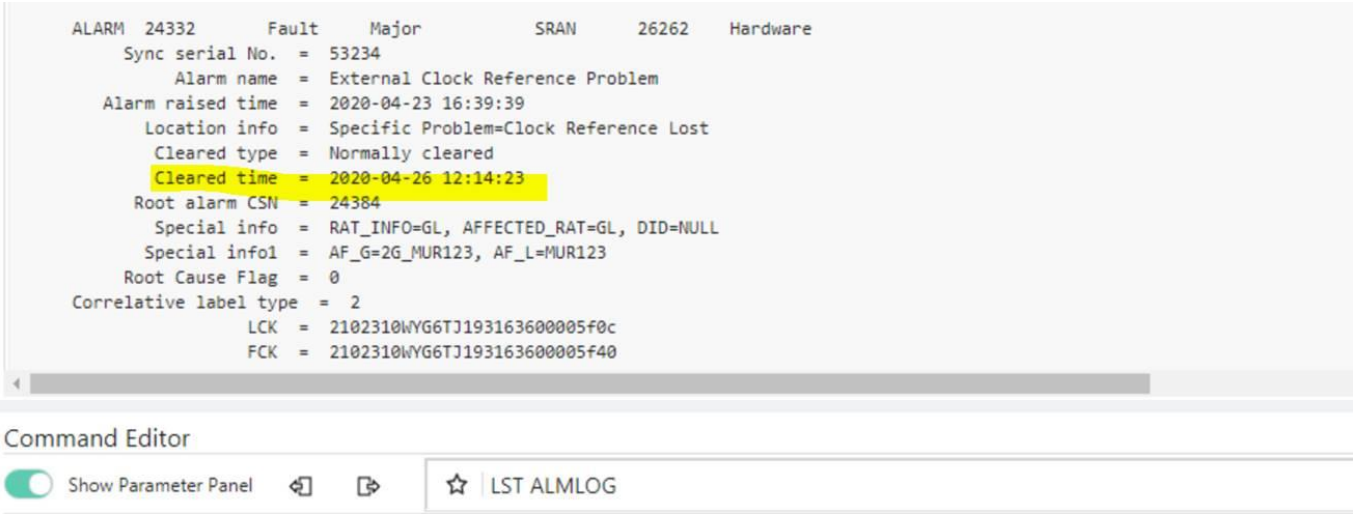
N => The alarm is not cleared. Go to step 3.
b.
Step 2.
Check the clock reference on the basis of configuration plan on the M2000.
Run the MML command **LST CLKMODE** to check whether the clock reference is consistent with the configuration plan.
Y => The clock reference is consistent with the configuration plan. Go to step 4.
N => The clock reference is inconsistent with the configuration plan. Go to sub-step b.



Sub Step a.
Run the MML command **SET CLKMODE** to change the clock reference according to the configuration plan.
Wait for 5 to 120 minutes. Check whether the alarm is cleared.
Y => The alarm is cleared. No further action is required.
b.
Step 3.
N => The alarm is not cleared. Go to step 4.
Locate the cause of the alarm on the M2000.
Locate the cause of the alarm based on the alarm location information.
If "Specific Problem" is "IPCLK Reference Unavailable due to Unacceptable Quality", go to step 5.
If "Specific Problem" is "Excessive Frequency Difference Between Clock Reference and Local Crystal Oscillator" or unstable frequency of the clock reference, go to step 6.
.
If "Specific Problem" is "SYNCETH Clock Reference Unavailable due to Unacceptable Quality", check the quality of synchronous Ethernet clock signals extracted from the upper-level network node.
If "Specific Problem" is "GPS Clock Reference Unavailable due to Unacceptable Quality", check the status of GPS equipment or the environment.
If "Specific Problem" is "TOD Clock Reference Unavailable due to Unacceptable Quality", check the quality of TOD clock signals.
If "Specific Problem" is not one of the preceding causes, Contact Huawei Customer Service Center.
a.
Step 4.
Handle the unavailable IP clock reference problem.
Contact maintenance personnel of the IP Clock server to solve the unavailable IP clock reference problem so that the IP clock reference quality meets the requirements of the base station.

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Wait for 5 to 120 minutes. Check whether the alarm is cleared.

Step 5.
Handle the unavailable IP clock reference problem.
Contact maintenance personnel of the IP Clock server to solve the unavailable IP clock reference problem so that the IP clock reference quality meets the requirements of the base station.
Wait for 5 to 120 minutes. Check whether the alarm is cleared.

Step 6.
Handle the link clock fault caused by transmission link failures.
Contact maintenance personnel of transport equipment to restore the transmission link and hence solve the fault.
Wait for 5 to 120 minutes. Check whether the alarm is cleared.