

A close-up, blue-tinted photograph of several interlocking metal gears, creating a complex mechanical pattern.

Audit v Security

A Loser's Game?

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ITSF2018
International Timing and
Synchronisation Forum

5 - 8 November // Bucharest, Romania

**WORKSHOP ON
SYNCHRONIZATION AND
TIMING SYSTEMS**

Time Matters - Today and Tomorrow

JUNE 18-21, 2018
SAN JOSE, CA
DOUBLETREE SAN JOSE

**IEEE
ComSoc**
IEEE Communications Society



16/11/2018



Chronos Technology:



Design Verification and Audit

Sync MoT Certificate

Test Details

Engineer Name.. _____
Service Name ... _____ ()
Date ... ____ / ____ / ____
Time ... _____
Location ... _____

Test Results - Summary

UTC offset ... Stability XX nS **PASS**
Test duration ... XX mins

Test Reliability

Reference Source ... Stability XX
Satellites in view ... OK/(min, max)

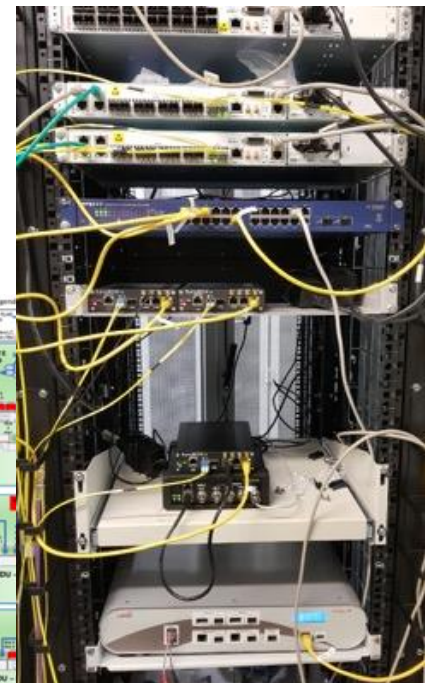
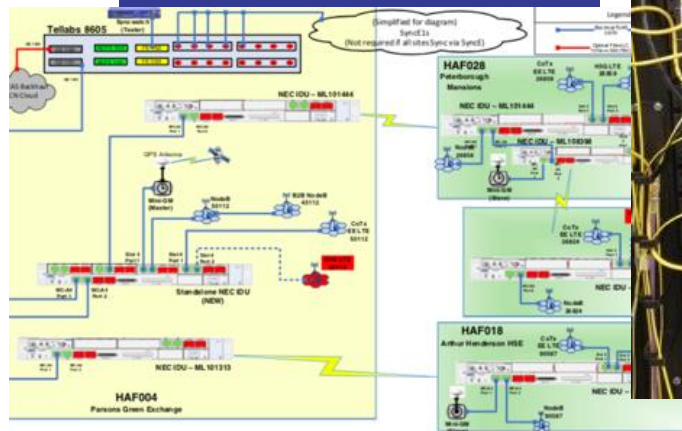
Hardware/Equipment Ser. No.

GM/BC ... _____
TimePORT ... _____
SyncBOX... _____

Clock + Time Synchronisation



Regulatory technical and implementing standards – Annex I MIFID II / MIFIR



Site Audit Data



File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

ptp

No.	Time	Source	Destination	Protocol	Length	Info
37	0.000000	10.83.218.255	224.0.1.129	PTPV2	110	Announce Message
38	0.000000	10.83.218.255	224.0.1.129	PTPV2	90	Follow_Up Message
43	0.000000	10.83.218.255	224.0.1.129	PTPV2	90	Sync Message
44	0.000000	10.83.218.255	224.0.1.129	PTPV2	90	Follow_Up Message
131	0.000000	10.83.218.255	224.0.1.129	PTPV2	90	Sync Message
132	0.000000	10.83.218.255	224.0.1.129	PTPV2	90	Follow_Up Message

subdomainNumber: 0

flags: 0x023c

- ... = PTP_SECURITY: False
- ... = PTP profile Specific 2: False
- ... = PTP profile Specific 1: False
- ... = PTP_UNICAST: False
- ... = PTP_TWO_STEP: True
- ... = PTP_ALTERNATE_MASTER: False
- ... = FREQUENCY_TRACEABLE: True
- ... = TIME_TRACEABLE: True
- ... = PTP_TIMESCALE: True
- ... = PTP_UTC_REASONABLE: True
- ... = PTP_LI_59: False
- ... = PTP_LI_61: False

correction: 0.000000 nanoseconds

ClockIdentity: 0xfc5b39fffe01a881

SourcePortID: 18

sequenceId: 26481

control: Other Message (5)

```

0000 01 00 5e 00 00 01 81 fc 5b 39 01 a8 5a 08 00 45 d4  .^...[ 9.Z.E.
0010 00 5c 00 00 00 00 40 11 b2 e9 0a 53 da ff e0 00  .\...@...S...
0020 01 81 01 40 01 40 00 48 ef 57 0b 02 00 40 00 00  .@.@.H.W...@
0030 02 3c 00 00 00 00 00 00 00 00 00 00 00 fc 5b  [^.....[
0040 39 ff fe 01 a8 81 00 12 67 71 05 01 00 00 00 00  9.....gq...
0050 00 00 00 00 00 00 25 00 14 06 22 34 fb 19 ec  .@...%...4...
0060 46 70 ff fe 00 df 52 00 01 40 5c f5 8c 99  Fp...R. .\...
    
```

Audit Requirements

- Regular and Recurring
 - Six Monthly / Annual
- Whole Time Delivery Network
 - GNSS Source to NIC
 - Not just UTC on GrandMaster
- Non-Intrusive
 - No need to interrupt business as usual



Auditors Requirements

- Reasonable Site Access
 - When is “Out of Hours”?
- Measure Measure Measure
 - All Available 1PPS Points
 - PTP Packet Capture
 - Derive Time from PTP Packet Flow



Auditors Plea

- Site Access during the week
- Enable 1PPS Test Points on Switches etc.
 - GrandMaster 1PPS verifies UTC Alignment
 - Need to map time flow to NIC
- Give Access to PTP Traffic
 - Add Test equipment to White List
 - Mirror relevant ports





Thank You

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