

FAQ - LAN synchronization measurement

Introduction

If you want to know if the network of the customer can be used for LAN synchronization, you can use the N870 to check the network.

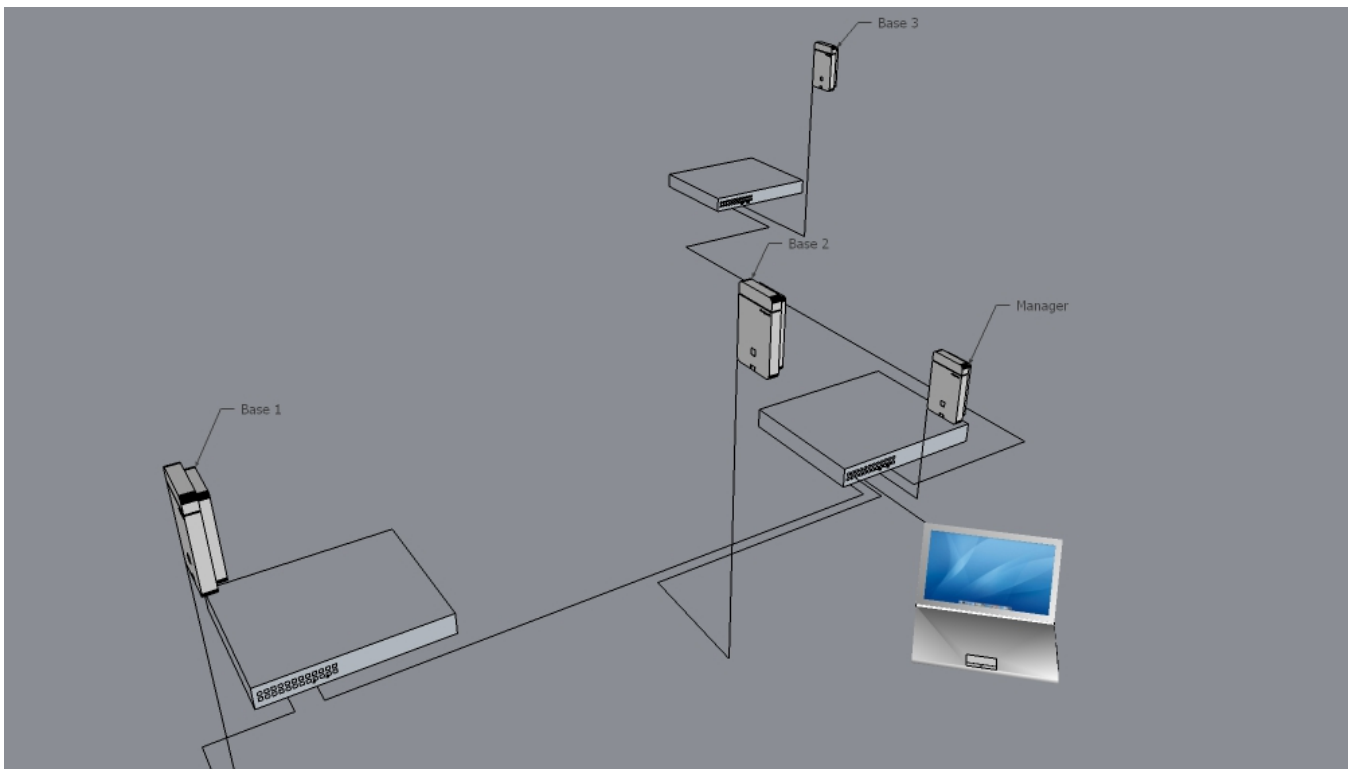
The first you need to do is to configure the customer network.

1. Add VLAN's
2. Activation of Quality of Service mechanism, LAN synchronization should have higher priority.
3. Check if the customer switches are not overloaded. Or overloaded at certain time during the day.
4. The less switches that are used, the better.
5. Deactivate Enhanced packet processing logics.

How to use the N870 to check if the network is suitable for LAN synchronization.

Install in the customer network at some strategic points the N870 with some base-stations. They do not have to be mounted to the wall, but connected to the switch.

Like in the example below. We installed some N870 base-stations in the customer network, Every base station is connected to one of the customers switches.



- On the laptop we installed a syslog server, or you can use an syslog server installed at another location like your own office. (Must be reachable from the customer network.)
- Activate in the N870 the syslog and enter the IP address of the laptop (or external syslog server)
- [Enable the CLI access](#) on the Integrator / DECT manager.
- The Manager is also the LAN Master
- The DECT base stations are all LAN slaves.
- Connect via an SSH client installed on your laptop with every DECT base that is a LAN sync slave device.
- **enter "sudo killall -10 dlsd" to activate the logging**

```
user@ubuntu:~$ ssh cli@192.168.3.6
cli@192.168.3.6's password:
```

V2.8.0-126-gf2e4c3c;einstein-albert;ci-xberry@2018-08-15/14:03:01

```
cli@base-7c2f80cfd2a:~$ sudo killall -10 dlsd
cli@base-7c2f80cfd2a:~$
```

- To deactivate the syslog output, **enter "sudo killall -10 dlsd" a second time** or reboot the DECT base.
- The syslog send from the DECT slave will contain the same output like described below. Every minute, the DECT LAN slave will send the syslog message.
- Let it run for some days and check the syslog
- If the values are above the maximum allowed values, the network is not suitable.

Output

You will get the following output:

dls- stats :	=====					
TS ----- :	1542352181.000000533					Timestamp of table generation
HOST ---- :	base-7c2f80e0d6d7					Hostname
SYS ---- :	dls- mode - ,	syn- mode -,	lan-m ----,	ptp-m ----,	-- state ----	SYS-dls-mode: client device runs in client mode. master device runs in master mode SYS-syn-mode: DECT device runs in DECT sync mode. LAN device runs in LAN sync mode SYS-lan-m: ON device is LAN-master. OFF device is LAN-client SYS-ptp-m: not used at the moment SYS-state: SYNC (80) means sync in client mode, every other state is async. SYNC (10) for master mode (means sync per definition)
	client,	LAN,	OFF,	OFF,	SYNC (80)	
DBC ---- :	dm-id ----,	cluster --,	cl- mask --,	level ---- ,	-- Info ----	DBC-dm-id: ID of Dectmnager the device is currently bound to DBC-cluster: DECT sync cluster DBC-cl_mask: DECT sync cluster mask, the cluster value can be masked ineternally by dlsd configuration to sync to a LAN master that is part of another cluster DBC-level: DECT sync level DBC-Info: Flag word given by DECT-DBC
	0x102 e70f1,	1,	0x000 000f8,	2,	0xb00 1e000	
PTP ---- :	gm-id -----,		domai n --,	-----		PTP-gm-id: PTP grand master clock id PTP-domain: PTP domain, dlsd is using domain 21 as default
	:	7c2f80.ffe. c6e5c2,	21,			
DLS ---- :	m-id -----,		-----			DLS (DECT Lan sync) master id
	:	7c2f80.ffe. c6e5c2,				
QUALI TY - :	async ----,	o_thr_ exc ,	----- -,	----- ----,	----- ----	QUALITY-async: async counter QUALITY-o_thr_exc: Out of sync threshold exceeded
	:	0,	11,			
TIMING -- :	----- -,	----- -,	----- -,	-----	-----	
CURR ENT - :	ptp- pd----,	ptp- d----,	dls- d----,	osc-idx --,	----- ----	
	24225,	120,	198,	175		
STATS --- :	rms ----,	min ----,	max ----,	mean ---- +/-	stddev ---	The statistics are generated of a window containing 60 values. They contain rms. min, max, mean and stdev for each value
p(av) [ns] :	16000 1403,	16000 1352,	16000 1465,	160001 403 +/-	25	period of the DECT-SYPO signal
frq [MHz] :	13.823 879,	13.82 3876,	13.823 882,	13.8238 79 +/-	0.0000 02	Calculated frequency of the DECT oscillator
osc- idx :	173,	172,	174,	173 +/-	0	DECT oscillator capacitor field index
ptp-pd [ns]:	24193,	23764,	24541,	24192 +/-	198	ptp path delay This is an indication of the transmission path quality. The account of switches and their processing speed and queue delay's influence this value. Jitter should be as less as possible. (This can easily be interpreted by the stddev value)
ptp-d [ns]:	224,	-422,	558,	12 +/-	224	ptp clock delay Ptp clock offset to master clock This value should not exceed 500ns for a longer time
dls-d [ns] :	251,	-513,	549,	-13 +/-	250	Measured offset of the local DECT-SYPO signal to the master DECT-SYPO signal. This is the DECT-SYNC criteria and should not exceed 1000ns for a longer time
eof dls-stats =====						

Important are the values below:

QUALITY - :	async ----,	o_thr_exc ,
	0,	11,
	This field shows you how many times the base kas lost synchronisation.	

Target quality benchmark to provide sufficient PTP synchronisation along the base stations, is to have a PTP deviation lower than 500ns (rms). For this PTP synchronisation a few single deviations > 500 ns are accepted and might just generate first warnings, If the PTP sync packet deviations does continuously exceed this limit of 500ns, the PTP synchronisation is considered broken and will lead to new sart synchronisation procedure.

The target quality benchmark for this synchronisation level is to see reference timer deviation by this DECT reference timer sync packets: DECT-LAN-SYnc deviation lower than 1000ns. A good mean value would be 500 ns (rms).

STATS --- :	rms -----,	min -----,	max -----,
ptp-d[ns]:	224,	-422,	558,
dls-d[ns] :	251,	-513,	549,



Gigaset does not offer the expertise to configure the customer switches. For this you need support of the customer network administrators.

Even if the network has a good quality, it can change during the time, when the switch configuration is changed by the administrator. Or if the switches get more load due to customer network changes. If needed also after installation, the syslog output of the running system can be enabled to collect the syslog again.