OpenScape Cordless IP

Atos Unify OpenScape Cordless IP V2

Installation Guide

Atos

1 Contents

2 History of Changes

Issue	Date	Summary
1	07/2019	First issue of the guide.
2	10/2022	Rebranding of the guide to Atos Colors

This document describes the OpenScape Cordless IP V2 installation procedure, it offers you the guidelines how to do a DECT measurement and the installation of the OS Cordless IP V2.

We advise you to go step by step through the document and fill in the required information.

In case support is needed, this filled in document must be added to the ticket.

3 Customer information

Customer Company name:

Address Line 1:

Address Line 2:

City:

ZIP/Postal code:

Telephone:

E-mail:

Country:

Contact person:

Reseller Company name:

Address Line 1:

Address Line 2:

City:

ZIP/Postal code:

Telephone:

E-mail:

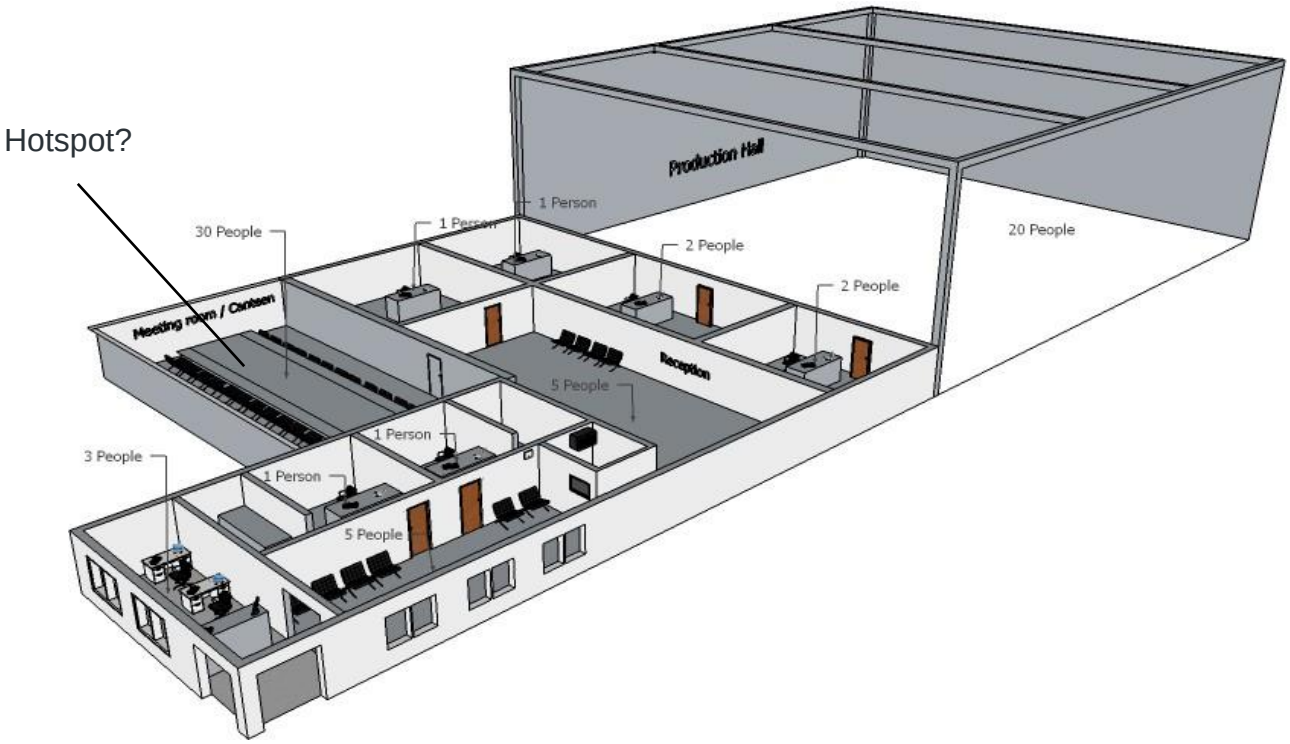
Country:

Contact person:

4 Building schematic

Ask your customer for a building schematic or create one your selves in case no building plan is available. Determine the telephony and user's behavior.

- How many people should have a DECT handset and how many calls at the same time should be possible? This results in the number of handsets and DECT base stations.
- Where should it be able to make calls? On which floors, in the stairwell, in which area? This results in the area to be covered.
- How many calls are made, how long is the average call duration?
- Where is high traffic? Where are hotspots like Open-plan office, meeting rooms, canteen? This results in the required capacity.

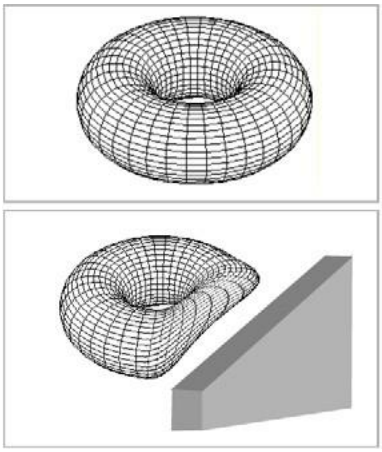


Example:

- Canteen is defined as an Hotspot, were 30 calls should be possible.
- Maximum of 45 handsets.
- Maximum of 30 Simultaneous calls.
- Calls should be possible in the building and outside the building.

5 Determine environmental conditions

The ideal signal transmission of a base station is a shaped like ring, so that the registered handsets can be the same distance away from the base station in all directions without the wireless signal being interrupted.



The range is influenced by a variety of environmental conditions. For example, obstacles such as walls or metal doors can impede the wireless signals or interfere with their uniform transmission.

You should investigate the actual conditions that the planned wireless network will be subjected to by measuring the signal transmission of the measuring base station

at appropriate positions.

Create an overview of the environmental conditions. What is the terrain like?

- Total area Building plan
- Number of floors
- Outdoor coverage

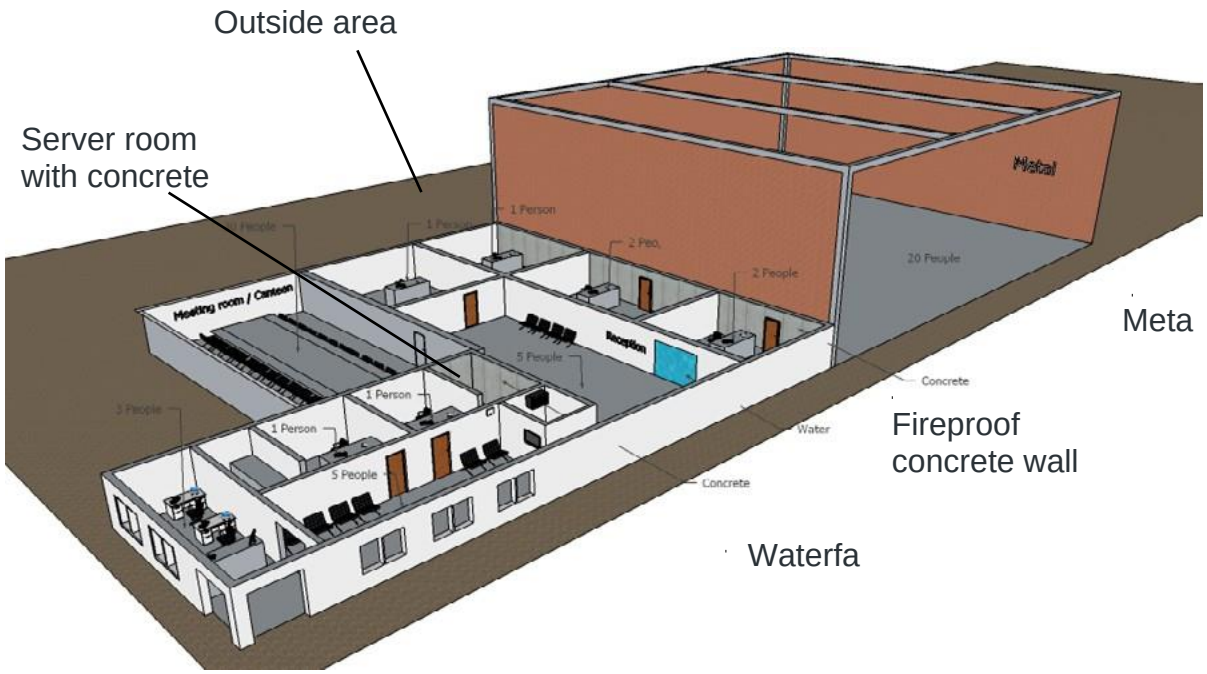
How is the building fabric?

- Materials
- Type of windows e.g. mirrored glass
- Planned construction measures

Which disturbing influences are recognizable?

- Reinforced concrete
- Lifts

Example:



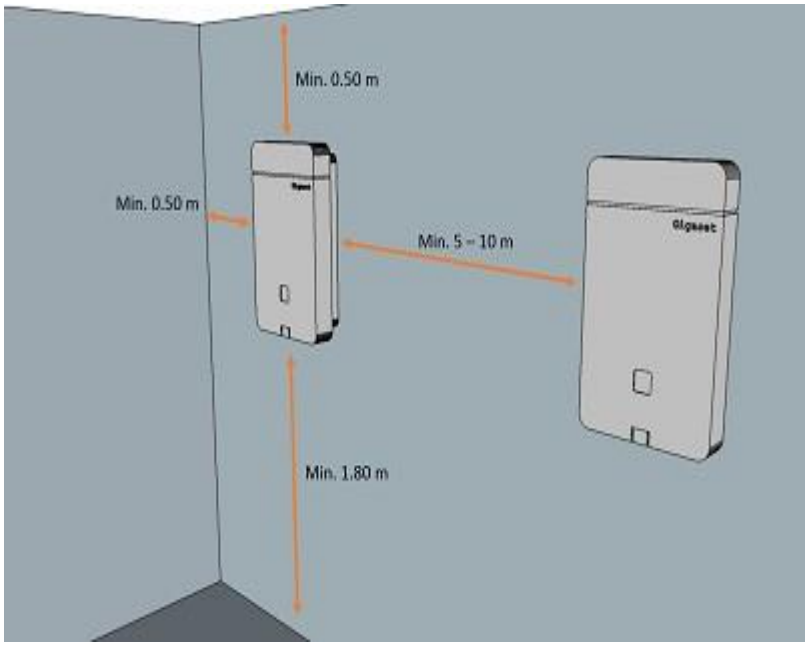
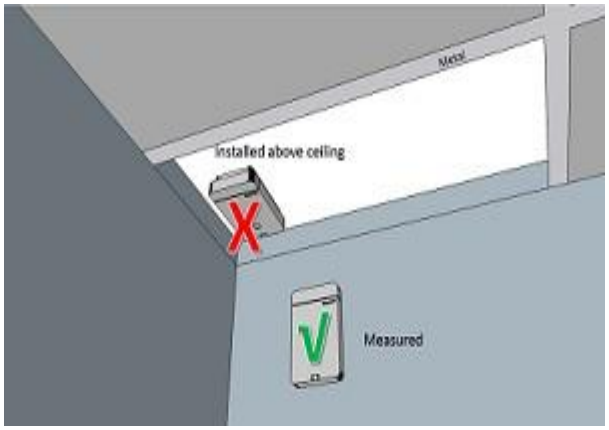
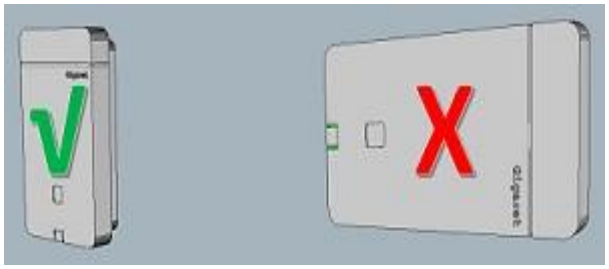
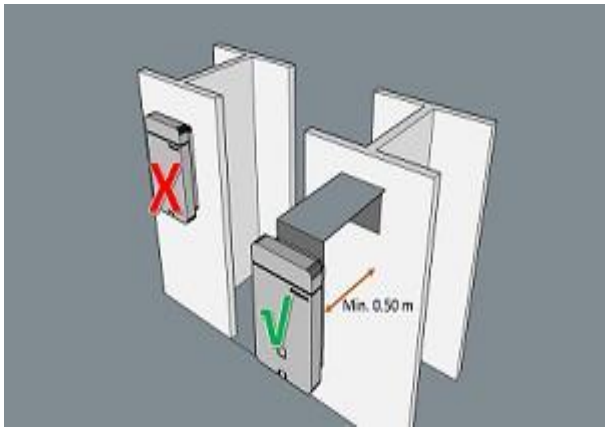
6 Base Station Positions

It is best to define the positions of the base stations in a building plan considering the required capacity and the determined influences.

As far as possible, you can take note of visual concerns as well as possibilities of technical connectivity.

Give the locations for the DECT bases unique labels. In this example we use the letters A to H. Furthermore, you define measurement points in areas that are to be supplied, but probably have the lowest field strength, or where external influences can lead to reception problems. Give these measuring points clear designations.

Important is that the location and alignment of the base stations installed should be identical to the position deemed optimum during the measurement stage.

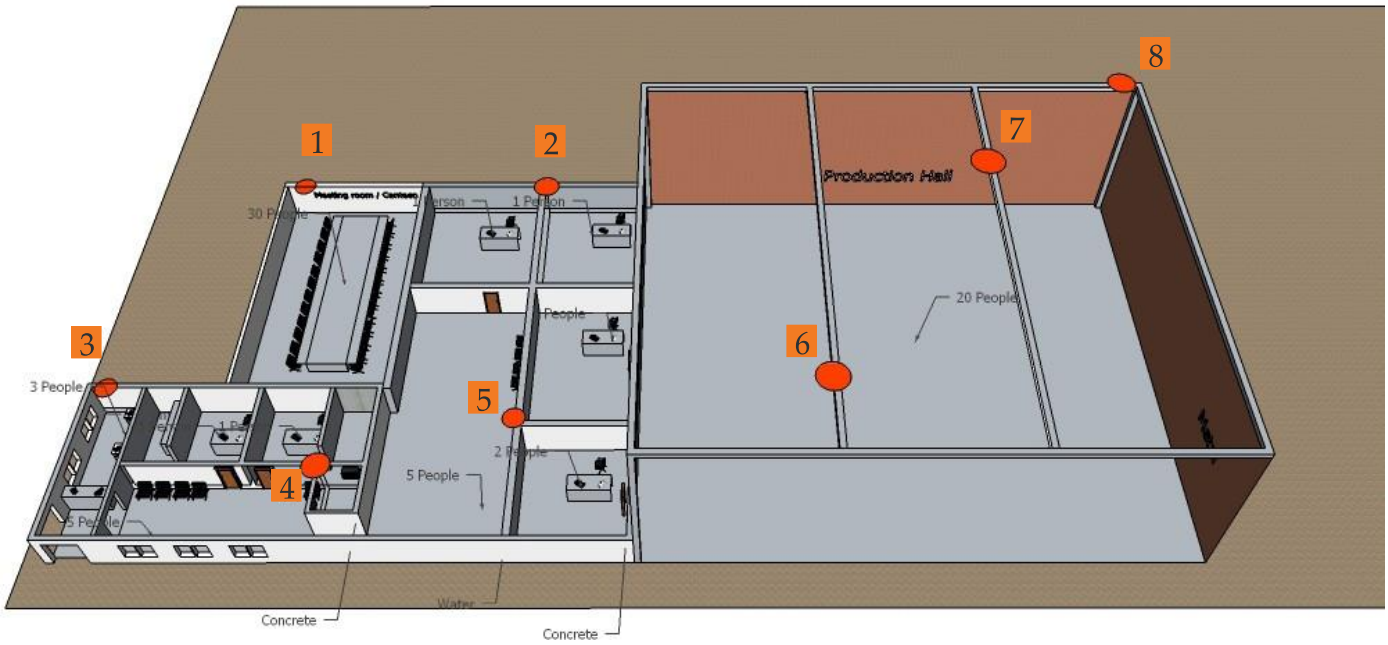
Correct	Wrong
	
	
	

- 1.8 m above the ground.
- Minimum distance ceiling 50 centimetres
- Optimal hight between 1.8 and 3m
- 50 centimetres distance from metal, supply lines, cable ducts
- operating temperature between + 5 ° and + 45 ° Celsius.
- We recommend installing all base stations at the same height
- Do not install the base stations in Suspended ceilings, cup boards or other closed furnishings.
- The base stations should be installed vertically.

Example:

In the example below, we have the following assumptions as measurement is not done at this point.

- Base 1 - 5 cover the Office area and can handle up to 50 parallel calls.
- The hotspot Meeting room / Canteen is covered with multiple bases to assure 30 simultaneous calls.
- The Production hall is covered with 2 base stations 6 / 7.
- The outside area is covered with Base 1 / 2 / 3 and 8



Write down the position of the base stations.

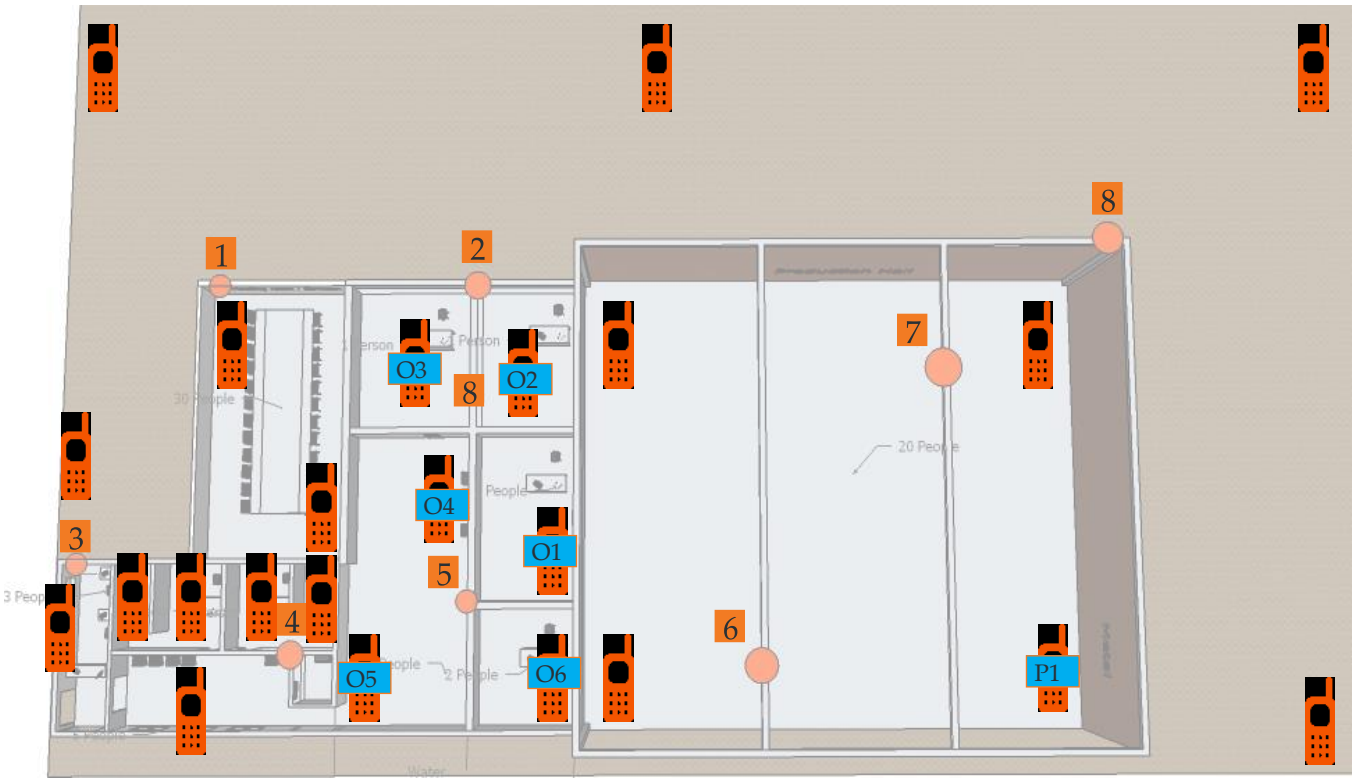
Base:	Location:	Base:	Location:	Base:	Location:
1		21		41	
2		22		42	
3		23		43	
4		24		44	
5		25		45	
6		26		46	
7		27		47	
8		28		48	
9		29		49	
10		30		50	
11		31		51	
12		32		52	
13		33		53	
14		34		54	
15		35		55	
16		36		56	
17		37		57	
18		38		58	
19		39		59	
20		40		60	

7 Measurement Points

Define measurement points in areas that are to be supplied, but probably have the lowest field strength, or where external influences can lead to reception problems. Give these measuring points clear designations.

Then start the measurement.

- Position the DECT Measurement base station at the first base station location. If necessary, use a tripod to position the transmitter as close as possible to the later mounting location.
- Then measure the field strength to the positions of the surrounding base stations with the synchronization measurement and enter the measurement results in the created table. If the field strength to the neighbouring base stations is too low to ensure problem-free synchronization (-65dBm), you may have to redefine the positions of these, taking into account the measured field strength.
- Then carry out the measurement for field coverage. Connect to the test tone generator and move from point to point under observation of field strength and frame quality as well as acoustic quality of connection quality.
- When measuring, turn around and around your own axis while observing the connection quality.
- Write down the measured values at the measuring points in the table created for this purpose. If you wish, you can also draw the measurement results graphically in a building plan. For example, the -65 dBm field strength limit. Proceed in the same way with the positions of the other transmitters.



Example:

In the example we have defined the measurements points and you need to give them a naming for example we have O=office and a number. In the Production, we could define these as P=production and a number.

On the next page there is a table that can be used to fill in the DECT measurements results.

Base	Measurements points (dBm/%)
1	-60 / 100
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
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Final position of the DECT base stations

After the DECT measurement, you can now define the final position of the DECT base stations.

DECT synchronization:

To relay DECT synchronisation signals from base station 1 to base station 2, base station 2 must be able to receive signals from base station 1 with enough signal quality.

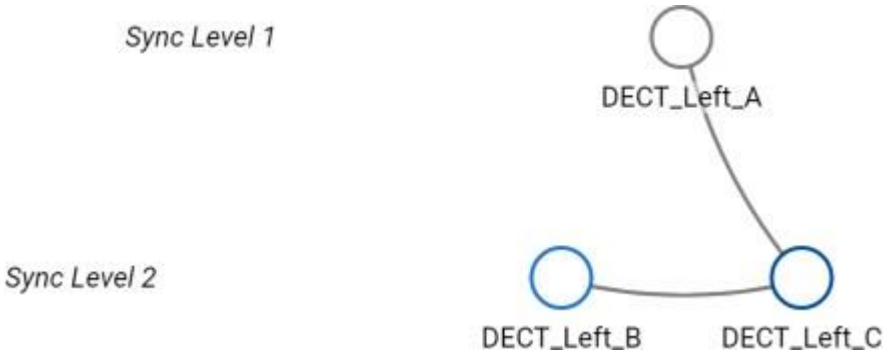
The DECT signal strength must be at least -65dBm when the measurement kit is used.

LAN synchronisation:

When using LAN synchronisation, it does not mean that the DECT signal quality is not important anymore. You still need to do an DECT measurement.

Base stations that are synchronized via LAN must be able to see the neighbor base stations via an stable DECT signal.

For this you can use the Visualization tool, when you click on a DECT Base (Color of Base that uses LAN sync is Blue) then it is enough that the Base can see the other Base. The DECT quality is not important, red line is also allowed.



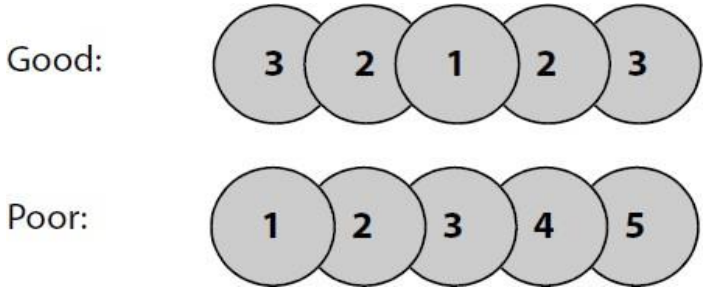
The Visualization tool can be used after installation to re-check the DECT signal quality.

8 DECT synchronisation levels

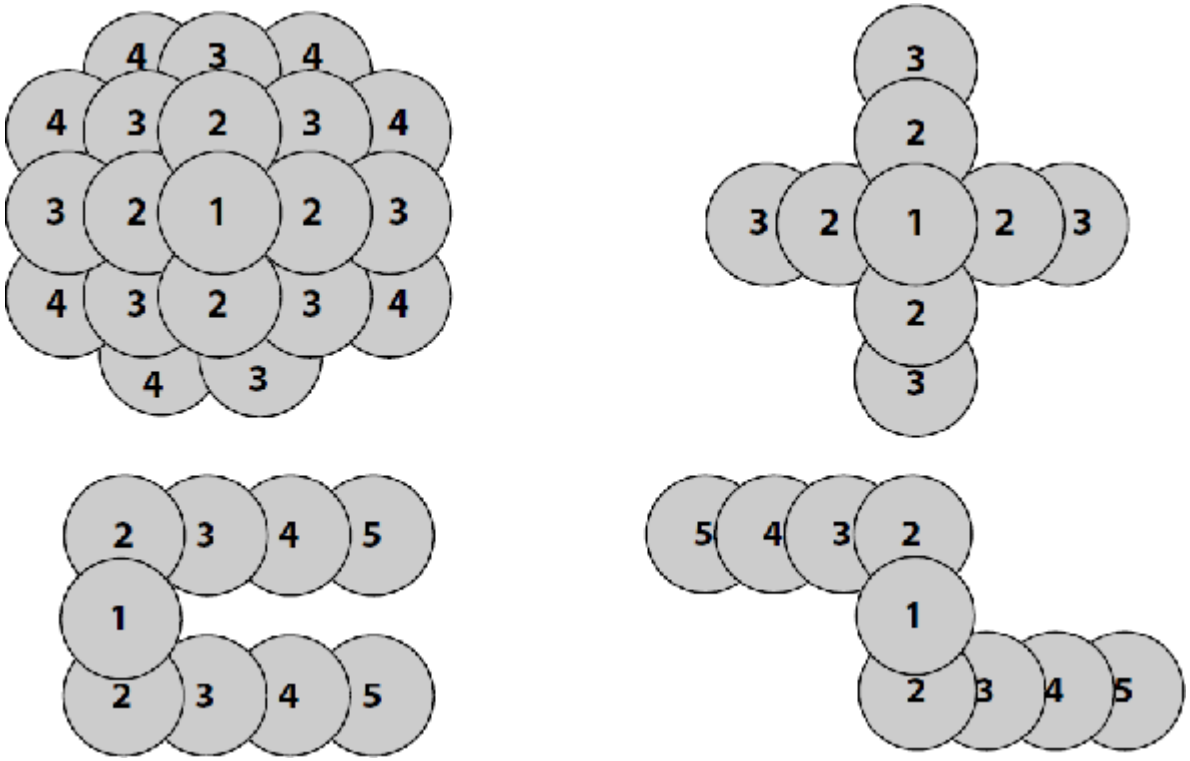
DECT synchronisation:

For DECT based synchronisation you need to follow the following rules.

- There can be only one Level 1 in a Cluster
- A base station can synchronise with each base station on a higher sync level.
- DECT manager and base stations must be connected to the same Ethernet or virtual LAN sharing a common broadcast domain.
- Minimise the DECT levels as much as possible.
- Sufficient signal quality between base stations is needed. (-65dBm when measurement kit is used.)



Depending on the topology of your DECT network, your synchronisation hierarchy could look like this for example.



LAN synchronization:

When using LAN synchronisation, there are no synchronisation levels. There is only a Master and a slave. LAN synchronisation is often used as it looks easier to install, but the network requirements are often forgotten. Configuring the customer network is often more difficult then defining DECT synchronisation levels. Gigaset offers the possibility to measure the PTP network delay/quality but we cannot advise you how to configure your switches.

9 Network requirements

OpenScape Cordless IP V2 Network requirements.

- 100 Mbit/s switch port with corresponding cabling to the device is required.
- The switchport must allow multicast / broadcast messages.
- PoE IEEE 802.3af < 3.8 W (Class 1)
- VLAN disconnection from other network devices.
- Supports VLAN tagging
- Activation of Quality of Service mechanisms: recommendation
- DECT Manager and all base stations in the same layer 2 segment

Extra network requirements when LAN Synchronization is used:

- The less switch hops. the lower the transmission delay and its jitter will be.
- The higher the bandwidth or quality of used switches is regarding packet delay and its jitter, the lower the packet delay and the lower the packet delay jitter will be.
- Enhanced packet processing logics (like L3 switching or packet inspection) could have significant negative impact on the resulting packet delay jitter. If possible, they should be deactivated for the OpenScape Cordless IP V2 base stations connected switch ports.
- Significantly increased traffic load on a switch, in the range of the maximum throughput, could have significant negative impact on the packet delay jitter.
- VLAN based prioritization of LAN packets could be a fruitful measure to minimize packet delay and its jitter for OpenScape Cordless IP V2 base stations.

LAN synchronisation is based on a two-layer design:

- Native PTPv2 is used to synchronise a common reference timer along all base stations involved. Target quality benchmark to provide sufficient PTP synchronisation along the base stations, is to have a PTP deviation lower than 500 ns (rms). For this PTP synchronisation a few single deviations
- 500 ns are accepted and might just generate first warnings. If the PTP sync packet deviation does continuously exceed this limit of 500 ns, the PTP synchronisation is considered broken and will lead to new start synchronisation procedure.
- Based on the PTP synchronisation LAN master and LAN slave adjust their DECT reference timer to one common offset to the common PTP reference timer. This common offset will be permanently monitored by a proprietary communication.
- 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 1000 ns. A good mean value would be 500 ns (rms).

This wiki article describes how you can use the OpenScape Cordless IP V2 to measure if the customer network can be used for LAN synchronisation.

10 System description

Number of DECT Managers:	**1**	Number of DECT basis:	
Number of DECT handsets:	Type	Number	

OpenScape Cordless IP

Software version: **1** Language setting:

Environment

Platform: Platform name:

Platform software version:

Network switches: Type of Internet router:

Comments:

11 Troubleshooting

In case you want to report a problem, this page will offer you the guideline how to report this.

Problem description:

Steps how to reproduce:

Comments

Has the system access to the internet? ☐

12 Checklist

- [ ] All OpenScape Cordless IP devices, Integrator, Manager and Base are on the same software level
- [ ] Check if the DECT Base stations are mounted correct. See here for more info
- [ ] The DECT measurement is done using the Gigaset Site Planning Kit. Please check if the customer situation has not been changed and these changes have influence on the DECT coverage.
- [ ] Open the visualisation tool to check the DECT connection quality
- [ ] If LAN synchronisation is used, the LAN network should support the documented requirements. It does not mean that DECT measurement is not needed, the base stations must be able to see each other via DECT.
- [ ] Check the Base station events, download the information and store it on your laptop.
- [ ] Check the Incidents page, download the information and store it on your laptop.
- [ ] Do the handsets have the latest firmware, connect them to a PC and update them with quick sync.
- [ ] Can you reproduce the error? > Reproducibility ratio **Always 9/10, 10/10**
- [ ] If there error is related to the network /VoIP protocol, wireshark traces are needed.
- [ ] Collect syslog output.
- [ ] Read on the handset the code for the last 4 reboots in case there is a reboot issue.
- [ ] Save the configuration
- [ ] Based on the found error, our support desk could advise you to update the system to a newer software version. On this page you can find an overview about the released software versions.

Provide feedback to further optimize this document to edoku@atos.net.

As reseller please address further presales related questions to the responsible presales organization at Unify or at your distributor. For specific technical inquiries you may use the support knowledgebase, raise - if a software support contract is in place - a ticket via our partner portal or contact your distributor.

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