DEPLOYMENT OF MULTIPLE WIRELESS HEADSETS IN LIMITED SPACE
Wireless headsets need space in which to operate in order to ensure optimal audio quality. The number of headsets that can be used in a given area depends on its size, the distance between headsets and bases, the presence of metal objects or large glass surfaces, and available headset features and settings. There are a number of simple rules of thumb to guide you when planning and Jabra Customer Support is pleased to provide advice and guidance.

Wireless headsets give users additional freedom of movement. In addition to providing hands-free communication, wireless headsets enable users to roam around in the workplace, limited only by the headset radio signal range.

If a larger number of wireless headsets are used within a limited area such as an open space office, users may experience less than optimal audio quality. This can be caused by so-called density or capacity issues. It is thus important to plan ahead if you consider deployment of a larger number of wireless headsets in a limited area.

Jabra offers a choice of large-scale installations using either DECT or Bluetooth®, both of which can be scaled successfully to provide the necessary capacity and audio quality in limited spaces.

**SHORT-RANGE RADIO AND CAPACITY**

Capacity issues apply generally for wireless technologies where there is competition for radio frequencies and time slots. This can be the case if several short-range radio transmitters are operating at the same time and at the same frequency, and the number of headset units exceeds the number of available channels, i.e. radio frequencies and time slots.

DECT and Bluetooth® technologies both employ sophisticated methods to minimize the likelihood of simultaneous transmission on the same channel in order to maximize the number of available channels.

**ENHANCED PERFORMANCE WITH JABRA**

Jabra offers a choice of large-scale wireless headset installations using short-range DECT, Bluetooth®, or 2G4 Digital Wireless Telephony technologies. The headsets provide special features to improve performance in environments requiring high capacity. These include Dynamic Radio Frequency Power Management and special configuration setting.
The purpose of the planning process is to define a headset deployment layout that ensures a signal-to-noise ratio above the threshold for good audio quality, in order to avoid radio interference in a limited space.

The result is a layout that defines the average distance between headsets and the average area per headset.

These figures are a function of the size of the area, the average distance from headsets to base, and the technology employed.

<table>
<thead>
<tr>
<th>CONSIDERATIONS</th>
<th>PLANNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building layout and isolated areas</td>
<td>Identify the areas where headsets are to be deployed. An area is a separate, isolated office space and need to be considered one at a time. Determine the area size in square meters or square feet</td>
</tr>
<tr>
<td>Number of headsets per area</td>
<td>Check whether the required number of headsets exceeds the limits stated on page 4</td>
</tr>
<tr>
<td>Average distance between headset and base, and user mobility</td>
<td>These are important factors affecting planning. The average distance between headset and base is typically less than 2 m / 7 ft. It makes no difference if some users are fetching coffee or a few supervisors are moving around. Site planning is very sensitive to these factors</td>
</tr>
<tr>
<td>Special DECT considerations</td>
<td>wideband Audio&lt;br&gt; The use of wideband audio reduces the maximum number of headsets in a given area by half&lt;br&gt;Transmit Power Configuration&lt;br&gt; Some DECT products have configuration options enabling reduction of the maximum radio transmitting power. Low power settings may be useful in higher density deployments</td>
</tr>
<tr>
<td>Special Bluetooth® considerations</td>
<td>Headset Utilization&lt;br&gt; It makes a significant difference when using Bluetooth® if users are on call all the time or maximum 50% of time&lt;br&gt;WiFi Coexistence&lt;br&gt; Bluetooth® must be used with care if WiFi (specifically IEEE 802.11b, g, or n) is being used.&lt;br&gt;Bluetooth® transmitting power affects site planning to some extent</td>
</tr>
</tbody>
</table>
Because of the many factors involved in the planning process, we recommend you to contact Jabra Technical Support if the number of headsets exceeds the simple density limits indicated below. Jabra Technical Support engineers can calculate areas and provide recommendations based on detailed planning tables.

**DECT**

- There should be no deployment issues if the number of headsets in an area is below the following limits:

  - 80 headsets for EU DECT (normal audio), or 40 headsets for EU DECT (wideband audio)
  - 45 headsets for US DECT (normal audio), or 22 headsets for US DECT (wideband audio)

We recommend a distance of at least 2-4 m / 7-13 ft between bases even if the number of headsets is below the limit.

- If the number of headsets exceeds these limits, you should configure them to operate in low power mode. You need to plan with the following average areas per headset:

  - 25 m² – 49 m² / 269-527 sq ft for EU DECT (i.e. 5-7 m / 16-23 ft between bases)
  - 49 m² – 100 m² / 527-1076 sq ft for US DECT (i.e. 7-10 m / 23-33 ft between bases)

Large metal objects or large glass windows, especially those covered with metallic layer, cause radio reflections, and necessitate more conservative planning.

The average areas are valid for average headset-to-base distance up to 5 m / 16 ft. otherwise more conservative planning is needed.

**BLUETOOTH®**

- There should be no deployment issues if the number of headsets in an area is below 25. However, even if there are fewer than 25 headsets, we recommend you to make sure there is at least 1-1.5 m / 3-5 ft between bases.

- If there are 25 or more headsets, areas and base separation distances grow proportionally with the number of headsets up to a limit of 224:

  - 26-80 headsets require an area of 4-9 m² / 43-97 sq ft per headset
  - 81-220 headsets require an area of 9 m² / 97 sq ft per headset
  - more than 220 headsets require an area of 16 m² / 172 sq ft per headset

- Lower headset utilization, say less than 50%, means you can double the number of headsets within an area.

JABRA.COM
FIND OUT MORE

Different working environments, office layouts and interiors present an almost infinite variety of challenges when planning effective deployment of multiple wireless headsets in a limited space. As a leading world supplier of wireless headset solutions, Jabra has many years of experience helping customers to deploy effective wireless solutions on their premises.

Find out more about your options in your particular locations and workplace environments by contacting Jabra Customer Service, where experts are available to discuss your particular needs and how best to address them.

Contact online:
http://www.jabra.com/ServiceMenu/contact

Website: www.jabra.com
Phone: +45 4575 8888
Address: Lautrupbjerg 7, DK-2750 Ballerup

ABOUT JABRA
Jabra is the brand of GN Netcom, a subsidiary of GN Store Nord A/S (GN) - listed on NASDAQ OMX. Jabra employs approximately 850 people worldwide and in 2011 produced an annual revenue which amounted to DKK 2,106 million. Jabra is a world leader in the development, manufacturing, and marketing of a broad range of handsfree communications solutions. With a reputation for innovation, reliability, and ease of use that goes back more than two decades, Jabra’s consumer and business divisions produce corded and wireless headsets, plus mobile and in-office speakerphones that empower individuals and businesses through increased freedom of movement, comfort, and functionality.