



Why Line of Sight is important when designing a Point to Point Bridge:

When designing an outdoor wireless network one of the first questions to ask is what is between point A (SOURCE LOCATION) and point B (DESTINATION LOCATION). The path between two antennas is referred to as the Line of Sight.

There are three main categories of Line of Sight, the first being clear, unobstructed, Line of Sight (LOS) where no obstacles reside between the two antennas. The next is called Near Line of Sight (nLOS) which includes partial obstructions such as tree tops between the two antennas. The third is called Non Line of Sight (NLOS) where full obstructions exist between the two antennas, such as trees. By determining the specific Line of Sight conditions in the Wi-Fi network area you can then determine the correct type of wireless antennas, frequency, and radio type to install.

For indoor wireless network installations it is important to consider obstacles such as walls, ceilings, and furniture that will affect Line of Sight as these all play a role in wireless signal reception. In wireless transmissions, reflections (when wireless signals "bounce" off objects) and multipath (when wireless signals travel in multiple paths arriving at the receiver at different times) are as important as signal strength in determining the success of an installation. A signal will also exhibit peaks and nulls in its amplitude and alteration of its polarization (vertical or horizontal) when propagating through walls, ceilings and reflecting off metallic objects. A clear Line of Sight is also an important factor for inside Wi-Fi network installations, not only for increased speed, but for increased reliability.

Path Loss is another area of concern when dealing with Line of Sight. For instance, although 2.4 GHz signals pass rather well through walls, they have a hard time passing through trees and leaves. This is due to the difference in water content in each. Walls are very dry and trees contain high levels of moisture. Radio waves in the 2.4 GHz band absorb into water very easily. 900 MHz is a better frequency when faced with nLOS or NLOS conditions due to trees as it is not absorbed like 2.4 GHz. Although 900MHz, NLOS, point to point bridge packages work great in penetrating trees, they will not travel as far, or as fast as the other frequencies.

GNS Wireless stocks [2.4GHz wireless bridge kits](#), [5.8GHz wireless bridge kits](#), and [900MHz wireless bridge kits](#). Please contact us for more information or to inquire about which package will work best for your application.