

## Connecting two buildings to one broadband service

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**Problem:** - I need to connect two buildings which are 100 metres apart. Both buildings are using wireless networks and one has an ADSL modem. I want to ensure both buildings can access the LAN to use shared resources and the Internet through the single ADSL connection.

**Solution:** - Before getting started, look at the total number of users you will have on one connection and compare that against the speed of your DSL. Depending on your level of service, you may want to increase the speed if you can (this will depend on how far your location is from the central office providing you with DSL). See if you can get broadband service from the cable company. More cable companies are beginning to provide this type of service to companies. You may be able to get better Internet performance for the same money or just a little bit more than you are currently paying.

Given the short distance between the buildings, see if you can get a dry copper pair between them. This needs to be a line with no "conditioning" voltage or dial tone on it. If you can get this, look at companies such as Blackbox, which offer Ethernet and network extenders. They can use a copper pair to create what amounts to a private DSL connection between both ends to give you a pretty decent connection speed - and without the monthly cost of a second broadband connection for the second building (while putting in a second broadband connection is an option, it will also complicate the ability to share files and do other tasks normally associated with a LAN).

If getting a dry pair for a network connection or a second broadband connection isn't an option, consider using a wireless link between the buildings. You will need to see if there is a direct line of sight between buildings, preferably with no obstructions such as trees. Trees (or even tall bushes) can attenuate the signal between access points/bridges to the point where the wireless link could be intermittent. If you do have a clear view between buildings, you will want to look at some type of external antenna to use for the inter-building link. You will need a directional antenna to concentrate the signal to where you want it to be, so you don't become an ISP to the neighbours. One place to look for antennas is [www.hyperlinktech.com](http://www.hyperlinktech.com). They have a good assortment to choose from, as well as folks who can assist with choosing the best antenna for your application.

Once you have the antenna, you will need to look at using a bridge to connect the two locations. Most access points don't have bridging built in, so look at dedicated devices, which typically will cost you a bit more than your average access point. An alternative is to go with a Linksys WRT54-GL access point and open-source firmware such as DD-WRT, which includes a Wireless Distribution System function.

As with any wireless connection, I can't stress strongly enough the need to use as strong encryption as possible, to keep somebody from intercepting your wireless traffic. Since you already have wireless running in both buildings, you will need to select a different channel for your bridge connection. For example, if you are using channel 6 for your in-building wireless, you could use either channel 1 or 11 for the bridge connection.