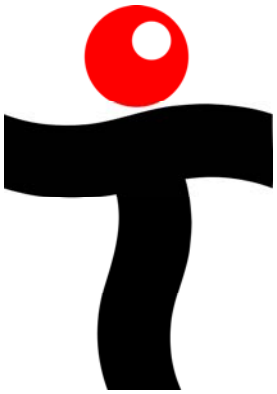

Teletics Application Note

Typical Applications for WOPX and "The String" (Wireless Line Sharing System)

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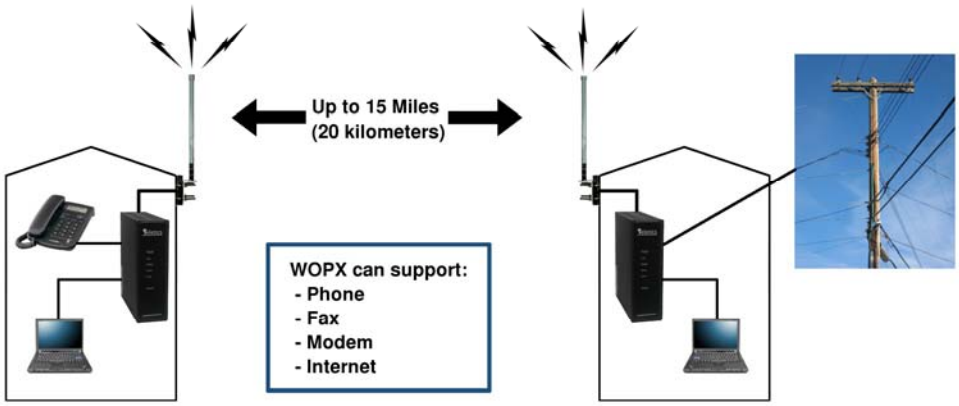
There are many situations that exist where a phone (or phones) are required in areas where it is not practical to run wires, or where telephone companies (telcos) simply cannot provide service. Additionally, there are occasions where the telco can run wires, but using a wireless phone line extension can save money and time.

The intent of this application note is to give some examples of where running a hard wired phone line simply did not make sense, and a high level technical description of how one of Teletics products were installed and used.

The first example is where a paved road, apron, railway, or utility right of way exists between two or more buildings or a building and electronic equipment or a payphone. What the WOPX system essentially is under these circumstances is “a wireless wire”

Our Teletics distributors provide a complete turnkey solution to this type of customer, consisting of a Wireless Off Premise eXchange (WOPX) system, plus cabling and antennas. A typical WOPX system consists of the following equipment:

Teletics WOPX System Diagram



The installer is required to figure out where the antennas should be mounted, and the suitable antenna heights required for reliable service. Antenna heights are typically established by ensuring that the radio path is not interfered with from vehicles, trees or any other obstruction in the area, plus there are minimum heights, depending on distance between the radios, that must be observed for proper operation of the radio. These minimum antenna height guidelines are in the WOPX manual.

From an installation planning perspective, the distance between the radio and the antenna should be kept as short as practically possible. For example, if the antenna is mounted on the outside roofline of the building, just enough radio cable should be used

to enter the building and bring the radio to a point in the building where it is practical to service it. From there, the telephone and ethernet data cables should run to the communications panel. Distances of greater than 100 feet of radio cable are possible, but should be avoided, both from a cost perspective, and for reliability. Radio cable should be purchased from either a Teletics distributor, or a qualified radio shop. Radio cable that is not rated for microwave operation (TV coax, for example) will not work, and might even damage the radio.

Another installation practice that must be observed is ensuring that any radio connectors that are exposed to weather are sealed using something called self-fusing rubber tape. **This is our number one support issue! If you fail to properly seal any and all outdoor antenna/RF connectors, the system you install will work until there is a large amount of rain, and then stop working!** Sorry to rant.

Most WOPX installations will use directional antennas, such as a panel antenna, which gives good gain in one direction. We have installations where people have extended a phone line by up to 15 miles using proper antennas and heights. Shorter distances, such as a mile or less generally can be set up by almost anyone, assuming they seal the connectors and get proper antenna height. If the antennas are mounted on a multiple floor building, getting the correct height usually just involves mounting the antenna on a pole on the outside of the building.

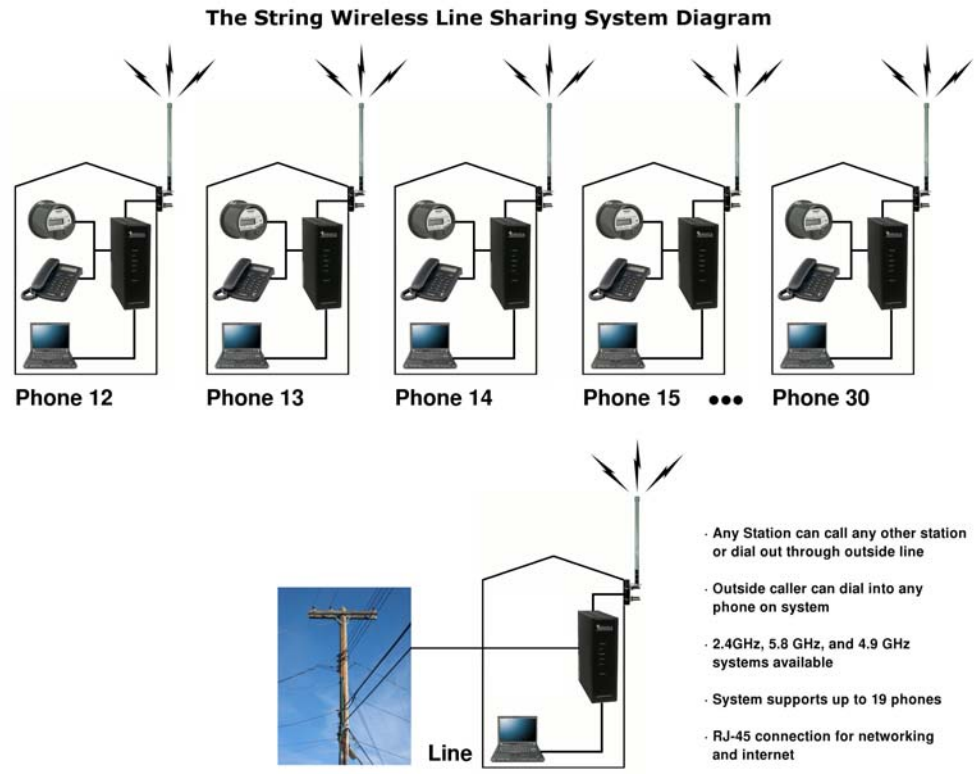
The WOPX may be used to provide internet service across the street as well. There is an RJ-45 connector on each end that acts like a wireless Cat 5e cable, allowing either private LAN extension, or internet service. Speed on this connection is about the same as most office LAN networks.

Once the WOPX is installed, the phone user will not notice any difference in how the phone works. Callers into the system also do not experience any difference, either. CallerID is supported, and the WOPX will either support voice and fax, or modems, but not both. If you need both, we can offer a solution that provides two different lines, one for modems and one for voice/fax.

WOPX are sold in preconfigured pairs. They do not require any programming to be used. Each system has a LINE unit, which is plugged into the regular phone line, and a PHONE end, which is installed where the remote phone is used.

There are also instances where one phone line might be sufficient to poll a number of different modems for metering or security purposes. Or, there may be a small community or campus that wants to share a regular phone line.

Where more than one phone is required, but only one outside phone line will be needed, **The String** makes sense:



The String can be configured, using software called TUtil, to support either standard telephones and fax machines, or modems.

When a call comes in on the LINE **String**, there is a second dial tone given to the caller, and they then may dial 12 through 30 to reach the appropriate phone. Any phone on the system can dial out through the one line. If the line is already in use, a busy signal is received.

Any phone can also dial any other phone in the system at any time by dialing the two digit extension of the phone to be called. For example, phone 12 can call phone 16 at any time, even if phone 14 is calling out on the phone line. You can have as many phone simultaneous phone conversations as you have Phone **String** units.

If **The String** system is dialed into by a central system modem, generally all that is required is the addition of more commas and the extension number in the modem dial

string. Once the call is answered, the Line caller becomes part of the dial group, as if they were a Phone **String** on the system.

Similar design and installation practices apply to **The String** as the WOPX. Antenna height, proper sealing of antenna cables and keeping radio cable lengths within reason are all crucial for a successful installation. Also, proper cable assembly and choice of a proper radio cable, based on length and frequency are essential.

If you require assistance with any of the technical topics discussed in this application note, or require any further assistance with any Teletics product, you can ask you Teletics distributor for assistance.

For further information on this application of the Teletics WOPX system, please contact Eric Larson, Vice President – Sales and Marketing, Teletics Inc. at (403) 681 6380, or your local Teletics distributor.