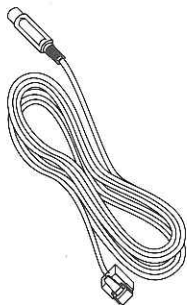


Chapter 4 – Using Existing Wiring

This section tells you how you can install a PhoneNET System using existing wiring. Existing wiring includes telephone wiring, LocalTalk cabling, and RS232 terminal wiring.

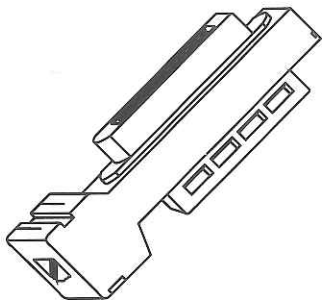
Important terms

PhoneNET to LocalTalk Adapter Cable: A cable that connects a PhoneNET Connector to a LocalTalk connector box. This adapter has an RJ11 plug at one end, and a DIN-3 at the other.



PhoneNET to LocalTalk Adapter Cable

50-pin line tap: A device that taps into pair 21 of ordinary 50-wire (25 pair) office telephone cable. A 50-pin line tap can be reconfigured to tap into any wire pair.



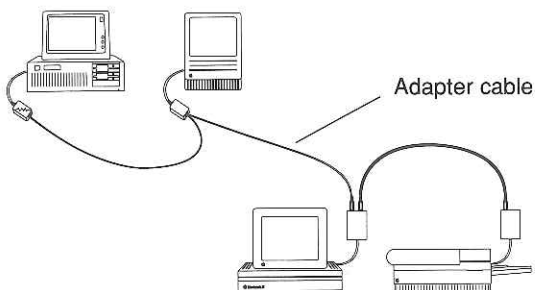
50-pin line tap

LocalTalk cabling

PhoneNET Connectors and LocalTalk connector boxes can be mixed on the same internet by using a PhoneNET to LocalTalk Adapter Cable.

Avoid using more than one adapter cable on a network. With multiple LocalTalk connector boxes, the maximum network distance is limited to LocalTalk's cabling limit of 1000 feet.

The following diagram shows a daisy chain with both PhoneNET Connectors and LocalTalk connector boxes.



A daisy chain with a PhoneNET to LocalTalk Adapter Cable.

Warning: Do not plug a LocalTalk connector box directly into a wall jack with an adapter cable. LocalTalk connector boxes do not have adequate surge protection to attach directly to telephone wall cable. Plug a PhoneNET Connector into the wall jack, then plug the LocalTalk connector box into the PhoneNET Connector with an adapter cable.

Telephone cabling

The information in this section is only an introduction to how a PhoneNET System can be combined with existing telephone cabling. You should consult a qualified telephone installer to ensure proper wiring. Be sure to provide the telephone installer with a copy of this manual.

Most residential and commercial telephone installations can accommodate a PhoneNET System. It doesn't matter what type of telephone cabling is installed as long as there is an unused wire pair for the network. PhoneNET System cabling is compatible with both analog and digital telephone systems. If the telephone wiring in your building does not have an unused wire pair going to each office, you may have to pull new cabling for the network.

Telephones are usually wired in a star. Telephone cables run from a central location such as a telephone closet to each telephone extension. In large, multi-story buildings each floor often has a wiring distribution center, and all of these are linked to a main wiring distribution center in the basement. Telephone cables are usually wired to either a terminal block or a punchdown block which is connected to the telephone company's central office.

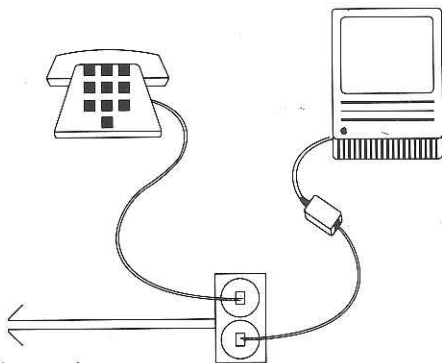
Most single-line telephones are installed using 4-wire cable and often have a pair of unused wires. A single telephone line uses only a single wire pair, typically the red and green wires, leaving the yellow and black wires unused and available for the network.

Multi-line telephone systems are installed using 4-, 6-, 8-, or 50-wire cables and often have many unused wire pairs. Multi-line telephones using 50-wire cable, for example, typically use wire pairs 1-20 for telephone extensions. Wire pairs 23-25 are often used for intercom lines. Wire pairs 21 and 22 are rarely used and are available for the network.

Wiring a PhoneNET System using existing telephone cabling

You need to make an RJ11 socket available at each device location. You may need to install new wall jacks, rewire the existing wall jacks, or add some other type of connector with an RJ11 socket on it.

There are three different ways to connect both a telephone and a PhoneNET Connector to 4-wire telephone wall cable. One way is to replace the existing single wall jacks with dual wall jacks. A second way is to install an additional wall jack at each device location. In a single line telephone that uses the center wire pair, you have a third option. You can plug the PhoneNET Connector into the existing wall jack, and plug the telephone directly into the second RJ11 socket on the PhoneNET Connector.



To phone closet
A PhoneNET Connector and telephone plugged into the same wall jack.

If you are using 50-wire cable, you need to install a 50-pin line tap at each device location. Farallon also offers hardware that lets you tap into other existing wiring schemes.

Once you've installed wall boxes or line taps, you need to wire all of the network wire pairs together at the center of the star. Often a punchdown block or terminal block is used at the center of a star. Consider hiring a qualified telephone installer to wire a punchdown block or terminal block.

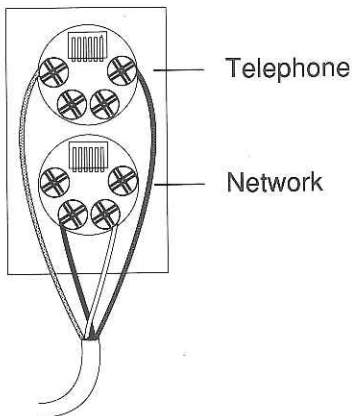
Examples of existing wiring installations

The following two examples describe the installation for two common wiring configurations.

Example 1 – Tapping into 4-wire cabling connected at a terminal block

A two-story residence has one telephone line with two extensions (one on each floor) and would like to add PhoneNET Connectors. Each extension runs on its own 4-wire cable and both cables are connected to a terminal block in the basement. This installation requires dual wall jacks, a terminal block, and modular extension cable.

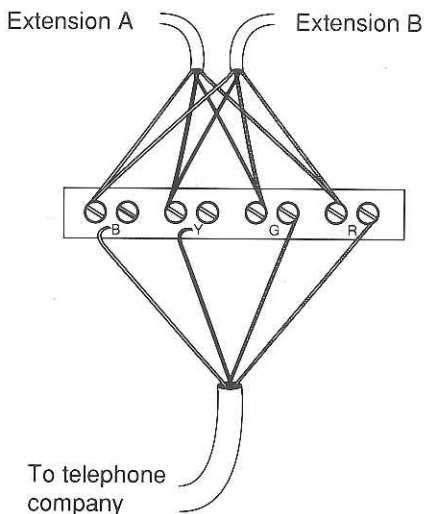
1. Replace the single wall jacks with dual wall jacks and rewire. One RJ11 socket should be wired with the yellow and black wires for the network, and the other should be wired with red and green wires for the telephone. Refer to the wiring diagram below:



Wiring a dual wall jack

2. Put a terminating resistor across the screw terminals labeled "Y" and "B" in each wall jack.
3. Modify the wiring on the terminal block to accommodate the network wire pairs.
 - a. Locate the yellow and black wires coming from each extension.
 - b. Attach both yellow wires to the screw terminal labeled "Y", and attach both black wires to the screw terminal labeled "B."

Note: Be sure to disconnect any wires going from the screw terminals labeled "Y" and "B" to the telephone company's central office. Otherwise your network may be disrupted by voltage from these wires.



Wiring two extensions into a terminal block.

4. Test your network for shorts and proper termination. See *"Testing installed cabling"* in Chapter 5.
5. Plug a PhoneNET Connector into the AppleTalk port of each network device.
6. Locate or make a piece of modular extension cable (with RJ11 plugs at both ends) long enough to link each PhoneNET Connector to a wall jack, or use the 7-foot modular extension cable that came with the PhoneNET Connector.
7. Test the network by printing a document from each device, or by running diagnostic software such as CheckNET. See *"Testing to see that the network functions properly"* in Chapter 5.

Example 2 – Tapping into 50-wire cabling connected at a punchdown block

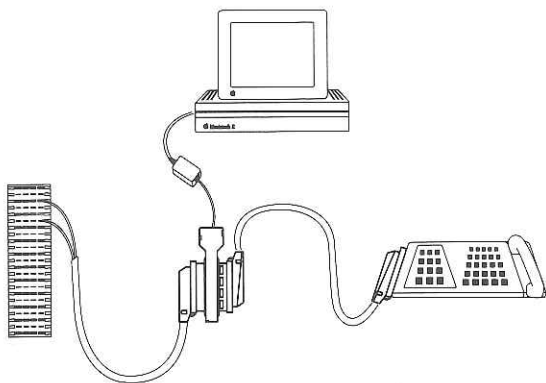
A large office has 50-wire cabling going to four offices and would like to add PhoneNET Connectors. A separate 50-wire cable runs from a punchdown block in the basement to each office. This installation requires four 50-pin line taps.

1. Determine which wire pair you want to use for the network. 50-pin line taps from Farallon are preconfigured to tap into wire pair 21. If necessary, reconfigure each 50-pin line tap to use a different wire pair.
2. Unplug the 50-pin Amphenol connector at each telephone extension and plug in a 50-pin line tap. You may need a screwdriver to detach the Amphenol connector.
3. Modify the wiring at the punchdown block to accommodate the network wires.
 - a. Locate the network wire pairs in the 50-wire cable coming from each office.
 - b. Connect all the wire pairs in common. This is equivalent to jumpering all of the yellow wires together and all of the black wires together in a 4-wire installation.

If you have a large installation or plan to install a PhoneNET StarController, consider purchasing a Passive Star Wiring Kit and running the network wires to the punchdown block.

Note: Be sure the network wire pairs aren't linked to the telephone company's central office. Otherwise your network may be disrupted by voltage from these wires.

4. Insert an RJ11-mounted terminating resistor in the 50-pin line tap.
5. Test your network for shorts and proper termination. See *"Testing installed cabling"* in Chapter 5.
6. Remove the RJ11-mounted terminating resistor, plug a PhoneNET Connector into the AppleTalk port of each network device, and plug a RJ11-mounted terminating resistor into each PhoneNET Connector.
7. Locate or make a piece of modular extension cable (with RJ11 plugs at both ends) long enough to link each PhoneNET Connector to a wall jack, or use the 7-foot modular extension cable that came with the PhoneNET Connector.
8. Test the network by printing a document from each device, or by running diagnostic software such as CheckNET. See *"Testing to see that the network functions properly"* in Chapter 5.



Use a 50-pin line tap to link a PhoneNET Connector to a 50-wire cable

Compatibility with other cabling schemes

You can install a PhoneNET System using other types of cabling including RS-232 terminal wiring, DECconnect cabling, and the IBM Cabling System. It doesn't matter what type of cabling is installed, as long as there is an unused wire pair for the network. Find out if line taps or adapters are available to interconnect your wiring scheme with RJ11 jacks of the PhoneNET System. Farallon offers line taps to connect to the IBM Cabling System and ordinary 50-wire telephone cabling. Contact Farallon for information about using other cabling schemes.