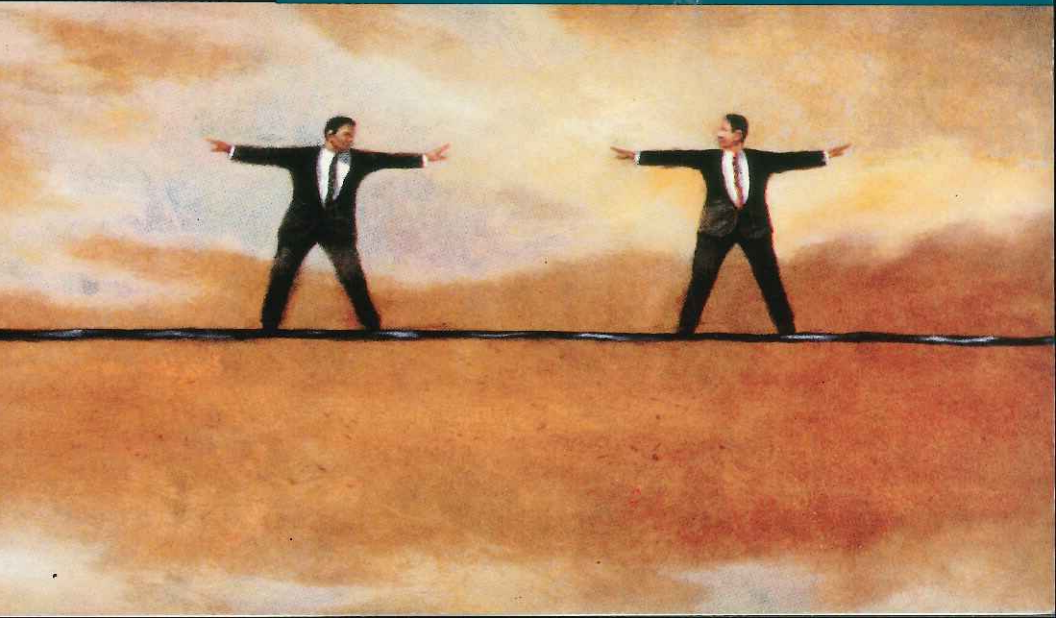
Farallon™

PhoneNET® Connector



Farallon®

PhoneNET® Connector Series 300 User's Guide

Contents

The PhoneNET® System is a network solution that includes a complete line of hardware and software products to help you build your networks, manage them, and use them to their full potential. PhoneNET® connectors are the basic components of the PhoneNET System. Each Macintosh, LaserWriter, or other AppleTalk-compatible device on your network requires a PhoneNET connector. Use PhoneNET connectors to link virtually any AppleTalk-compatible devices. This includes devices with built-in AppleTalk capability, such as Macintosh computers and LaserWriter printers. This also includes IBM PCs and compatibles, Apple IIs, and other types of devices equipped with an AppleTalk interface.

This user's guide introduces you to the concepts and applications behind creating a network. This manual describes some key network components and topologies. It also gives you guidelines and procedures for designing, installing, testing, and troubleshooting your network.

Farallon Customer Service

Farallon Computing is committed to providing its customers with reliable products and excellent technical support. If you have any questions, concerns, or suggestions, please contact Farallon Customer Service by telephone, fax, or mail at:

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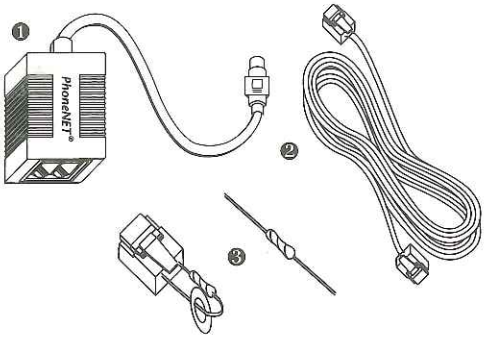
You can also reach us online with the network services of CompuServe (ID: 75410,2702), or with America Online, AppleLink, Connect, GEnie, and MCI Mail (ID for all: FARALLON). Product information and technical notes can be found in the Farallon bulletin boards on America Online, AppleLink, and Connect.

International customers can get customer service easily by contacting your nearest Farallon distributor. For a list of our international distributors, see our AppleLink bulletin board or the back page of our product catalog—or contact Farallon directly.

Network components

Each PhoneNET connector package comes with a connector, modular extension cable, RJ-11-mounted terminating resistor, and an unmounted terminating resistor.



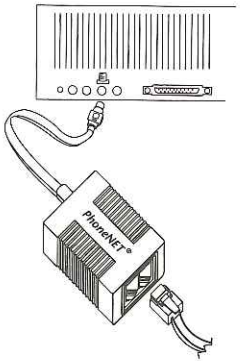
1. PhoneNET connector: The basic hardware unit that attaches a device to the network. Farallon makes PhoneNET connectors with DIN-8, DB-9, and DB-25 plugs. Most newer Macintoshes and LaserWriters use a PhoneNET connector with a DIN–8 plug. Many AppleTalk cards, older Macintoshes and LaserWriters, and other devices use a PhoneNET connector with a DB-9 plug.

2. Modular extension cable: Ordinary 4-wire, 26–gauge stranded cable. Each PhoneNET connector comes with a 7-foot modular extension cable with an RJ-11 plug mounted at each end. Use this cable between the PhoneNET connector and the wall jack.

3. Terminating resistors: Electrical components used to terminate a network. A 120-ohm resistor has four indicator bands: brown, red, brown, and gold. You can terminate a network by plugging an RJ-11-mounted resistor into a PhoneNET connector or by installing an unmounted resistor in a wall jack. Network termination is discussed in "Terminating a Network" later in this manual.

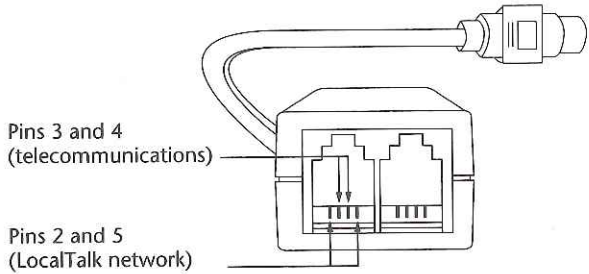
Attaching the PhoneNET connector to a Macintosh

Installation is simple. Insert the DIN–8 or DB-9 plug of the PhoneNET Connector into the LocalTalk port of your network device. Use the printer port on a Macintosh. Then attach the PhoneNET connector to the network using modular cable.



Understanding LocalTalk networks

The PhoneNET connector requires one wire pair (two wires). The LocalTalk signal is a ±5 Volts balanced signal with no ground and is insensitive to polarity. Both RJ-11 jacks on the PhoneNET connector are functionally identical and wired in common. The outer pair of RJ-11 pins (pins 2 and 5) is used for the network. The inner pair is not used by the PhoneNET connector; these wires are often used for telecommunications.



Use the outer pair (pins 2 and 5) for the network

Designing a network

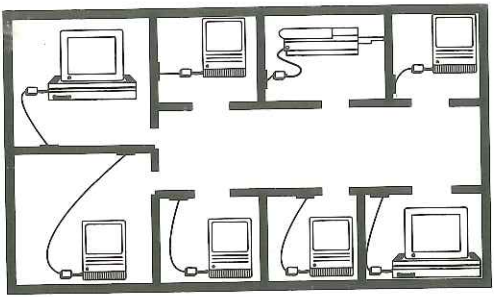
An efficient network that will serve your long-term needs requires thorough research and planning. This section begins with a review of some key network design considerations, and then explains how devices such as gateways and StarController® hubs let you create networks to suit different needs. It also outlines some maximum wiring distance guidelines for PhoneNET System cabling. If you plan to install a small network with a few devices in one room, you may find this section has all the information you need. If you plan to implement a large network with hundreds or thousands of devices, this section may only serve as a starting point. Consider calling Farallon Technical Support to discuss your network design.

Network design considerations

Since every network is unique, it is impossible to list the exact steps involved in network design. Listed below are some general guidelines.

- **Choose a network topology.** The topology is the physical layout of network devices. Topologies include daisy chain, backbone, and star.
- **Assign a network manager.** The network manager coordinates the design and installation of the network. The network manager is also responsible for adding new users to the network and troubleshooting problems.

- **Create a network map.** A network map is a visual record of your network configuration. Create a network map by copying a floor layout diagram and adding graphics representing devices and cabling. You can modify the map as you change your plans and use the completed map during installation.

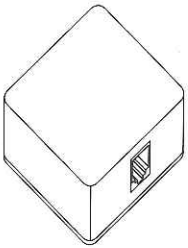


- **Leave room for growth.** As your network needs grow, your network should also grow. Hasty additions to your network will make network maintenance difficult and time consuming. Plan to install more cabling than you think you will need at the present time.

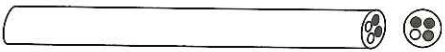
Network topologies

There are four basic network topologies: daisy chain, backbone, passive star, and active star. It is important to understand the benefits of each topology. Three key building blocks of the network topologies are the wall jack, telephone wall cable, and punchdown block.

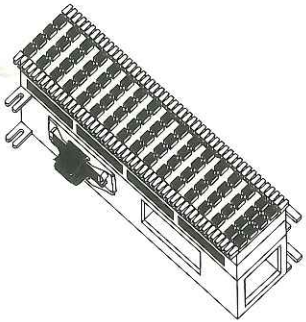
Wall jack: A small hardware component used to tap into telephone wall cable. Most offices have a wall jack for each telephone. RJ-11 wall jacks usually have four conductors, while RJ-45 wall jacks typically have eight conductors.



Telephone wall cable: Ordinary 4- or 8-wire, 22- or 24-gauge (.642 mm or .510 mm, respectively) unshielded solid copper wire cable. Telephone wall cable is often called telephone station cable or twisted-pair cable.

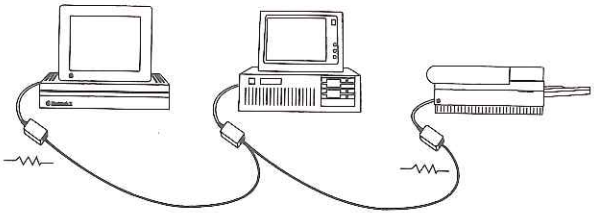


Punchdown block: A wall-mounted telephone wiring distribution block used to connect many pairs of wires. A punchdown block is often used at the center of a star configuration to connect the many network branches together.



Daisy chain topology

A **daisy chain** is a network topology in which multiple devices are linked one to another. In a daisy chain, each device has a PhoneNET connector and is directly linked to the next with modular extension cable.



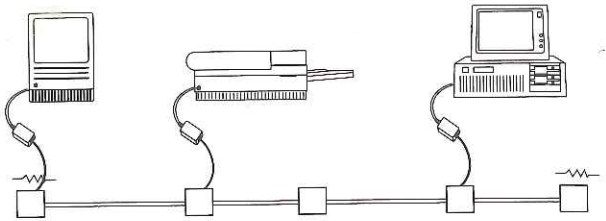
A daisy chain can be constructed quickly and easily, and is a good choice if you want to connect a few devices that are in the same room. A daisy chain is also useful for temporary installations.

There are a few important limitations to keep in mind when constructing a daisy chain. Modular extension cable isn't twisted and contains relatively thin, stranded wire. A daisy chain contains a separate length of wire and two contact points between each PhoneNET connector. As a result, a given daisy chain should contain no more than 24 PhoneNET connectors and should be limited to 1800 feet (549 meters) of modular extension cable.

A daisy chain can be easily disconnected. Removing a PhoneNET connector from the middle of a daisy chain splits the network into two independent networks. To create a larger or more permanent network, consider a backbone or star topology.

Backbone topology

A **backbone** consists of a continuous length of cable with multiple network connection points. In a backbone many wall jacks are connected to a length of telephone wall cable. Each device has a PhoneNET connector connected to a wall jack with modular extension cable.

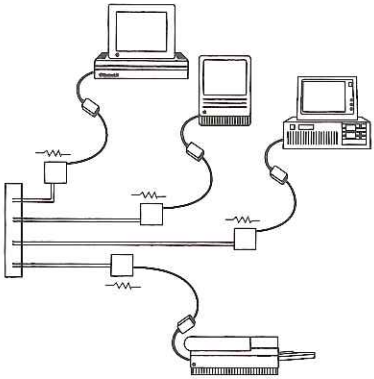


A backbone has many advantages over a daisy chain. You can create large, permanent, reliable networks of up to 4500 feet (1372 meters) using telephone wall cable. You can plug or unplug a PhoneNET connector from any wall jack on a backbone without affecting other devices.

You may need to pull new telephone wall cable and install new wall jacks to install a backbone. A backbone is a good alternative if you plan to run new cabling and don't need the benefits of a star.

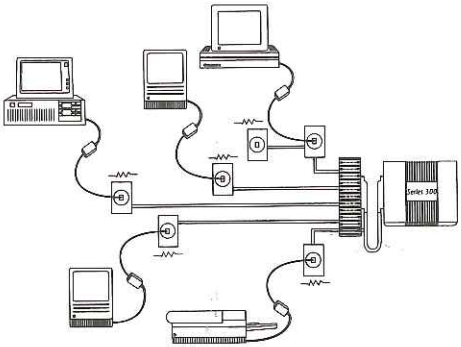
Passive star topology

A **passive star** is a network topology in which up to four network branches are connected to one central location. In a passive star each network branch usually contains one or more devices, and all the network branches are connected to a wiring distribution block such as a punchdown block. This topology is a good choice if you plan to use existing wiring for a small network. You can easily add a StarController hub and create an active star if your network grows beyond four branches.



Active star topology

An **active star** consists of multiple network branches connected to a StarController. Of the four topologies, the active star is the best choice. An active star consists of a StarController connected to a punchdown block with network branches radiating to telephone wall jacks. The StarController amplifies the signals between network branches, increases network reliability, and increases cabling distances. The StarController has 12 ports, each of which can support up to 3000 feet (914 meters) of cabling and up to four network branches. See the *PhoneNET StarController User's Guide* for more information. A StarController also comes with StarCommand™ software to manage, test, and troubleshoot the network.



Using existing wiring

You may be able to use the existing telephone wiring in your building for the network. Most residential and commercial telephone installations can support a network—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. Most single-line telephones are installed using 4-wire cable and often have a pair of unused wires. 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 wiring closet to each telephone extension. In large, multi-story buildings each floor often has a wiring closet, and all of these are linked to a main wiring closet in the basement.

Wiring guidelines for PhoneNET System cabling

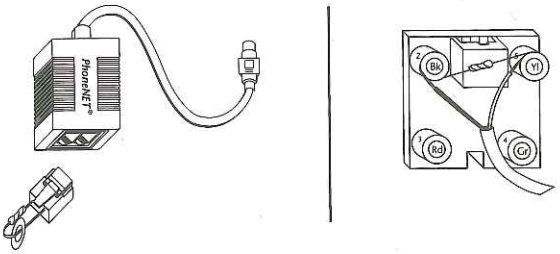
Network signals weaken as they travel through cable. We have tested our connectors and determined maximum distance guidelines for LocalTalk networks. If you would like to extend your network beyond these distances, consider using repeaters, routers, or additional StarController hubs.

Topology	**22 gauge .642 mm**	**24 gauge .510 mm**	**26 gauge .403 mm**
daisy chain	n/a	n/a	1800 ft. 549 m
backbone	4500 ft. 1372 m	3000 ft. 914 m	1800 ft. 549 m
4-branch passive star*	1125 ft. 343 m	750 ft. 229 m	450 ft. 137 m
LocalTalk StarController 12-branch active star*	3000 ft. 914 m	2000 ft. 610 m	1200 ft. 366 m
LocalTalk StarController 48-branch active star*	750 ft. 229 m	500 ft. 153 m	300 ft. 92 m

**distance is per branch*

Terminating your network

You need to terminate the ends of the network to reduce errors caused by reflected network signals. You can terminate a network by installing a 120-ohm (1/4 Watt) resistor at the end of each network branch, or at both ends of a daisy chain or backbone. Some LocalTalk connectors, like the StarConnector™, are pre-terminated. If you are using connectors that do not have built-in terminators, you can either install a terminating resistor in a wall jack or plug in an RJ-11-mounted terminating resistor into the unused port of a PhoneNET connector.



Placing terminating resistors in wall jacks ensures that they will not be removed accidentally even if the PhoneNET connector attached to the wall jack is removed. The following table tells you where you need to install terminating resistors. Many diagrams in this manual include a resistor symbol (—WW—) to indicate the proper location of terminating resistors on a network.

Topology	Termination instructions
daisy chain	Install a resistor at each end of the daisy chain. Use a maximum of two resistors per daisy chain.
backbone	Install a resistor at each end of the backbone. Use a maximum of two resistors per backbone.
passive star	Install a resistor at the end of each network branch. Use a maximum of four resistors per passive star.
active star	Install a resistor at the end of each network branch. Use a maximum of 48 resistors per StarController.

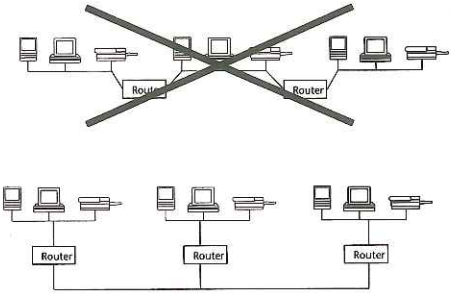
Adding bridges, routers, PhoneNET® Repeaters, and PhoneNET StarController® hubs

Designing a large network involves a close look at how some key network hardware components can expand a network and improve performance.

- **Add LocalTalk routers to reduce traffic in a network.** Consider adding a LocalTalk router if your network appears to be slowed down by traffic. Use TrafficWatch® to see the traffic patterns of your network and to find out which devices generate the most traffic.

- **Use PhoneNET Repeaters for extended network distances.** For spanning distances of 6000 feet or more, such as multi-building networks, you should consider using PhoneNET Repeaters. You can install multiple PhoneNET Repeaters to carry a network signal several miles.

- **Place networks in a backbone to avoid excessive cross traffic.** If one network requires frequent use of a device on another network, make sure both networks are contiguous or linked by a backbone. Otherwise the networks placed between them will be slowed down by constant through-traffic.



- **Add PhoneNET StarController hubs to create large LocalTalk networks.** A PhoneNET StarController extends the total network length, improves reliability, and provides convenient network management control functions.

- **Add StarController EN hubs for heavy network users.** Running at 10 Mbps, the Ethernet StarController EN can handle the needs of the most demanding users. You can install StarController EN hubs with existing wiring and place them alongside LocalTalk StarController hubs. You can use a router to link the LocalTalk and Ethernet devices.

Installing PhoneNET System cabling

This section gives instructions for installing a daisy chain, backbone, and passive star. Instructions for installing an active star appear in the *PhoneNET StarController User's Guide*. Just as every network is different, the exact steps, tools, and parts required for installing your network will vary. You always need one PhoneNET connector for each network device. Most of the other wiring accessories are available from Farallon.

A pocketknife or wire stripping tool is useful for stripping wire, and a screwdriver is needed to wire wall jacks. You may also need wire cutters and a punchdown tool.

Installing a daisy chain

A daisy chain is easy to install. You modular extension cable to interconnect adjacent PhoneNET connectors and two RJ-11-mounted terminating resistors.

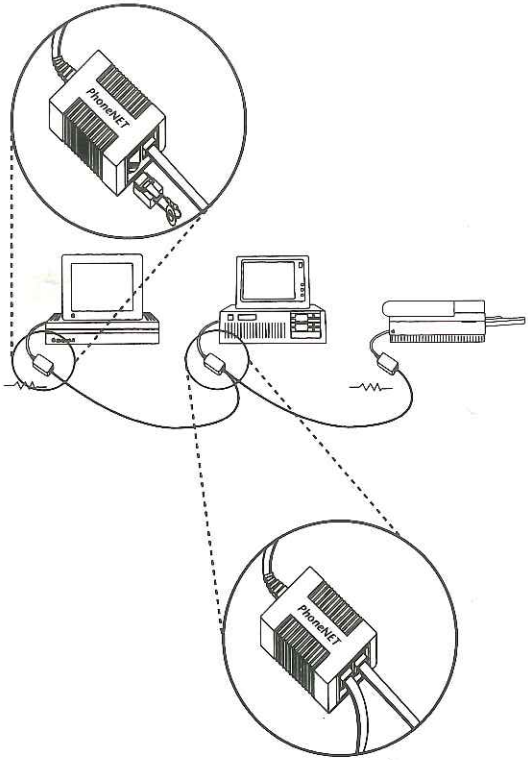
1. Plug a PhoneNET connector into the LocalTalk port of each network device.

2. Connect each PhoneNET connector to the next by plugging the modular extension cable into an RJ-11 socket in each PhoneNET connector. Repeat this step until all PhoneNET connectors are connected.

   Note: Do *not* attach the first and last PhoneNET connectors together, creating a circle. The PhoneNET connectors at each end of the daisy chain should have only one modular extension cable plugged into them. The PhoneNET connectors in the middle of the daisy chain should each have two modular extension cables plugged into them.

4. Insert an RJ-11-mounted terminating resistor into the unused RJ-11 socket on the first and last PhoneNET connectors of the daisy chain.

5. Test the network by printing a document from each device or by running diagnostic software such as PhoneNET CheckNET®.



A daisy chain with properly installed RJ-11-mounted terminating resistors

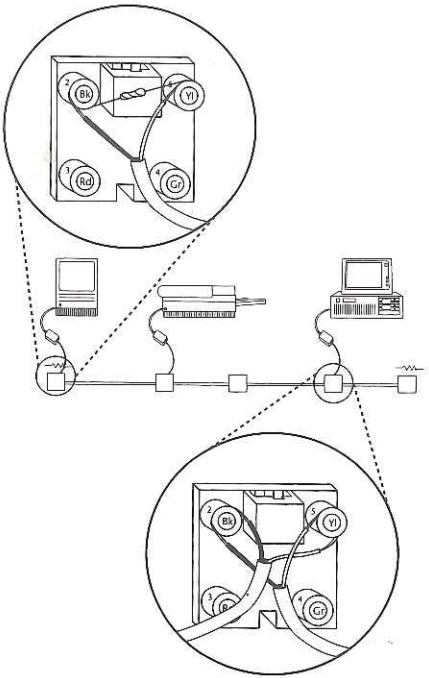
Installing a backbone

To install a backbone you need wall jacks, modular extension cable, and enough telephone wall cable to reach each wall jack. The most reliable backbone is created by using one continuous length of telephone wall cable and wiring wall jacks *without* cutting the telephone wall cable.

1. Pull one continuous length of telephone wall cable along the route of your network.
2. Position the wall jacks along the wall cable.
3. At each wall jack within the backbone, follow these steps to strip the insulation off the yellow and black wires without cutting them:
   - Make a cut all the way around the outer insulation without cutting the wires inside. Make a second cut all the way around the outer insulation 2 inches (5 cm) from the first cut. Now make a cut lengthwise between the first two cuts.
   - Remove the 2-inch (5-cm) piece of insulation and discard it. You will see four wires colored yellow, black, red, and green.
   - Strip about 1 inch (2.5 cm) of insulation from the yellow and black wires. Again, be careful not to cut the wires.

4. Follow these steps to loop the exposed section of the yellow and black wires around the screw terminals labeled "Y" and "B" in the wall jack:
   - Loosen the screw terminals labeled "Y" and "B" in the wall jack.
   - Loop the exposed yellow wire around the screw terminal labeled "Y" inside the wall jack.
   - Loop the exposed black wire around the screw terminal labeled "B" inside the wall jack.
   - Tighten the screw terminals and replace the wall jack covers. Be careful not to dislodge the spade lugs connecting the screw terminals to the RJ–11 socket.
5. Wire and terminate the wall jacks at each end of the backbone. See Step 3 in the next section, "Installing a Passive Star," for details.
6. Mount the wall jacks. The wall jacks supplied by Farallon have adhesive backs; remove the backing piece and stick the jacks in place. Other wall jacks may have screw mounts.
7. Test your network for shorts and proper termination. See the section "Testing Installed Cabling" later in this manual for more detailed information.
8. Plug a PhoneNET connector into the LocalTalk port of each network device.
9. Attach the PhoneNET connector to the wall jack using modular extension cable.

10. Test the network by printing a document from each device or by running diagnostic software such as CheckNET™.



A backbone

Installing a passive star

To install a passive star you need wall jacks, telephone wall cable, and modular extension cable. You also need a punchdown block at the center of a star. A punchdown block keeps your wiring well organized, allows easy wiring modifications, and can accommodate a StarController should your network need one.

The instructions below describe the installation of a passive star using wall jacks, telephone wall cable, and a punchdown block. You should be familiar with the use of a punchdown tool for this installation. Consult a qualified network installer if necessary.

1. Install a punchdown block at a central location such as a telephone closet.
2. Pull or locate a separate length of telephone wall cable from the punchdown block to each wall jack.
3. Wire each wall jack.
   - Remove a 2–inch piece of the outer insulation. You will see four wires colored yellow, black, red, and green.
   - Strip about 3/4 inch of insulation from the yellow and black wires.
   - Attach the exposed yellow wire around the screw terminal labeled "Y" inside the wall jack.
   - Attach the exposed black wire around the screw terminal labeled "B" inside the wall jack.
   - Wrap one end of the resistor clockwise around the screw terminal labeled "Y" and wrap the

other end of the resistor clockwise around the screw terminal labeled "B." Be careful not to dislodge the yellow and black screw lugs leading to the RJ–11 socket.

- Tighten the screw terminals and replace the wall jack covers.

4. Connect the wires coming from each wall jack to the punchdown block. Be sure to connect yellow wires to one row of pins and black wires to the other row of pins.

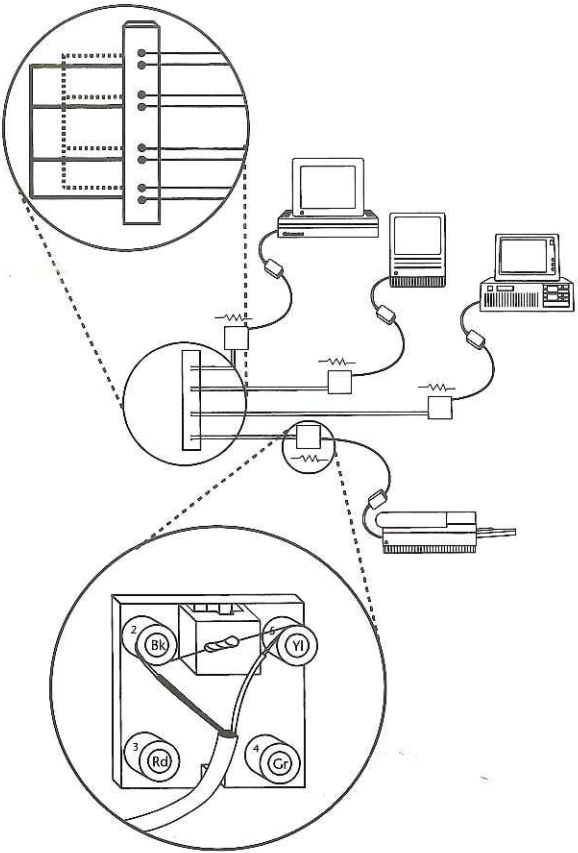
5. Connect (jumper) all the yellow wires in common, and connect all the black wires in common. If you are using Farallon's Passive Star Wiring Kit, simply insert the jumper plug into the punchdown block's 50–pin Amphenol socket. Otherwise, use a piece of wire to connect the yellow rows together and another piece of wire to connect the black rows together.

6. Test your network for shorts and proper termination. See the section "Testing Installed Cabling" later in this manual for more detailed information.

7. Plug a PhoneNET connector into the LocalTalk port of each network device.

8. Attach the PhoneNET connector to the wall jack using modular extension cable.

9. Test the network by printing a document from each device or by running diagnostic software such as PhoneNET CheckNET.

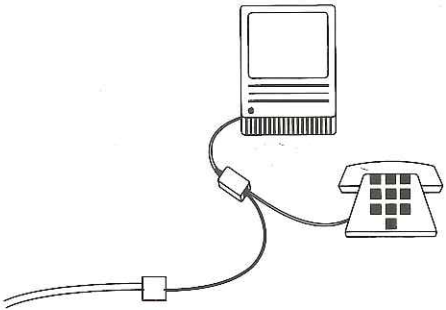


A passive star

Installing a network using existing telephone wiring

To install a network using existing telephone wiring, you may need to install new wall jacks, rewire the existing wall jacks, or add some other type of connector with an RJ–11 socket on it. There are three different ways to connect both a telephone and a PhoneNET connector to 4-wire telephone wall cable:

- Install an additional wall jack at each device location.
- Replace the existing single wall jacks with dual wall jacks.
- Plug the PhoneNET connector into the wall jack, and plug the telephone directly into the second RJ–11 socket on the PhoneNET connector. This method only works when you have a single line telephone that uses the center wire pair (pins 3 and 4).



To wiring closet

Testing installed cabling

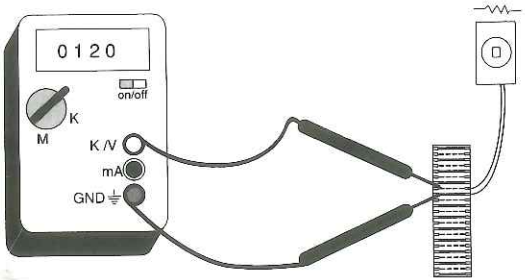
It is important to test the network wiring for shorts and to see that terminators are properly installed. When testing branch cables, use a digital ohm meter since most analog ohm meters cannot accurately display small resistances.

Testing a branch of a star

After installing a terminating resistor in the wall jack at the end of each branch cable, test the cables to confirm that the wall jacks are wired correctly. Before you test the cables, make sure that no PhoneNET connectors are connected to any of the wall jacks.

Use a digital ohm meter and a PhoneNET connector to test each network branch cable from the telephone closet.

1. Disconnect the PhoneNET connector from the network branch.
2. Attach the ohm meter to a network branch cable in the telephone closet.
3. Measure the resistance. The resistance should be 120 ohms, plus approximately 30 to 50 ohms more for every 1,000 feet of cable.



Measuring the resistance in a network branch

4. Plug a PhoneNET connector into the wall jack at the end of the network branch and again measure the resistance.

   If the resistance is greater than 100 ohms, you may have a bad connection or you may have exceeded the recommended cable length.

   If the resistance is the same as it was before you plugged in the PhoneNET connector, either you have connected the 120-ohm terminating resistor to the wrong pair of wires inside the RJ-11 wall jack, or you are measuring the wrong network branch cable.

Testing a backbone

1. Create a test cable from a short piece (1 to 3 feet) of modular extension cable. Mount an RJ–11 plug on one end, and strip about 1 inch of insulation from the yellow and black wires at the other end. Attach the leads of the ohm meter to the yellow and black wires.

2. Disconnect all PhoneNET connectors from the backbone.

3. Insert the test cable's RJ–11 plug into any wall socket on the backbone.

4. Measure the resistance. The resistance should be 60 ohms, plus approximately 30 to 50 ohms for every 1,000 feet of cable.

   If the resistance is infinite, then the cable is cut, damaged, or not terminated. Inspect the cable carefully. Check the wall jack at the end of the cable to make sure that a terminating resistor is correctly installed.

   If the resistance is close to zero or approximately 30 to 50 ohms for every 1,000 feet of cable, either the cable has a short or a PhoneNET connector is plugged into a wall jack along the cable. Check the cable for snapped or crimped wires.

Testing to see that the network functions properly

Once you've testing the wiring, it is a good idea to print a test document from each network device. A more thorough way to test your network is to run a diagnostic software such as PhoneNET CheckNET. This desk accessory displays the name, address, and type of every device on the network. PhoneNET CheckNET can search for particular devices (even across multiple bridges and zones) and can sort by name, address, or device type.

The following steps describe how to set up a Macintosh to print a test document to a LaserWriter.

1. Check to see that all devices are properly connected to the network.
2. Start up a Macintosh with a disk containing the latest System, Finder, LaserWriter, and LaserPrep files.
3. Choose the Chooser desk accessory from the Apple menu, and check to see that the AppleTalk Active box is selected. If necessary, click to make AppleTalk active.

4. Select a zone if necessary. Click on the LaserWriter icon and select a LaserWriter. Close the Chooser.

Selecting a network printer using the Chooser desk accessory

5. Open any folder on the desktop to display its contents. Choose Print Directory from the File menu. A one-page document should print.

6. Repeat steps 3 to 5 for each Macintosh.

Troubleshooting tips

This section provides general information to help you solve network problems. If you are unable to solve a problem yourself, call Farallon Technical Support.

- Make sure that the terminating resistors are installed properly. Terminating resistors should be placed at each end of a daisy chain or backbone, and the end of each branch of a star.
- Make sure that a PhoneNET connector is plugged into the *printer port* of each Macintosh or in the LocalTalk port of other devices.
- Test the network for shorts, proper termination, and to see that the network is functioning properly.
- Be sure you haven't exceeded the maximum recommended cable distances, number of branches, or number of devices. See *"Wiring Guidelines for PhoneNET System Cabling"* earlier in this manual.
- Make sure that each Macintosh starts up from a disk containing the same version of the System, Finder, LaserWriter, and LaserPrep files.
- Be sure that AppleTalk is active in the Chooser desk accessory. Also be sure the appropriate network service icon (AppleShare, LaserWriter, and so on) is selected in the Chooser.

Traffic tips

- Analyze network traffic patterns to locate high traffic areas and evaluate error rates. Farallon's TrafficWatch software collects traffic data and includes utilities to analyze the data, providing the necessary information to optimize network performance.
- Consider adding a bridge to split a network into two separate but interconnected networks. If you already have two or more bridges, consider configuring your bridges to create an AppleTalk backbone.
- Consider adding gateways to create an Ethernet backbone.
- Consider purchasing a separate computer (preferably a Macintosh II series) for each network service, instead of running all network services on the same computer.

Glossary

active star: A network topology consisting of a StarController connected to a punchdown block with network branches radiating to telephone wall jacks.

backbone: An unbroken length of cable with multiple network connection points. In a backbone many wall jacks are connected to a length of telephone wall cable. Each device has a PhoneNET connector that is connected to a wall jack with modular extension cable.

daisy chain: A network topology in which multiple devices are linked one to another. In a daisy chain, each device has a PhoneNET connector and is directly linked to the next with modular extension cable.

modular extension cable: Ordinary 4-wire, 26-gauge (.4 mm) stranded cable. Each PhoneNET connector comes with a 7-foot modular extension cable with an RJ-11 plug mounted at each end.

passive star: A network topology in which up to four network branches are connected to one central location. In a passive star each network branch usually contains one or more devices, and all the network branches are connected to a wiring distribution block such as a punchdown block.

PhoneNET connector: The basic hardware unit that attaches a device to the network.

punchdown block: A wall-mounted telephone wiring distribution block used to connect many pairs of wires. A punchdown block is often used at the center of a star configuration to connect the many network branches together.

RJ-11-mounted terminating resistor: An electrical component for properly terminating the ends of a daisy chain.

telephone wall cable: Ordinary 4- or 8-wire, 22- or 24-gauge (.642 mm or .510 mm) solid copper wire cable. Telephone wall cable is often called telephone station cable or twisted-pair cable.

terminating resistor: A component used to increase the reliability of a network signal. Terminating resistors can be added into a wall box. A 120–ohm resistor has four bands: brown, red, brown, and gold.

wall jack: A small hardware component used to tap into telephone wall cable. Most offices have a wall jack for each telephone. RJ–11 wall jacks usually have four conductors; RJ–45 wall jacks typically have eight conductors.

Technical specifications

Topology: parallel bus, low-resistance transformer isolated

Signaling standard: EIA modified RS–422, balanced voltage

Signaling speed: 230,400 bits per second

Network signal rates: Speed independent. Speeds in excess of 1M Baud

Signal encoding: FMO (bi-phase) space

Frame format: SDLC (Synchronous Data Link Control)

Maximum distance between devices: ~4500 feet

Maximum number of nodes per network: Limited by traffic

Node identification: AppleTalk logical address is self-configuring, no user action required

RFI and noise immunity: No RFI passive taps; noise immunity greater than 600 Volts

FCC class: Verified to comply within FCC Class A limits

Cabling: 22– or 24–gauge (.642 mm or .510 mm) unshielded twisted pair or telephone wall cable. 26-gauge 4–conductor modular telephone extension cable for restricted distances

Connectors: modular RJ–11 4-pin connectors

Hardware limited warranty and disclaimer

Farallon Computing, Inc. ("Farallon") warrants the PhoneNET Connector Series 300 (the "Product") against defects in materials and workmanship for the life of the original purchaser. If you discover a defect during the warranty period, Farallon will repair or replace the defective Product or refund the purchase price, at its option, provided you comply with the following procedure:

1. Contact Farallon Customer Service to obtain a Return Materials Authorization ("RMA") number.
2. Return the defective Product and proof of purchase, shipping prepaid, to Farallon with the RMA number prominently displayed on the outside of the package.

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Special thanks to Brad Adams, Fred Kaye, Diana Wynne, Jeff Angus, and Larry Jones.

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The Last Word

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- Were the illustrations useful? Did you need more examples?
- Can you recommend other relevant reference materials?
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