

MacCon Family  
Ethernet Network Cards  
for the Macintosh

Installation Guide



**ASANTÉ**

# **Asanté MacCon Adapter Family**

## **Installation Guide**

Asanté Technologies, Inc.  
821 Fox Lane  
San Jose, CA 95131

October 1994

Part Number 06-00141-00 Rev. B  
Printed in USA

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Fax-Back <sup>a</sup>	(800) 741-8607 (408) 954-8607
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a Please request catalog of contents.

b Download INDEX.TXT file for catalog of contents.

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## Technical support hours

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- What do you think is the least valuable or weakest part of this manual?
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## Introducing the Asanté MacCon Cards

Thank you for purchasing a MacCon network interface card from Asanté Technologies. Asanté's MacCon cards enable you to connect any Macintosh with an available expansion slot to a high speed Ethernet network.

The MacCon Family consists of the MacCon and MacCon-i series. The MacCon-i series, designed with advanced integration technology, is available only for Macintosh systems with NuBus and LC PDS expansion slots.

The MacCon cards are described in the table below.

	10BaseT and Thick	Thin and Thick	10BaseT, Thin, and Thick
NuBus Macs	MacCon-i NB-10T 99-00198-01 MacCon+ ILET64 99-00102-10	MacCon-i NB-TN 99-00197-01 MacCon+ ILET64 99-00101-02	MacCon3 NB 99-00301-02 MacCon-i NB-3 99-00196-01
Centris 610 PDS, Quadra 610, and Centris 660 AV	MacCon+ 610ET 99-00162-01	MacCon+ 610E 99-00161-01	MacCon3 610 99-00160-01
Mac IIsi and Mac SE/30	MacCon+ 30iET64 99-00203-03	MacCon+ 30iE64 99-00204-02	MacCon3 IIsi 99-00302-02
Mac LC PDS	MacCon-i LC-10T (10BaseT only) 99-00219-01 MacCon LC10THI (10BaseT only) 99-00093-01	MacCon-i LC-TN (Thin only) 99-00218-01 MacCon LCTNIII (Thin only) 99-00089-01	MacCon-i LC-TN/10T (10BaseT and Thin) 99-00217-01 MacCon+ LCIII (10BaseT and Thin) 99-00089-01
Mac SE	MacCon+ SEET 99-00300-03	MacCon+ SEE 99-00300-02	MacCon3 for SE 99-00302-04

The term *MacCon cards* is used in this manual to refer to all cards in the MacCon Family. When text applies only to a specific card, it is identified by its name.

## Summary of MacCon Card Features

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Asanté MacCon cards offer the following features:

- ❑ Support for all Macintosh computers with expansion slots
- ❑ Compatibility with Apple® System 7, and EtherTalk Phase 1™ and Phase 2™
- ❑ Compliance with the IEEE 802.3 standard for 10BaseT (Twisted-Pair), Thin, and Thick Ethernet
- ❑ Compatible with the following software environments: Apple-Share™, Novell NetWare™ for Macintosh, 3Com 3+Open™, 3Com 3+Share™, Sitka TOPS™, DEC Pathworks™, A/UX, and other popular network software
- ❑ Supports the following protocols: AppleTalk, TCP/IP, and DecNet
- ❑ High performance true 32-bit internal data transfers with tuned drivers for optimal performance
- ❑ Diagnostic software for help in identifying problems
- ❑ A PDS pass-through slot and a removable AUI port on the MacCon3 IIsi cards allowing you to install more than one PDS card in a Macintosh IIsi
- ❑ A socket for an additional Motorola 68882 math co-processor on the MacCon3 IIsi, 30i and LC cards

### The Math Co-processor Option

An optional socket for a math co-processor is provided with the following MacCon cards: MacCon LC, MacCon IIsi, MacCon 30i. This socket accepts the Motorola 68882 PLCC Math Co-Processor™. For the correct math co-processor chip and installation procedure, check your Macintosh documentation.

## Asanté EtherTalk Installer Software

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An Asanté EtherTalk Installer diskette is included with each Asanté MacCon card. The diskette contains Asanté's EtherTalk driver, Asanté Network and Diagnostic Utility software and Apple networking software. Asanté's EtherTalk device driver enables AppleTalk to communicate with the Ethernet interface card.

## Installing Asanté MacCon Cards

This chapter provides step-by-step instructions for installing Asanté MacCon Ethernet network interface cards and EtherTalk software.

To install an Asanté MacCon Ethernet card, you will perform the following operations:

- ❑ Prepare for the installation
- ❑ Install the MacCon card
- ❑ Connect the Macintosh to the network cable
- ❑ Terminate the cable where applicable
- ❑ Install the EtherTalk software

### Preparing for the Installation

---

Before you open the anti-static bag containing the card, you must prepare for the installation as described below.

Make sure you meet all the requirements and are aware of the safety rules.

#### Checking the Requirements

Before you open the anti-static bag containing the Asanté MacCon card, make sure you have the following:

- ❑ The required software:
  - Apple system software 6.0.8 or higher
  - A network operating system or a compatible system and application software to run the network, provided by Apple or a third-party vendor.
- ❑ The EtherTalk Installer diskette provided by Asanté.

- ❑ The appropriate Asanté card and Ethernet hardware for your cabling:

Cabling	Requires	Comments
10BaseT	Hub and RJ-45 connector	10BaseT-compliant hub required <sup>a</sup>
Thin	Pair of 50-ohm terminator plugs and BNC connector	One plug for each end of thin Ethernet cable
Thick	External media adapter and DB-15 (AUI) connector	Connects Macintosh to a drop cable. One for each Macintosh connected to the network

- a. Asanté offers a full range of intelligent and non-intelligent 10BaseT-compliant hubs.

Refer to Appendix B for detailed Ethernet specifications.

## Observing the Safety Rules

Do not remove the network interface card from its anti-static bag until you are ready to insert it into the expansion slot. The interface cards are sensitive to static electricity and must be handled very carefully. Improper handling or installation can result in damage to your card and/or your Macintosh.

Any damage you may cause to the computer or card will not be covered by the limited warranty.

Observe the following safety precautions during the installation:

- ❑ Consult your network administrator about the card installation before connecting to the network..
- ❑ Turn off the Macintosh and all peripherals connected to it.
- ❑ If you need to lay a Macintosh flat on its face, use an anti-static mat.
- ❑ When installing the MacCon+ SE or SE/30 card, be extremely careful not to touch any part of the exposed circuitry. Some circuit components retain a high voltage charge long after the power is disconnected.

- ❑ Ground yourself by using an anti-static wrist strap. Attach it to the chassis once you have opened the Macintosh, but before handling the Asanté card or touching any component inside the system.
- ❑ Handle the Asanté card by the edges and avoid touching the connectors and chips.
- ❑ Keep the Asanté card in the anti-static bag until you are ready to install it in the Macintosh.

## The MacCon NuBus Card

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If your Macintosh accepts NuBus expansion cards, you can use the MacCon NuBus network interface card to connect the Macintosh to an Ethernet network.

You install a MacCon NuBus card into an unused NuBus expansion slot on the motherboard.

Refer to your computer's User Guide for illustrated instructions on how to open your Macintosh computer.

### MacCon NuBus Card

- △ **Note:** If you are using Thick Ethernet (10Base5) cabling and your network does not have 10Base5-compliant Ethernet transceivers, you may need to force the card to select the AUI port by setting the JP1 jumper ON as shown in Figure 2-1.

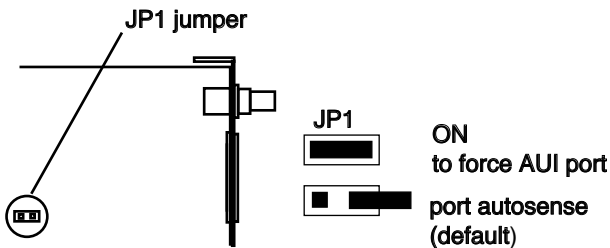


Figure 2-1 Selecting AUI, MacCon NuBus card

## MacCon-i NuBus Card

- △ Note: If you wish to disable link integrity, use the JP1 jumper on the MacCon NuBus card, as shown in Figure 2-2. (For example, hubs made before the 10BaseT specifications were published do not support link integrity.)

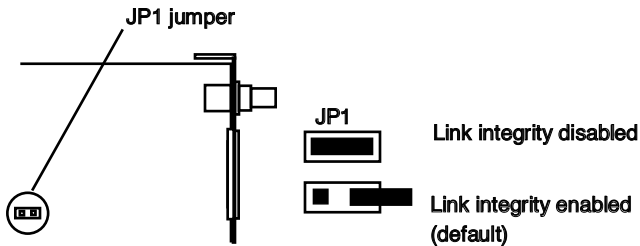


Figure 2-2 Disabling Link Integrity, MacCon-i NuBus card

## Installing the MacCon NuBus Card

- 1** Power down the Macintosh. Disconnect and remove the power cable.
- 2** Open the Macintosh.
- 3** Remove the access port cover. Make sure you are grounded: check that your anti-static wrist strap is properly attached to your wrist and to the Macintosh chassis.
- 4** Plug the MacCon card into the NuBus expansion slot on the motherboard:
  - With the card's Ethernet connectors facing the expansion slot access port, carefully line up the card's edge connector with the expansion slot (see Figure 2-3).

**Figure 2-3 Installing a MacCon 3 NuBus card**

- Gently press on the card until the connector is fully seated and the card is flush with the card holders at both ends.

**With a Centris 610**

If you are installing a MacCon NuBus card in an Apple Centris 610, you need to use the Apple Centris 610 NuBus Adapter, which is not included with the MacCon NuBus card. The Apple Centris NuBus Adapter part number is M1402LL/A.

- Slide the MacCon NuBus card into the Centris 610 NuBus Adapter.
- Plug the adapter into the NuBus expansion slot as shown in Figure 2-4 on page 2-6.

**5** Close the case.

**6** Connect the Macintosh to the network as described in "Connecting the Macintosh to the Network" on page 2-24.

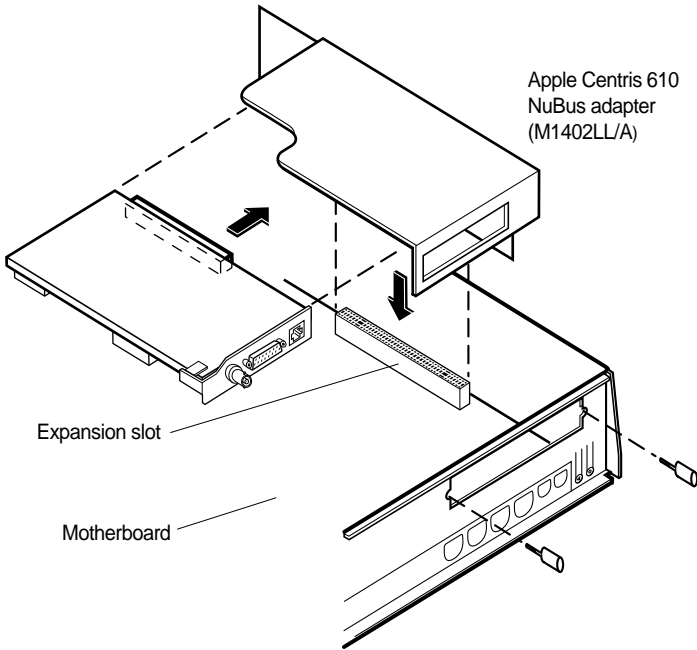


Figure 2-4 Installing MacCon NuBus card, Apple Centris 610

## Installing the MacCon 610 Card

---

If you have a Macintosh Centris 610, you can use a MacCon 610 card to connect to the Ethernet. Each card consists of two parts:

- ❑ The larger controller card, which plugs into the expansion slot in the Macintosh.
- ❑ The smaller daughter card, which is mounted on the rear access port to enable a connection to the Ethernet cable.

You connect the two cards before installing them.

To install the MacCon3 610, MacCon+ 610E, or MacCon+ 610ET card in a Macintosh Centris 610, perform the following steps:

- 1** Set jumpers if needed (see the next two Notes and Figures 2-5 and 2-6).



△ **Note:** In some cases with Thick Ethernet (10Base5) cabling when your network does not have 10Base5-compliant Ethernet transceivers, you may need to force the NuBus card to select the AUI port by setting the JP1 jumper ON as shown in Figure 2-5.

- 3** Power down the Macintosh. Disconnect and remove the power cable.
- 4** Open the Macintosh and remove the access port cover.
- 5** Make sure you are grounded: check that your anti-static wrist strap is properly attached to your wrist and to the Macintosh chassis.
- 6** Plug the controller card (with daughter card attached) into the expansion slot on the motherboard (see Figure 2-7).

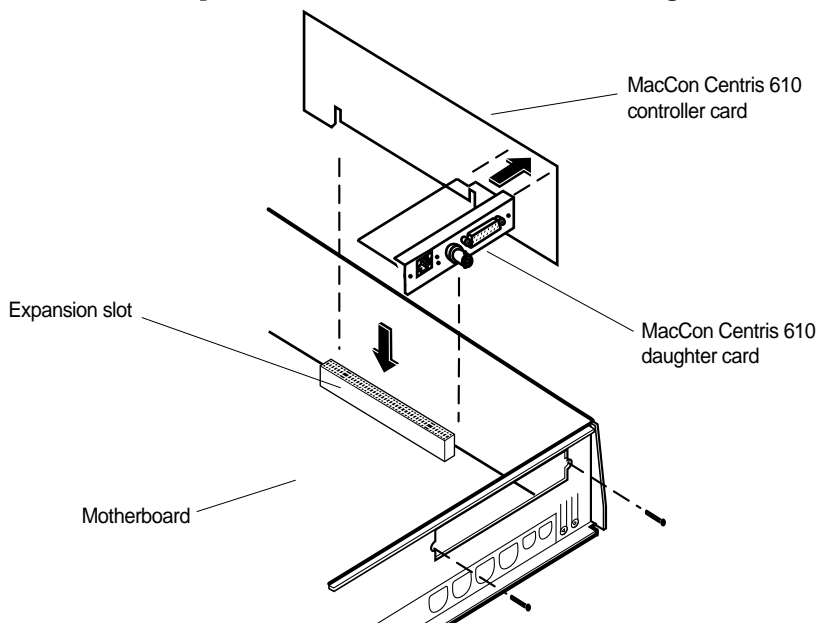


Figure 2-7 The MacCon 610 card plugged into the expansion slot on the motherboard

- 7** Align the chassis bracket with the access port on the back cover.
- 8** Secure the daughter card to the chassis using the two screws.
- 9** Close the case.
- 10** Connect the Macintosh to the network as described in "Connecting the Macintosh to the Network" on page 2-24.

# Installing a MacCon LC Card

If you have a Macintosh LC, LCII, or Color Classic computer, use the MacCon LCIII or MacCon-i LC card to connect the Macintosh to the Ethernet.



## Caution

Only the LC and LCII computers can accept FPU's on the LC card. If your Macintosh already has a math co-processor (or FPU), do not install the Asanté math co-processor option with the card.

Refer to your Macintosh User's Guide for illustrated instructions for opening your computer.

△ **Note:** LCIII card—You can disable link integrity on the MacCon LCIII card by setting the JP2 jumper as indicated in Figure 2-8. (For example, hubs made before the 10BaseT specifications were published do not support link integrity.)

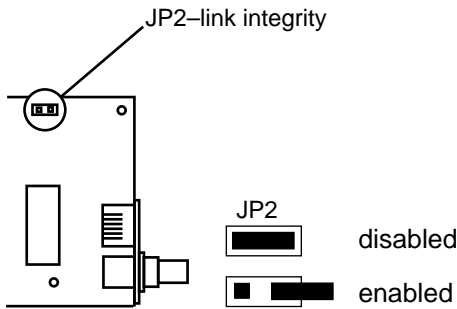


Figure 2-8 Disabling link integrity, LCIII card

To install the MacCon LC card into the expansion slot on the motherboard, perform the following steps:

- 1** Power down the Macintosh. Disconnect and remove the power cable.
- 2** Open the Macintosh.
- 3** Make sure you are grounded: check that your anti-static wrist strap is properly attached to your wrist and to the Macintosh chassis.
- 4** Insert the card into the expansion slot.

With the card's components facing down, carefully angle its external connector through the Ethernet port, then line up its edge connector with the motherboard expansion slot.

- 5** Gently press on the card until the connector is fully seated (see Figure 2-9).

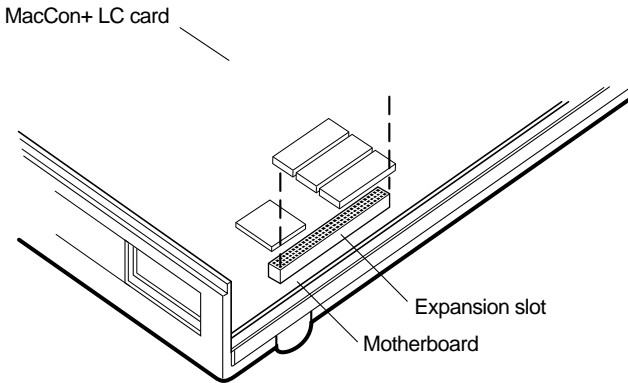


Figure 2-9 The MacCon LC card plugged into the expansion slot on the motherboard

- 6** Connect the Macintosh to the network as described in "Connecting the Macintosh to the Network" on page 2-24.

## Installing a MacCon LC Card in a Color Classic

- 1** Power down the Macintosh Color Classic. Disconnect and remove the power cable.

- 2** Remove the rear access panel case (see Figure 2-10).

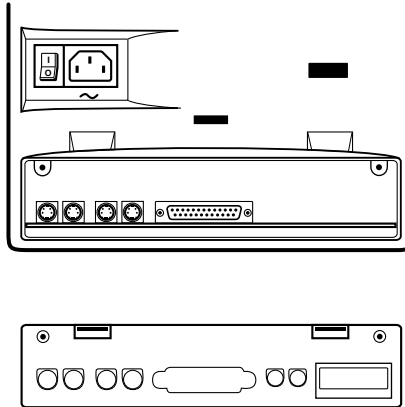
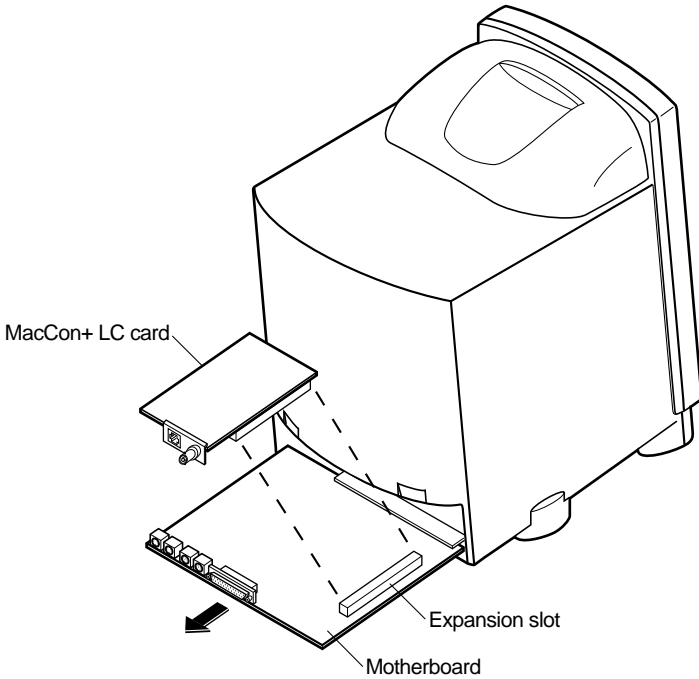


Figure 2-10 The rear panel removed on the Color Classic

- 3** Make sure you are grounded: check that your anti-static wrist strap is properly attached to your wrist and to the Macintosh chassis.
- 4** Slide out the motherboard.
- 5** Insert the card into the expansion slot.

With the connectors facing down, carefully angle its external connector through the Ethernet port (see Figure 2-11).



**Figure 2-11** Installing the MacCon LC in the expansion slot in the Color Classic

- 6** Plug the card's edge connector into the expansion slot on the motherboard.
- 7** Gently press on the card until the connector is fully inserted.
- 8** Slide the motherboard back into the Color Classic.
- 9** Secure the rear access panel case.
- 10** Connect the Macintosh to the network as described in "Connecting the Macintosh to the Network" on page 2-24.

# Installing the MacCon3 IIsi and MacCon 30i Cards

If you have a Macintosh IIsi or a Macintosh SE/30, use a MacCon3 IIsi or a MacCon+ 30i to connect to the Ethernet. (The cards are not designed for a Macintosh SE.)

Each card consists of two parts:

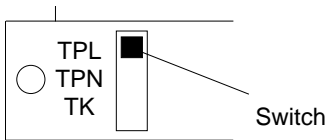
- ❑ The larger controller card, which plugs into the expansion slot in the Macintosh.
- ❑ The smaller daughter card, which is mounted on the rear access port to enable a connection to the Ethernet cable.

You connect the two cards with a ribbon cable after installing them.

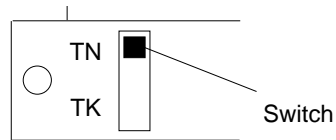
## Setting the Cable Type on the Daughter Card

With the MacCon+ 30iET and MacCon+ 30iE, set the cable type by pressing the switch in the lower left corner on the daughter card. Select the switch position, as specified in the table below, by pressing the switch with a pointed tool. With the MacCon+ 30iET, select TPL if your hub supports link integrity; select TPN if it does not. With the MacCon+ 30iE, select TPL if your hub supports link integrity; select TPN if it does not.

MacCon+ 30iET



MacCon+ 30iE



TPL	10BaseT Link integrity enabled	TN	Thin
TPN	10BaseT Link integrity not enabled	TK	Thick
TK	Thick		

The MacCon3 card has autosensing ports and does not require a switch to be set.

## Video Options

Even though the Macintosh IIx has only one expansion slot, you can install both a MacCon3 IIx card and the Radius video card. An external interface device is not needed and high performance is maintained. The following table shows which MacCon cards you can install with the Radius and SuperMac video cards and which ports are available for connecting to the Ethernet.

### MacCon compatibility with third-party video cards

Video card	Asanté card	Ethernet ports available
Radius Pivot IIx	MacCon3 IIx	RJ-45 and BNC
SuperMac Spectrum/8•24 PDQ Spectrum/8•24 PDQ si	FriendlyNet IIx	AAUI with FriendlyNet Media Adapter for 10BaseT/Thin/thick

## Setting the Slot Address for Two Cards

Since the two cards cannot use the same slot address, change the slot address for the Asanté card by setting the JP1 and JP2 jumpers on the larger controller card. If you keep the default slot address of 9 for the video card, you can set the Asanté card address to A, B, or E, as shown in the following table.

JP1 and JP2 jumpers	Address Set	Address Set
	9	A
	E	B



## Installing the Math Co-processor

If your Macintosh, or the Radius card, already has a math co-processor, do not install the Asanté math co-processor option. It will cause the Macintosh to fail at start up.

The following sections, starting on the next page, describe how to install a MacCon card in a Macintosh IIsi and a Macintosh SE/30. Instructions for installing a MacCon card together with a video card are also included.

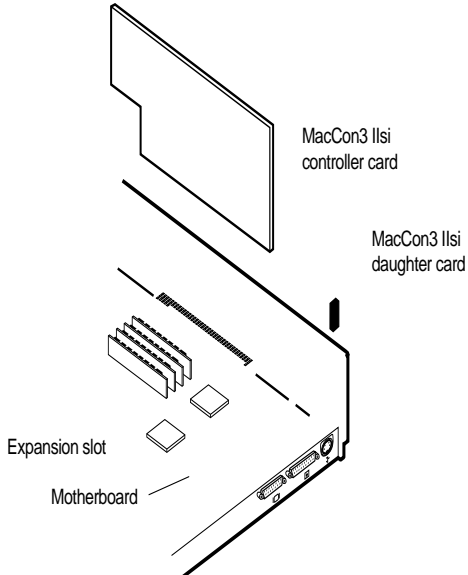


Figure 2-12 The MacCon3 IIsi controller card and daughter card installed in a Macintosh IIsi

- △ **Note:** In some cases with thick Ethernet (10Base5) cabling, you may need to set the JP1 jumper ON (as shown below) to force the daughter card to select the AUI port. This may be necessary when your network does not have a 10Base5-compliant Ethernet transceiver.

## Installing in a Macintosh IIsi


To install the MacCon+ 30 or a MacCon3 IIsi in a Macintosh IIsi, perform the following steps:



Caution

Be very careful when you open the case and work inside the Macintosh IIsi.

Refer to your Macintosh User's Guide for an illustrated description of how to open your computer.

- 1** Power down the Macintosh. Disconnect and remove the power cable.
  - 2** Open the Macintosh and remove the access port cover.
  - 3** Make sure you are grounded: check that your anti-static wrist strap is properly attached to your wrist and to the Macintosh chassis.
  - 4** Plug the controller card into the expansion slot on the motherboard.
  - 5** Install the daughter card:
    - Remove the screws on the daughter card bracket.
    - Align the bracket so that the daughter card extends down from the access port and the external cable connectors protrude through the port.
    - Secure the bracket with the screws.
  - 6** Connect the controller card and daughter card:
    - Attach the ribbon cable from the daughter card to the controller card (see Figure 2-12).
-  Caution
- Make sure the white dot on the ribbon cable aligns with the white dot on the connector.
- 7** Close the Macintosh IIsi.

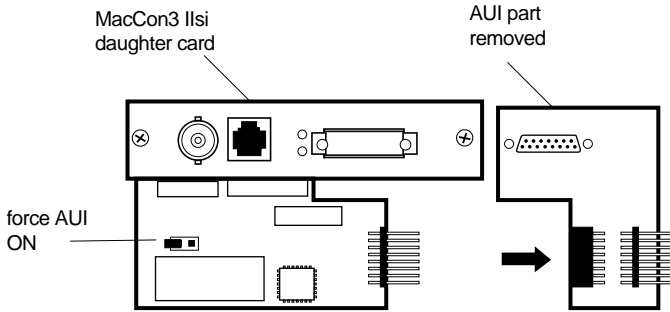


Figure 2-13 Removing the MacCon3 IIsi daughter card

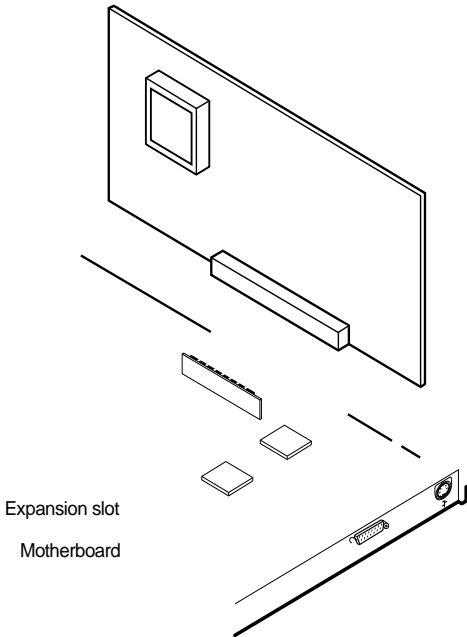


Figure 2-14 Installing a MacCon3 IIsi card with a Radius card

## Installing a MacCon3 IIsi and a Radius Pivot IIsi

To install a MacCon3 IIsi card and a Radius Pivot IIsi card, perform the first three steps on page 2-17, then perform the steps below.



### Caution

Handle the Asanté cards and the video cards carefully so they remain plugged together. Be careful not to bend or twist the cards, especially when they are plugged together at right angles to each other.

- 1** Remove the AUI part of the Asanté daughter card by removing the two screws beneath the AUI latch and gently removing the AUI part (see Figure 2-13).
- 2** Replace this part with the Radius video DB-15 cable, using two screws to attach the cable.
  - △ Note: Do not connect an AUI cable to this port. This is now a video connector. Connecting a thick cable to this port, renders the video card unusable.
- 3** Plug the assembled Asanté daughter card into the rear of the chassis.
- 4** Since the two cards cannot use the same slot address, you need to change the slot address for the Asanté card by setting the JP1 and JP2 jumpers on the Asanté controller card. Refer to the instructions on page 2-14.
- 5** Plug the Radius video card into the expansion slot on the motherboard.
- 6** Attach the MacCon3 IIsi controller card (at a right angle to the video card) to the Radius pass-through PDS slot.
- 7** Attach the Radius video ribbon cable to the Radius card.
- 8** Connect the MacCon3 IIsi ribbon cable from the daughter card to the controller card.



### Caution

Make sure the white dot on the ribbon cable aligns with the white dot on the connector. See the revised Release Note for details.

- 9** Connect the Macintosh to the network as described on page 2-24 in “Connecting the Macintosh to the network.”

Figure 2-15 Installing a MacCon+ 30i card in a Macintosh SE/30

### **Installing a MacCon Card in a Macintosh SE/30**

#### **Caution**

Be very careful when you open the case and work inside the Macintosh SE/30. If you are unfamiliar with opening the machine, consult

- 3** Make sure you are grounded: check that your anti-static wrist strap is properly attached to your wrist and to the Macintosh chassis.
- 4** Disconnect the speaker, power supply, floppy drive, and hard drive cables (see Figure 2-15 on page 2-19).
- 5** Slide the larger controller card into the expansion slot on the motherboard:
  - Line up the card's edge connector with the expansion slot on the motherboard. The card's component side should face the inside of the Macintosh.
  - Gently press on the card until the connector is fully seated.
- 6** Attach the smaller MacCon+ daughter card to the interior side of the SE/30 back:
  - Remove the two screws from the bracket.
  - Align the bracket so the daughter card extends down from the access port and the external cable connector sticks through the access port.
  - Attach the card to the chassis bracket that lines up with the access port on the back cover.
  - Secure the daughter card with printed circuit side facing up, using the two screws.
- 7** Connect the ribbon cable to the controller card keeping it as flat as possible. Make sure the white dot on the ribbon cable aligns with the white dot on the connector.
- 8** Close the Macintosh SE/30:
  - Place the Macintosh SE/30 face down.
  - Fit the aluminum shield over the external device connectors and around the bottom and sides of the motherboard.
  - Fit the plastic case over the chassis and snap the case into place. Screw the case shut.
- 9** Connect the Macintosh to the network as described on page 2-24 in "Connecting the Macintosh to the network."

# Installing a MacCon+ SE Card in a Macintosh SE

---

The MacCon+ SE network interface card allows you to connect a Macintosh SE to an Ethernet network.

The card consists of two parts.

- ❑ The larger controller card, which plugs into the expansion slot in the Macintosh.
- ❑ The smaller daughter card, which is mounted on the rear access port to enable a connection to the Ethernet cable.

You connect the two cards with a ribbon cable after installing them.

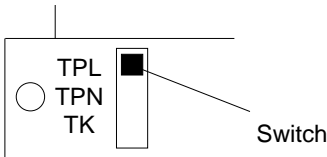
△ Note: The MacCon3 IIsi or the MacCon 30i cards are not designed for the Macintosh SE.

## Setting the Cable Type on the Daughter Card

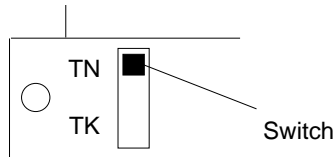
With the MacCon+ SEET and MacCon+ SEE, set the cable type by pressing the switch on the daughter card (lower left corner). Select the switch position, as specified in the table below, by pressing the switch with a pointed tool. With the MacCon+ SEE only, select TPL if your hub supports link integrity; select TPN if it does not.

---

MacCon+ SEET



MacCon+ SEE



---

TPL	10BaseT Link integrity enabled
TPN	10BaseT Link integrity not enabled
TK	Thick

---

TN	Thin
TK	Thick

---

The MacCon3 SE card has auto-sensing ports and does not require a switch to be set.

To install the MacCon+ SE card in the Macintosh SE, perform the following steps:

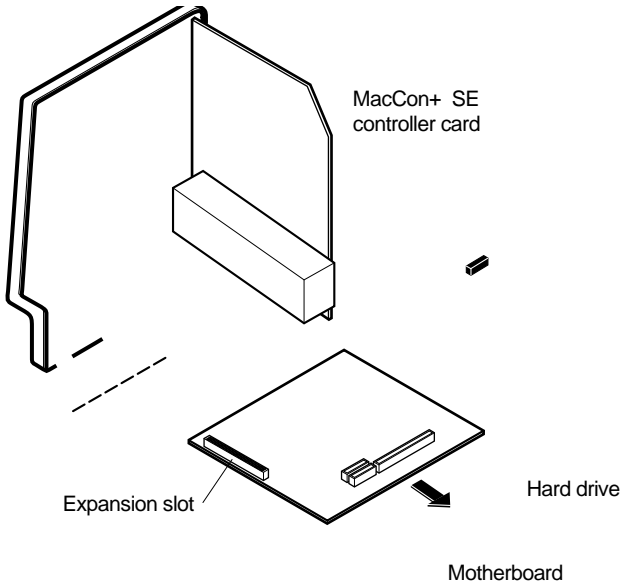


Figure 2-16 Installing the MacCon SE daughter controller card and daughter card

### Caution

Be very careful opening and working inside the Macintosh SE.

- 1** Power down the Macintosh. Disconnect and remove the power cable.
- 2** Lay the Macintosh SE flat on its face.
- 3** Open the case very carefully and remove the access port cover.
- 4** Make sure you are grounded: check that your anti-static wrist strap is properly attached to your wrist and to the Macintosh chassis.



## **5** Take out the motherboard:

- Lift the grounding shield (padded aluminum sheet) covering the motherboard.
- Disconnect the power supply cable and the drive cables on the component side of the motherboard.



### **Caution**

Be careful not to pull the wires out; pull only on the connectors only, not on the bundled wires.

- Gently take out the motherboard and lay it down, component side up.
- Remove the speaker wire connection to J11 (the speaker wire) on the motherboard.

## **6** Plug the larger MacCon+ controller card into the expansion slot on the motherboard:

- Plug the 96-pin edge connector on the controller card into the expansion slot so that the card lies on top, parallel to the motherboard (see Figure 2-16).
- Gently press on the card until the connector is fully seated.
- Snap the standoffs on the side of the card into place to keep the card from touching the motherboard.

## **7** Attach the smaller MacCon+ daughter card to the back of the Macintosh SE:

- Remove the two screws from the bracket on the daughter card.
- Attach the card to the chassis bracket that lines up with the expansion card connector access port on the back cover of the Macintosh.
- Secure the daughter card, with the printed circuit side facing up, to the chassis using the two screws.
- Re-attach the speaker wire (see Figure 2-16).

## **8** Route the ribbon cable from the smaller daughter card to the larger controller card, keeping it flat at all times.

- 9** Place the motherboard (with the MacCon+ controller card riding piggyback on it) back into the guides on the left side of the chassis.
- 10** Reconnect the power supply and the disk drive cable on the component side of the motherboard.
- 11** Plug the ribbon cable into the controller card's receptacle. Make sure the white dot on the ribbon cable aligns with the white dot on the connector. (The blue wire is pin 1 on both ends of the cable.)
- 12** Close the Macintosh SE:
  - Place the Macintosh SE face down.
  - Fit the aluminum shield over the external device connectors and around the bottom and sides of the motherboard.
  - Fit the plastic case over the chassis and snap the case into place. Screw the case shut.

## Connecting the Macintosh to the Network

---

To connect the Macintosh to the Ethernet cable, perform the following steps:

### With 10BaseT cabling

- 1** Plug the RJ-45 connector on one end of the 10BaseT cable into the RJ-45 jack on the card. The RJ-45 connector's plastic tab snaps locked into the jack.
- 2** Plug the other end of the cable directly into a hub or plug it into a 10BaseT wall jack. A green LED (link integrity) light indicates a good connection to the hub.

△ Note: Asanté offers a full range of intelligent and non-intelligent 10BaseT-compliant hubs.

### With thin Ethernet cabling



Caution

Check with your network administrator before you disconnect the Ethernet cable. Network users must be warned if you are bringing down the network.

- 1** Connect the “T” connector to the BNC port on the card. The connector slips on, twists, and locks in place.
- 2** If the Macintosh is the last node, terminate one end of the “T” connector using a 50-ohm BNC terminator (for thin cable).

#### **With thick Ethernet cabling**

- 1** Connect a drop cable to the thick Ethernet cable:
- 2** Plug one end of the drop cable into the AUI port on the card.
- 3** Plug the other end into the thick Ethernet transceiver.

## **Installing the EtherTalk Software**

---

An EtherTalk Installer diskette is included with each Asanté MacCon Ethernet adapter. This diskette contains Asanté’s EtherTalk driver, AppleTalk, and other Apple system extensions. Asanté’s EtherTalk device driver allows AppleTalk to communicate with the MacCon adapter.

### **Two Types of Software Installations**

Asanté provides two types of installations—an easy install or a customize install. You should be experienced in network administration to perform the customize install.

For detailed information about each installation, click the Help button to display a help screen.

The following table explains which installation to choose:

Choose	When
Easy Install	<ul style="list-style-type: none"><li><input type="checkbox"/> You want to install the AppleTalk version on the diskette and the Asanté Ethernet driver.</li><li><input type="checkbox"/> Your network does not present any potential compatibility problems with the AppleTalk version on the diskette.</li><li><input type="checkbox"/> You want access to EtherTalk Phase 2 network services.</li></ul>
Customize Install	<ul style="list-style-type: none"><li><input type="checkbox"/> When your network has software that may conflict with the AppleTalk version on the Asanté diskette. You have the option to install only specific parts of Apple network software or just the Asanté driver software. Read the <i>Read Me First</i> file for more information about special situations and installation options.</li><li><input type="checkbox"/> You want to install EtherTalk Phase 1 network services.</li></ul>

## About EtherTalk Phase 1 and Phase 2

EtherTalk Phase 1 is limited to 255 devices and allows only one zone. EtherTalk Phase 2 has virtually no limit (maximum—over 16 million devices) and allows multiple zones. Phase 2 also offers optimized network performance.

The Easy Install automatically installs EtherTalk Phase 2, now used by most networks. If your network requires the use of EtherTalk Phase 1, choose the Customize install option.

## Installation Procedures



Caution

Before you install Asanté's EtherTalk software, disable all extensions and virus detection programs. Then restart your Macintosh.

**1** Before you install the EtherTalk software, read the *Read Me First* file, which contains information about your installation and helps you determine if you need to do a customized installation.

The installation instructions assume that you normally boot from your hard disk.

- 2** Insert the Asanté EtherTalk Installer Disk.
- 3** Double-click the Installer icon and click OK when the Installer banner appears. The Easy Install dialog box appears (see Figure 2-17).
  - △ Note: To properly install the EtherTalk Installer program, you must double-click the Installer icon. Do not drag the files from the diskette to the System Folder.

Figure 2-17 The Easy Install dialog box

- 4** To perform an Easy Install, click Install. The Installer program examines your Macintosh and installs the appropriate EtherTalk driver and the current AppleTalk.

To perform a Customize install (only experienced Macintosh users should perform a customized installation):

  - Click Customize. A dialog box appears with a list of software options.
  - Select the appropriate software options. Use Shift-click to select multiple operations.
- 5** Click Restart when you are prompted to do so.
  - △ Note: If other Macintoshes on the network have Asanté EtherTalk drivers, we recommend that you upgrade all drivers to the most recent version.

# Accessing Network Services

---

To make the connection between your Macintosh and the Ethernet network work, you need the following:

- ❑ AppleTalk must be active in the Chooser dialog box
- ❑ EtherTalk must be active in the Control Panel

Asanté EtherTalk driver software enables AppleTalk to interact with the MacCon Ethernet adapter and make a connection.

## 1 Open the Network control panel.

The Network window contains two types of network icons, Built-in LocalTalk and EtherTalk (see Figure 2-18).

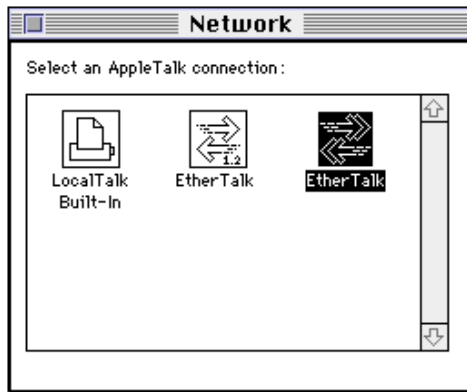


Figure 2-18 Network control panel

- △ Note: If you wish to access Phase 1 network services (single arrow), click the Phase 1 icon. If you wish to access Phase 2 network services, (double arrow), click the Phase 2 icon. Click OK to confirm your selection. When you double-click the Phase 2 icon, the default zone for the node is displayed if you have a router. If you have more than one network card installed, each card appears as a separate icon, labeled by a slot number.

## 2 Select EtherTalk.

Click on the EtherTalk icon in the network control panel.

## 3 Close the network control panel.

Your connection to Ethernet remains active until you switch to LocalTalk, disconnect the cable, or remove the Asanté interface card.

**4** Select Chooser from the Apple menu.

The Chooser dialog box displays the icons for all available device options and the AppleTalk zones you set up (see the example in Figure 2-19).

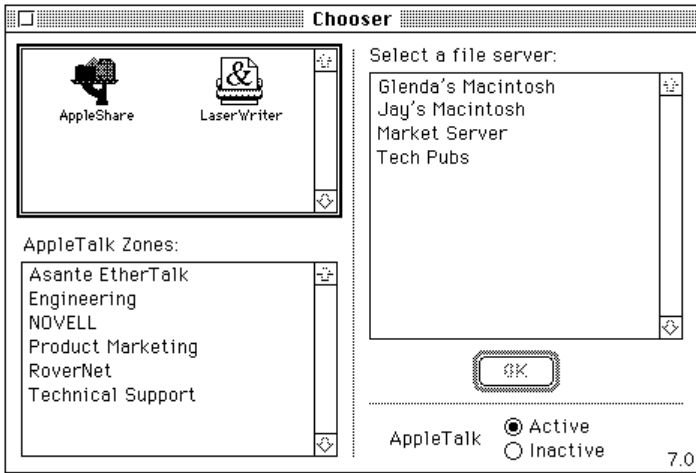


Figure 2-19 An example of a user's Chooser dialog box

**5** Make sure AppleTalk is active.

Click the Active button if AppleTalk is not active.

## Asanté SNMP MacAgent

### Introduction

---

Asanté SNMP MacAgent provides hardware and software information from a Macintosh to an Asanté network management station running AsantéView. It works in conjunction with Apple's MacTCP software. The SNMP MacAgent is a system extension under System 7 and an INIT under System 6 and can be installed on any Macintosh on the network.

Asanté SNMP MacAgent is tailored for Asanté adapter cards; therefore, it provides more extensive SNMP object information than for non-Asanté cards.

Asanté SNMP MacAgent and MacTCP are included with your Asanté EtherTalk Installer diskette.

△ Note: MacTCP is Apple Computer's TCP/IP software. It provides the transport mechanism for accessing the information provided by the Asanté SNMP MacAgent.

### TCP/IP Protocol Stack

TCP/IP refers to a collection of network protocols that support host to host communication. The TCP/IP protocol family is an industry standard developed by the United States Department of Defense.

### IP Addressing

To connect to an IP network you must obtain an IP address, which identifies an individual node in a TCP/IP network. IP addresses can be officially assigned by the Internet committee for world-wide access over the Internet, or by your network administrator for communication over a local TCP/IP network. It is the responsibility of the network administrator to assign IP addresses. You must have an IP address before you install SNMP MacAgent and MacTCP.



## Requirements

The requirements for Asanté SNMP Agent are

Workstation	Network Management Station
SNMP MacAgent and MacTCP	AsantéView In-Band or A generic SNMP Management console with MIB compiler and/or MIB browser and Asanté SNMP MacAgent MIB

## AsantéView In-Band Network Management Software

AsantéView is powerful network management software used to manage Asanté intelligent Ethernet hubs and bridges. It allows network managers to monitor Ethernet networks using the SNMP protocol.

AsantéView provides detailed information about Macintoshes that have Asanté's SNMP MacAgent installed as well as information about other SNMP devices on the network. The SNMP MacAgent can be accessed using AsantéView In-Band software. The term in-band means network management packets travel over the same wire as other network traffic.

## Accessing Asanté MacAgent MIB

If you don't have AsantéView, it is still possible to manage the SNMP MacAgent. You must obtain Asanté's SNMP MacAgent MIB, a text file available on Asanté's FTP server via the Internet.

The file can be obtained from the /snmp directory using "anonymous" as the log in to: <ftp.asante.com>. The SNMP MacAgent MIB text file is also available via our Bulletin Board Service at (408) 432-1416.

## Asanté SNMP MacAgent and the TCP/IP Protocol

The Asanté SNMP MacAgent loads into RAM when the Macintosh is turned on. It uses the TCP/IP protocol, made available through MacTCP, as a transport mechanism for the SNMP information.

When the Macintosh is polled by an AsantéView or Generic SNMP management console, Asanté SNMP MacAgent forwards information about the Macintosh's network connection and other vital statistics.

SNMP MacAgent forwards four types of information about the station:

- ❑ Station Profile, including station hardware components, system and memory
- ❑ Station Slot Table, identifying the network interface cards installed
- ❑ Station Activity, transmission statistics for the network interface card
  - △ Note: The Macintosh must be equipped with an Asanté card and the Asanté EtherTalk driver to receive Station Activity information.
- ❑ Station Applications, a listing of resident applications for software resource management

In addition, the SNMP MacAgent alerts the network management system when the station is restarted.

## **Asanté SNMP MacAgent as a Network Diagnostic Tool**

Asanté's SNMP MacAgent allows the network manager to quickly and easily resolve problems on the network. It provides information about the Macintosh configuration, operational statistics, and the applications installed on the Macintosh.

## **Installing SNMP MacAgent**

---

To install and configure the Asanté SNMP MacAgent on the workstation, perform the following steps:

- 1** Quit all applications running on your Macintosh.
- 2** Insert the installation diskette. The Asanté EtherTalk Installer window appears.
- 3** Double-click the Installer icon and click OK when the "About" screen appears. The Easy Install dialog box appears.

- 4 Click **Customize**. The **Customize Install** dialog box appears, shown in Figure 3-1.

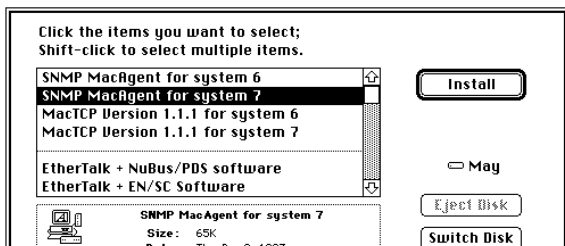


Figure 3-1 Customize Install dialog box

- 5 Select the **SNMP MacAgent** for the appropriate operating system.
- 6 Select **MacTCP** for the appropriate operating system.
- 7 Click **Install**.
- 8 Restart.

## Configuring MacTCP

---

To configure MacTCP, perform the following steps:

- 1 Select **Control Panels** from the **Apple** menu.

- 2 Double-click the MacTCP icon. The MacTCP Configuration screen appears, shown in Figure 3-2.

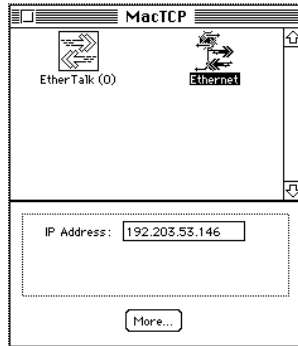


Figure 3-2 MacTCP Configuration screen

- ❖ Note: To configure MacTCP, see the MacTCP Administrator's Guide. This guide is included with the Asanté-View documentation.

- 3 Double-click More... and select Manually. This allows you to manually enter your IP address.
- 4 Note: If you have any questions about your MacTCP or SNMP configuration, contact your network administrator. It is important that the network administrator be aware of any changes on the IP network.

## Configuring SNMP MacAgent

---

To configure SNMP MacAgent, perform the following steps:

- 1 Select Control Panels from the Apple menu.

- 2 Double-click the SNMP MacAgent control panel. The SNMP MacAgent Configuration screen appears, shown in Figure 3-3.

SNMP MacAgent  
Copyright 1992, Asanté Technologies Inc.

System Contact: Asante Developer

System Location: Engineering

System Name: agent

Read-Community: public

Write-Community: private

Trap-Community: public

Trap IP Address: 0.0.0.0

Authentication Trap:  On  Off

SNMP Agent:  On  Off

Figure 3-3 Asanté SNMP MacAgent Configuration screen

- 3 Enter the configuration parameters (see the next section for parameter descriptions).
- 4 Restart.

## Asanté SNMP Configuration Parameters

### System Contact

The person who should be contacted regarding this workstation.

### System Location

The physical location of the workstation.

### System Name

A local alias describing this station.

### Read-community

Enter public (default), allowing the Asanté network management station to query SNMP MacAgent and get information about the station.

### Write-community

Enter private (default). This allows the Asanté network management station to query SNMP MacAgent remotely.

△ Note: The defaults for Read-community and Write-community should be used unless you are told otherwise by your network administrator.

### Trap-community

Enter public. (Trap is the SNMP term for alarm or alert.) Public is usually the default for the SNMP configuration. However, if there is any question, please contact your network administrator. SNMP MacAgent sends traps to the Asanté network management station for two events: restarting your Macintosh and authentication violation.

### Trap IP Address

The IP address to which the workstation sends traps. This is usually the Asanté management station IP address.

### Authentication Trap (On/Off)

This is ON by default. This station sends a trap to the Asanté management station if accessed by an SNMP management console with the wrong read or write community string.

### SNMP Agent (On/Off)

This is also ON by default. If SNMP Agent is OFF, the agent does not send information to the Asanté management station.

## AsantéView Network Management Station

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The Asanté network management station should be running AsantéView or a Generic SNMP Management Console. Figure 3-4 shows a network map generated by AsantéView network management software.

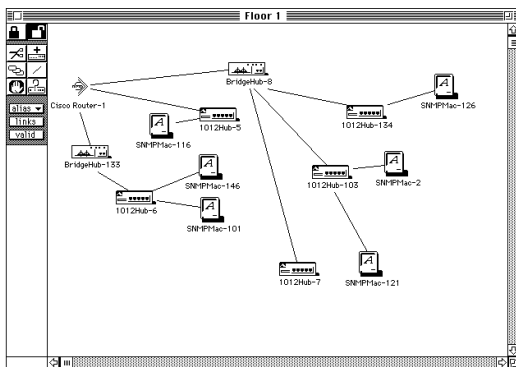


Figure 3-4 AsantéView sample network map

A Macintosh icon displayed on the map with an “A” indicates the Asanté SNMP MacAgent is installed.

If a Macintosh has Asanté’s SNMP MacAgent installed, the Asanté network management station running AsantéView can display the following information:

- ❑ General Information (see Figure 3-5)
- ❑ Slot Configuration of Macintosh
- ❑ Statistics
- ❑ Applications installed

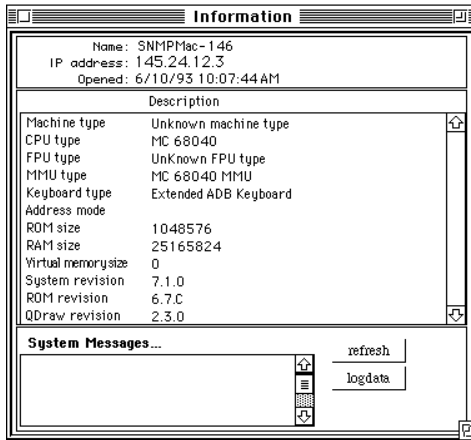


Figure 3-5 Sample SNMP MacAgent Station Information

## Other Network Management Software

If you are using network management software other than AsantéView (for example, HP OpenView or SunNet Manager), use the Asanté MacAgent MIB and follow the directions for loading and browsing a MIB file in your network management software documentation.

△ Note: You can obtain the SNMP MacAgent MIB text file (in the /pub directory) by accessing Asanté’s FTP server via the Internet using “anonymous” as the log in to: [ftp.asante.com](ftp://ftp.asante.com).

You can also obtain the file via our Bulletin Board Service (BBS) at (408) 432-1416.

## Using TroubleShooter and ADLS Diagnostic Software

The TroubleShooter and Asanté Driver Local Statistic (ADLS) programs are included with the EtherTalk drivers on the Asanté EtherTalk Installer diskette. The TroubleShooter program runs diagnostic tests on the MacCon adapter to help you identify problems on the adapter. The ADLS program provides configuration and Ethernet traffic information about your Macintosh and your Asanté MacCon adapter.

### Running TroubleShooter Diagnostics

---

The TroubleShooter diagnostic program reinitializes and reconfigures your Ethernet connection and sends out data through the Ethernet port. Therefore, before you run TroubleShooter, you must:

- Save all open files and close all active applications
- Log out of any active network services
- Change from EtherTalk to LocalTalk
- Turn off virtual memory with System 7
- Restart your Macintosh with virus software, extensions, and inits disabled

The following sections provide instructions for these operations.

#### Changing from EtherTalk to LocalTalk

- 1** Drag any remote volumes into the Trash.
- 2** Change from EtherTalk to LocalTalk by clicking the LocalTalk icon in the network control panel.
- 3** Disable virus software, extensions, and inits.



- 4** Restart the Macintosh.

## Starting Troubleshooter Diagnostics

- 1** Insert the EtherTalk Installer diskette and open the diskette's directory window.
- 2** Copy the Troubleshooter software to the desktop or a folder, such as the Net Utils folder.
- 3** Double-click the Troubleshooter icon to start the program and click OK in the Troubleshooter window.

If you have not changed your EtherTalk connection to a LocalTalk connection, Troubleshooter warns you to do so by displaying the message shown in Figure 4-1.



Figure 4-1 Troubleshooter warning message

Click Exit, make the change, then restart the Macintosh with the Shift key down. Run Troubleshooter again.

- ❖ **Note:** If you're using MacTCP, it can activate the EtherTalk driver regardless of whether you're in EtherTalk or LocalTalk. You'll get the Troubleshooter warning message even though you've switched to LocalTalk and/or rebooted (that is, rebooted without holding down the Shift key). Click Exit, then restart the Macintosh with the Shift key down. Run Troubleshooter again.

- 4** Click OK in the Troubleshooter window.

Troubleshooter loads and automatically runs the following three default tests:

- **Memory Buffer Test**  
Writes to and reads from the packet buffer RAM to verify its addressability and operation.
  - **Network Interface Controller Test**  
Writes to and reads from the controller register to verify its operation. Also issues a transmit command to verify the network interface controller's integrity.
  - **Ping-Pong Test**  
Transmits and receives special packets to verify communication with other systems on the network.  
If the Ping-Pong test fails, check your connectors and cables.
- ❖ **Note:** The Ping-Pong Test requires at least one other Macintosh in EtherTalk Phase 1 or Phase 2 on the network.

**5** Troubleshooter opens the Troubleshooter window and displays results from the following tests:

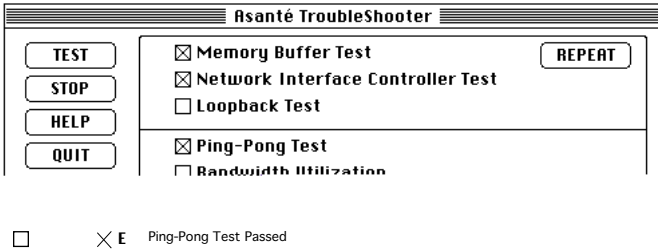


Figure 4-2 Troubleshooter window

## Running other Troubleshooter tests

The Loopback and Bandwidth Utilization tests are available in addition to the three default tests for validating the MacCon adapter.

## Running the Loopback test

The Loopback test verifies the operation of the major components of the interface circuitry and the cable run to the hub by transmitting and receiving special packets.

- ❖ Note: The Macintosh with the MacCon adapter installed must be connected to a hub to run the Loopback test.

To run the Loopback test, perform the following steps:

- 1** Click the Loopback test checkbox to select the test.
- 2** Click TEST to start the loopback test.
- 3** If the first test fails, click REPEAT.

If the tests are “passed” successfully, everything is operating properly. If the Loopback test fails repeatedly, please call Technical Support.

## Running the Bandwidth Utilization test

- 1** Reconnect the Ethernet cable.
- 2** Click the Bandwidth Utilization checkbox to select the test.
- 3** Click the TEST button to start the test.
- 4** Data representing network activity is collected from the network during the test.
- 5** To stop data acquisition, click STOP or press any key.

The performance statistics are displayed in the Trouble-Shooter dialog box.

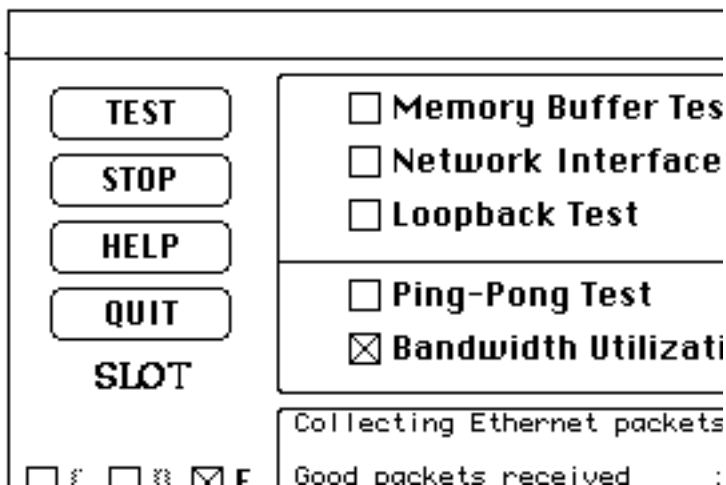


Figure 4-3 Bandwidth Utilization Test window

### What the Bandwidth Utilization test displays

The Bandwidth Utilization test takes a “snap shot” of the network. The test can be used in conjunction with other network analysis tools to identify network problems. A number of network criteria are tested and displayed in the window. The criteria are described briefly below:

- **Good packets received**  
Total number of good packets (error-free) received from the network by the adapter. This allows you to evaluate activity on the network. Activity level can be used as a benchmark to determine changes in network performance.
- **Total bytes received**  
Total number of bytes received from the network by the adapter. Good Packets received displays the total number of packets, not the packet size. Total bytes received is more specific giving the actual byte count.
- **Number of reset byte count**  
This number increments by 1 after each  $10^9$  byte received from the network by the adapter.

- **CRC Error**

Indicates the number of packets with CRC (Cyclic Redundancy Check) errors received from the network by the adapter. When a packet is transmitted, a mathematical calculation is done on the header and data and is appended to the end of the frame. The receiver of the packet performs the same computation. If the computations are not equal, the packet is discarded and a CRC error is issued.

- **Frame Alignment Error**

Number of misaligned packets received from the network by the adapter. An Ethernet frame is misaligned if it does not end in an 8 bit boundary.

- **FIFO Overrun Error**

This error occurs when FIFO (First In First Out) is disabled causing an overflow during reception. The reception of the packet is aborted.

- **Frame Lost Error**

This error represents the number of lost frames received from the network by the adapter.

- **Receive Buffer Overwrite Error**

This error occurs when the receive buffer is full due to heavy network traffic.

- **Sample Time**

The time in seconds from test start to test completion.

- **Bandwidth Utilization**

Total bandwidth utilization of the network. If it is over 2 percent, it will effect the FIFO Overrun Error and Frame Lost errors.

## **If a test fails**

If a test fails, TroubleShooter displays an error message in the main dialog box. The message generally consists of three parts:

- The name of the diagnostic test
- "Failed"
- A possible reason for the failure

Check the connections from your Macintosh to the Ethernet cable, and repeat the tests.

If the test fails repeatedly, make a note of the error message, quit the Troubleshooter diagnostics, and call Technical Support.

## Quitting Troubleshooter and restarting network services

---

To quit Troubleshooter, click the QUIT button in the Troubleshooter dialog box or quit from the menu bar.

To restart network services, perform the following steps:

- 1** Activate AppleTalk in the Chooser.
- 2** Select EtherTalk in the Network control panel.
- 3** Restart the Macintosh.
- 4** Select the Chooser from the Apple menu, then select a network resource such as AppleShare or another network service.

## Running ADLS

---

The Asanté Driver Local Statistic (ADLS) program provides configuration information about your Macintosh and MacCon adapter, and displays statistics about Ethernet traffic through the MacCon adapter.

Make sure you have EtherTalk enabled before running the ADLS program. To enable EtherTalk:

- 1** Select Control Panels from the Apple menu.
- 2** Double-click the Network icon.
- 3** Select the EtherTalk icon.
- 4** Close the Network control panel.
- 5** Restart the Macintosh.

To start the ADLS program, double-click its icon. Figure 4-4 shows an example of the screen that appears.


<b>Current Time</b>	<b>System information</b>	<b>Card information</b>
4:11:52 PM	<ul style="list-style-type: none"> <li>• System : 7.10</li> <li>• Machine : Macintosh IIsi</li> <li>• Memory : 4178960 bytes</li> <li>• AppleTalk : 58.1.3</li> </ul>	<ul style="list-style-type: none"> <li>• Card : MacCon3 IIsi</li> <li>• Node : 00:20:A5:11:00:01</li> <li>• Ram : 4KB    • Rev: 1.0</li> <li>• Driver : 2.0.0    • Slot : E</li> </ul>
<b>Elapsed Time</b>	<b>Asanté Driver Local Statistic table</b>	
0:01:14	<b>Transmit Status</b>	<b>Receive Status</b>
Day(s): 0	<ul style="list-style-type: none"> <li>Xmit Packets : 2</li> <li>Xmit bytes : 146</li> <li>Mcast Xmit : 0</li> <li>Bcast Xmit : 0</li> <li>Coll Frames : 0</li> <li>Late Coll Err : 0</li> <li>ExcessCollErr : 0</li> <li>caSenseErrCnt : 0</li> <li>Single Coll : 0</li> <li>Multi Coll : 0</li> <li>DefXmitFrames : 0</li> </ul>	<ul style="list-style-type: none"> <li>Rcvd Packets : 33</li> <li>Rcvd bytes : 4034</li> <li>Mcast Rcvd : 0</li> <li>Bcast Rcvd : 33</li> <li>IntRcvErrCnt : 0</li> <li>RlignErrCnt : 0</li> <li>Fcs Error Cnt : 0</li> <li>FraTooLongErr : 0</li> <li>ExcessDefErr : 0</li> </ul>
	<ul style="list-style-type: none"> <li>IntXmitErrCnt : 0</li> <li>Tx Time out : 0</li> <li>TxPktTooBig : 0</li> <li>Tx Errors : 0</li> </ul>	<ul style="list-style-type: none"> <li>RxOverWrCnt : 0</li> <li>NoOfRXErrors : 0</li> <li>NoOfFatalErr : 0</li> <li>RxUnkwnProtos : 33</li> </ul>

Figure 4-4 Asanté Driver Local Statistic (ADLS) table

When the program opens, it automatically begins gathering statistics. The screen displays the current time and the elapsed time (the time since the ADLS program was opened).

The System Information and Card Information areas give configuration information for the Macintosh, the MacCon adapter, and the Asanté EtherTalk driver.

The Transmit Status and Receive Status areas display information about Ethernet traffic through the MacCon adapter. The upper panes of the Transmit Status and Receive Status areas show Simple Network Management Protocol (SNMP) information; the lower panes show information specific to the Asanté EtherTalk driver.

The File menu contains these commands:

**Start** – Begin statistical tracking and display; used after selecting **Stop**

**Stop** – Stop/pause statistical tracking and display

**Reset** – Set all counters back to zero

**Quit** – Close the ADLS program

- ❖ **Note:** The Switch Slot card and Switch to ENSC commands are dimmed; they are not applicable to the MacCon adapter.

## Troubleshooting

This chapter addresses a few problems you may encounter when installing or using an Asanté MacCon network interface card. If you are unable to solve a problem after reading this chapter, please call Asanté Tech Support for assistance at 800-622-7464 or 408-435-0706.

### Checking the Basics

---

If you have a problem accessing a network node, check the basic requirements listed in the following table:

---

AppleTalk is active in the Chooser.	<input type="checkbox"/>
EtherTalk is selected in the Network Control Panel. Make sure the same EtherTalk version (Phase 1 or Phase 2) is on the Macintosh as is used by the network.	<input type="checkbox"/>
The AppleTalk zones are visible, when applicable.	<input type="checkbox"/>
The card is properly seated.	<input type="checkbox"/>
The cabling connections are secure.	<input type="checkbox"/>
The LEDs on the card indicate no problems. Refer to Appendix A for information about the LEDs.	<input type="checkbox"/>
The Asanté EtherTalk driver is installed on the start-up disk.	<input type="checkbox"/>

---

### Do You Have the Current Asanté Driver Software?

Before calling Technical Support, please check that you have the latest Asanté Ethernet driver in use. If you do not have the latest version, we ask that you obtain it and load it. Asanté Technical Support has found driver and operating system issues to be the #1 cause of most network problems.



To learn the latest version number:

- ❑ Call 800-622-7464 and press 4 for Technical Support
- ❑ Then press 1 for Software Update information

You will obtain the current version number as well as instructions for downloading Asanté Ethernet drivers from Applelink or InterNet. If you prefer a floppy disk be mailed to you, please leave a detailed message as instructed.

## Running Troubleshooter

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Run the Asanté Troubleshooter Diagnostics program to identify problems in the installation. Refer to Chapter 4 for more information.

## Other Tips

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### Installing the Math Co-processor Option



Caution

If your Macintosh already has a math co-processor, do not install the Asanté math co-processor option with the MacCon3 IIsi, MacCon 30iE, 30iET, or LC cards. It will cause the Macintosh to fail at start-up.

#### Math Co-processor Socket

The MacCon3 IIsi, MacCon 30i, FriendlyNet IIsi, MacCon LCII, and LCIII cards offer a socket for a math co-processor. The Motorola MC68882 Co-processor can be used (case design—type PLCC). Make sure you use the correct chip.

#### Macintosh IIsi with a PDS Slot

Use the MacCon3 IIsi or the MacCon 30i card rather than the NuBus card. The cards are specifically designed for the Macintosh IIsi PDS slot. A NuBus adapter is not required. If you install a NuBus card with a NuBus adapter, it will result in a decrease in performance.

## Questions and Answers to Common Problems

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**Q** The AppleTalk zones are not in the Chooser and I can't connect to my remote file server. What's wrong?

**A**

- AppleTalk may not be active in the Chooser.
- EtherTalk may not be selected in the Network control panel.
- The Asanté EtherTalk driver may not be properly installed.

**Q** I can't access the network resources over our thin coaxial backbone.

**A** Check to see if your Macintosh is the last node. If so, make sure the T-connector on the Asanté Ethernet card is terminated with a 50 ohm terminating resistor.

**Q** Why is the EtherTalk icon not in the Network control panel? I can't connect to the network.

**A**

- The Asanté EtherTalk driver may not be installed or is not seen by the system.
- Run the Asanté EtherTalk Installer again.
- Make sure the Asanté network interface card is firmly seated.
- With a Macintosh IIsi or SE/30 model, make sure the cable is properly installed (the white dot on the ribbon cable should be aligned with the white dot on the connector). See the installation procedure in Chapter 2.
- Check the connector on the Asanté card for any bent pins.

**Q** Do I need to remove the LocalTalk connection before I use EtherTalk?

**A** No.

**Q** After I restart my Macintosh, the LocalTalk icon is selected, instead of the EtherTalk.

**A** Make sure that:

- The Asanté EtherTalk driver is on the start-up disk or in the System folder.
- The Asanté card is properly seated.
- The network cable is properly connected.

If LocalTalk is still selected, install the Asanté EtherTalk software again.

**Q** My system freezes intermittently when I access data on the remote file server. Printing to remote printers is OK. What's wrong?

**A** Check the software version numbers on your Macintosh.

We recommend you have:

- Apple operating system 6.0.7 or later
- AppleTalk 57.04 or later
- Asanté EtherTalk 5.1 or later
- Mac TCP version 1.1.1 if using Mac TCP

Upgrade your software if necessary. Remove old driver software by running the Installer, selecting the Customize option, and holding down the Option key (Install changes to Remove). Then install new software.

Try a known good location to connect to the network.

**Q** I can't see any other Macs on the network.

**A**

- Unmount all network file servers.
- Change to LocalTalk.
- If using system 7.0, turn off virtual memory and restart.
- Run the Asanté Troubleshooter program from the Asanté EtherTalk diskette.
- If the Ping-Pong test fails, check for faulty connectors, frayed or broken cable.

## Technical Specifications

### MacCon Specifications

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The specifications for the Asanté MacCon cards are given below.

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Systems supported	Macintosh SE, SE/30, IIsi, LC family, Color Classic, Quadra, MacII (NuBus) family, Centris, and Performa computers with an available expansion slot
Standards supported	IEEE 802.3 Ethernet specifications for thick (10Base5), thin (10Base2), and Unshielded Twisted-Pair (10BaseT) media; Phase 1 and Phase 2 EtherTalk. Register-level compatible with Apple Computer's Ethernet cards
Software supported	AppleShare, Novell NetWare for Macintosh, 3Com 3+Open, 3Com 3+Share, Sitka TOPS, DEC Pathworks, A/UX and other popular network software
Protocols supported	AFP, TCP/IP, DecNet, and LAT
Math co-processor	Motorola 68882 PLCC math co-processor available for MacCon IIsi, 30i, and LC cards
Address selection (IIsi only)	4 user-selectable slot addresses: 9, A, B and E
Power requirements	+5V @ 1300 mA max. (thin) +5V @ 1000 mA max (UTP) +12V @500 mA max (thick) +5V @800 mA max. (LC Series)
Operating temperature	0° to 50° C Relative humidity: 10% - 90%, non-condensing
Warranty	5 years

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## Ethernet Address

Each Asanté card has a 6 byte Ethernet physical address beginning with 00.00.94. In Figure A-1, an arrow points to the location of the Ethernet address on each card.

You can also learn the Ethernet address using the Get Adapter Information option from the TroubleShooter File menu (see "Obtaining System Configuration Information" on page 4-5). The TroubleShooter application is available on the Installer diskette.

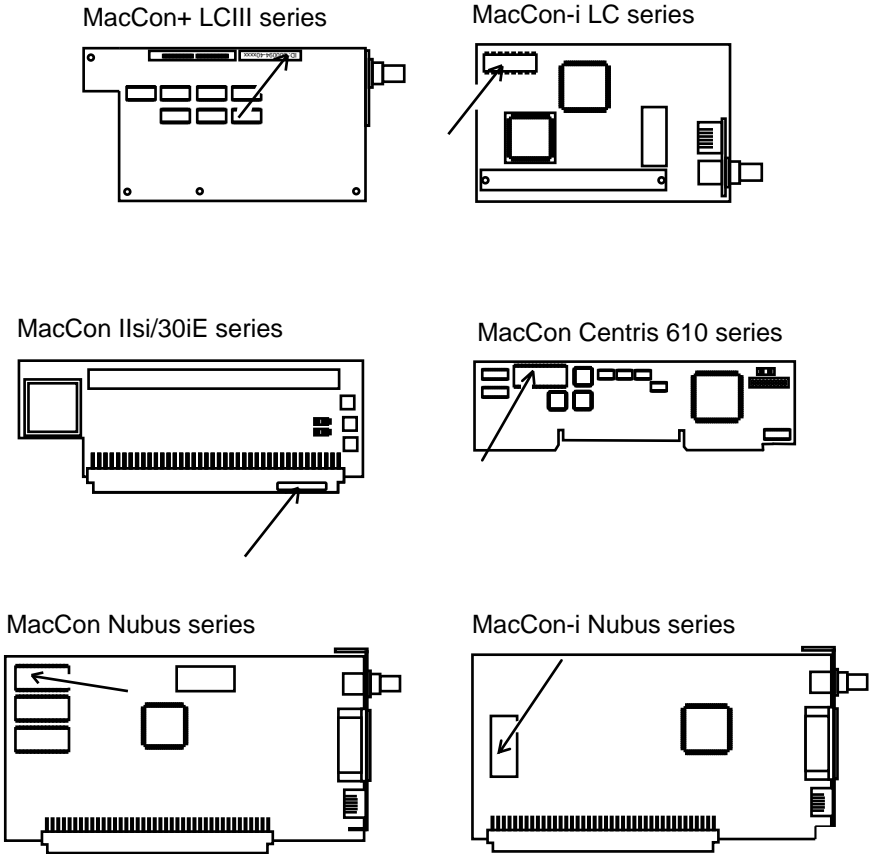


Figure A-1 Location of Ethernet addresses on MacCon cards

## MacCon LEDs

The LEDs for the MacCon NuBus, LC, IIsi, and SE cards are described below.

LED State	Yellow	Green
ON	N/A	Link Integrity enabled, Twisted pair cabling used, link detected Link Integrity disabled, Twisted pair cabling used
OFF	No network activity	Link Integrity enabled, Twisted pair cabling used, no link detected Link Integrity enabled, thin or thick cabling used
Blinking	Network traffic	N/A

## Ethernet Specifications

The table below lists the Ethernet specifications.

Parameter	10Base2	10Base5	10BaseT
Cable	Thin	Thick	UTP
Impedance	50 ohms	50 ohms	100 ohms
Connector on cable	BNC	DB-15	RJ-45
Data transfer rate	10 Mbps	10 Mbps	10 Mbps
Topology	Bus	Bus	Star
Segment length (maximum)	185 meters	500 meters	100 meters
Distance between nodes (minimum)	0.5 meter	1 meter	n/a
Nodes per segment (maximum)	30	500	n/a

You may find the following tips useful.

❑ **10BaseT**

The wiring normally called for in 10BaseT is 26 to 22 AWG, which corresponds to the wire gauge of telephone twisted-pair cables. You need two pairs of wiring for each node. Before you think seriously about using your existing phone wiring for an Ethernet network, be aware that older cabling may not be of sufficient quality to support the full 100 meters between a device and the hub.

- ❑ When wiring 10BaseT connections, take precautions against splitting pairs. Be sure you maintain the same color mates for each pair used within the cable. If you don't follow a common color pairing, you can mix up the wires preventing the Ethernet signal from being transmitted.
- ❑ Be sure to check any cabling you plan to use. Older cabling may not be of adequate quality to support 100 meters between a device and the hub.
- ❑ When subdividing cable segments, do not randomly pick any length of cable. The IEEE recommends that Ethernet coaxial cable be subdivided at lengths of 23.4 meters (76.8 feet), or multiples of that length, in order to minimize internal signal reflections. These reflections reduce the signal strength for large networks. On small networks, such as those covering a single floor of a building, these reflections probably won't cause problems.
- ❑ You may want to install a wiring system in your building, or you may already have one, that allows you to run a 10BaseT cable to a wall jack.

## **Connector Pin-outs**

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### **AAUI Connector**

The AAUI is a 14-pin connector used in the Apple Ethernet Cabling System and the Asanté FriendlyNet system as a universal interface to various external transceiver units (MAUs). The Asanté FriendlyNet media adapters connect to the AAUI Ethernet port on the Macintosh Quadras, Centris 610 or Centris 650 with built-in Ethernet and Laser-Writer IIg printers.

Asanté FriendlyNet cards and Apple computers and printers with built-in Ethernet do not directly connect to the Ethernet cable; instead, an external transceiver, like the Asanté FriendlyNet Media adapter, is used. This approach lets you change network media by only changing the external adapter instead of the card.

GND	Circuit	Signal name
09	TX+	Transmit +
10	TX-	Transmit -
02	RX+	Receive +
03	RX-	Receive -
05	CD+	Collision Detect +
06	CD-	Collision Detect -
07	+5 V	
04	GND	

The following table describes the AUI connector pinouts.

Pin	Circuit	Signal name
03	DO+	Data Out + (transmit pair)
10	DO-	Data Out -
11	DO S	Data Out Shield
05	DI+	Data In + (transmit pair)
12	DI-	Data In -
04	DI S	Data In Shield
07	CO+	Control Out + (optional)
15	CO-	Control Out -
08	COS	Control Out Shield
02	CI+	Control In + (optional)
09	CI-	Control In -
01	CI S	Control In shield
06	VC	Voltage Common (power pair)
13	VP	Voltage Plus
14	VS	Voltage Shield
Shell	PG	Protective Ground



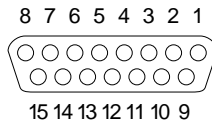


Figure B-1 AUI connector pin number assignments

## RJ-45 Connector

The RJ-45 connector's pin numbers listed below are for an Asanté 10BaseT card positioned correctly with the notch on the 8 pin modular jack oriented down. Pin 1 is the left-most pin, and Pin 8 is the right-most pin.

Pin	Circuit	Signal name	Color code
1	TD+	Data Transmit +	white-blue
2	TD-	Data Transmit -	blue-white
3	RD+	Data Receive +	white-orange
4		Not used	
5		Not used	
6	RD-	Data Receive -	orange-white
7		Not used	
8		Not used	

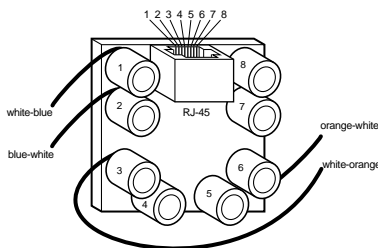


Figure B-2 RJ-45 connector and biscuit block pin-outs