

Configuring 3Com EtherLink 16 NICs**LAN Services Tutorial #3****Contents**

Introduction.....	1
Overview of Process.....	3
Figure 1: Overview of Process: Configuring and Installing 3C507 and 3C507TP.....	4
Configure Card (or TPAU) for 10BASE-T or Draft D.....	5
Switch settings for ASP300.....	5
Switch settings for Ungermann-Bass ASP310 and ASP320 TPAUs for use with 3C507 Card.....	5
Jumper Settings for 3C507TP.....	5
Add the 3Com Card to the Server Configuration.....	6
Configure 3C507 or 3C507TP.....	6
ICA Card Configuration.....	8
Banyan ICA card: Jumper-block settings for various I/O addresses.....	8
For More Information.....	8

Introduction

There are two models of 3Com's 16-bit EtherLink 16 card: the 3C507, and the 3C507TP. Both cards are 16-bit network interface cards recommended for CNS and ISA PC-based servers; both cards are supported by VINES 4.11(5), but neither is supported by VINES 5.00(5). (The 32-bit Racal InterLAN card is recommended for EISA-based servers. See the C&TS Products and Services catalog for details).

The 3C507 contains a BNC connector for coaxial connection to thinnet networks and an AUI for connection to an external transceiver; the 3C507TP has a built-in 10BASE-T transceiver with an RJ-45 jack for direct connection to twisted-pair: you'll need a TPAU to connect the 3C507 to TTP (telephone twisted-pair), but you don't for the 3C507TP.

Before installing either card in your server (or workstation), please note these important considerations:

- You must know both the hub type and mode (10BASE-T or Draft D) of the LAN to which you'll be connecting before the card's network-related settings can be properly made; and
- Because of a special addressing scheme used by 3Com, no other card in the server or workstation can use I/O address 100.

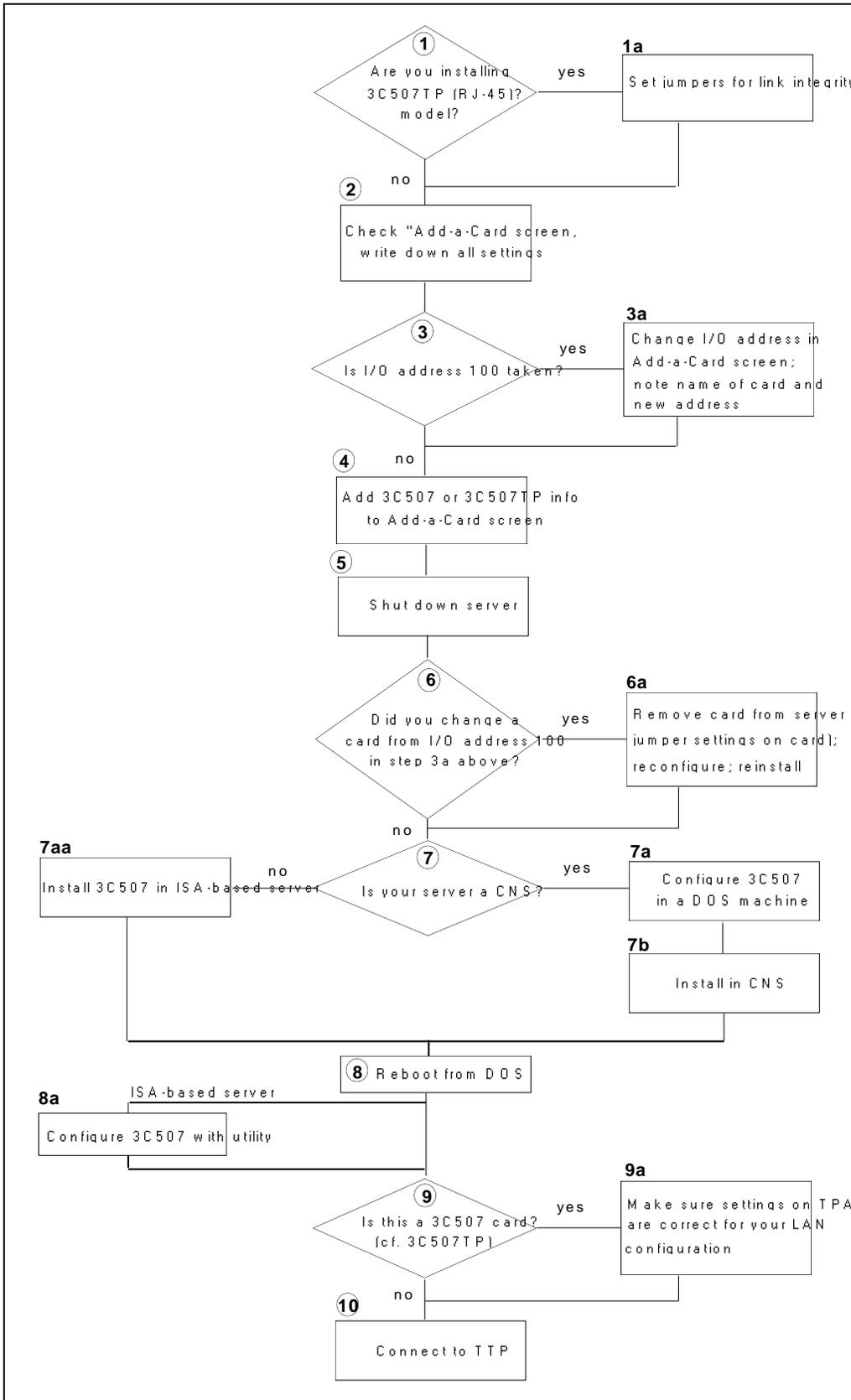
This tutorial provides information about all these issues and includes configuration settings for the Banyan ICA card, which uses I/O address 100 by default. Refer to Figure 1 or the list below for an overview of the process. You may wish to leave your existing LAN card in place in case you encounter problems installing the 3C507; you can remove the existing card at a later date.

Overview of Process

Be sure to plan out settings and configuration information, in advance. Here's a summary:

1. Find out what hub and mode your LAN uses and decide which settings your 3C507TP or your TPAU should be set to, according to the charts below. Set the jumpers on the 3C507TP.
2. Look at your server's Add/Change Card screen. Write down all existing cards and settings listed.
3. Note whether I/O address 100 is already being used. Change the address to something other than 100 and write that down. If the card is a Banyan ICA card, use I/O 120, 140, 160, 180, or other address.
4. Add the 3C507 or 3C507TP to the Add/Change Card screen by selecting 3Com EtherLink 16 from the scrolling list; enter the settings for the card (see page 4 of this guide).
5. Shut down your server normally.
6. Open the server case. If you changed a previously installed card from I/O address 100, and that card requires setting jumper cables on a card, remove the card, reconfigure the jumpers, and reinstall it.
7. ISA-based server: Install the 3C507 into the server. CNS server: you must configure the card in a DOS-based machine prior to installing it.
8. Reboot the server (or workstation where you're configuring card for CNS) with DOS boot diskette. Configure the card using the 3Com507 or 507TP utility.
9. Make sure the settings on the TPAU are correct before connecting to the network.
10. Connect the TTP (telephone twisted pair) to the TPAU or to the RJ-45 port in the 3C507TP.

FIGURE 1: OVERVIEW OF PROCESS: CONFIGURING AND INSTALLING 3C507 AND 3C507TP



Configure Card (or TPAU) for 10BASE-T or Draft D

You cannot correctly configure the 3C507TP or a TPAU without knowing your LAN's hub type and the operating mode of that hub. A misconfigured card may appear to work but there's no guarantee that it will work consistently -- or that it won't wreak havoc on your LAN: such connectivity hardware configured incorrectly can "flood" the LAN and severely disrupt local communications.

Your Telecom representative will be able to tell you the hub type and the 10BASE-T version, or you can try to guess by checking the TPAU on a neighboring workstation: if it's an old ASP300 -- the kind with only one switch -- then your subnet can only be Draft D and link-integrity cannot be enabled on the TPAU. (The ASP300 has only one switch, which should always be down.) It's best, however, to consult with your Telecom representative for a definitive answer. When you have the information, set the jumpers on the 3C507TP for 10BASE-T or Draft D using the settings in the table below. Or set the switches on the Ungermann-Bass TPAU that you'll connect to the 3C507.

SWITCH SETTINGS FOR ASP300

The Ungermann-Bass ASP300 TPAU has only one setting, which is for the SQE (signal quality error) test feature. This setting should always be down in order to disable that feature.

SWITCH SETTINGS FOR UNGERMANN-BASS ASP310 AND ASP320 TPAUS FOR USE WITH 3C507 CARD

	Hub model:	U-B ASM300		U-B ASM310		U-B ASM320		AT&T StarLAN		AT&T StarLAN 10	
	Ethernet version:	Draft D	10BaseT	Draft D	10BaseT	Draft D	10BaseT	Pre-10BT	10BaseT	Pre-10BT	10BaseT
1 SQE Test		B (down)	na	B (down)	B (down)	B (down)	B (down)	B (down)	na	B (down)	B (down)
2 Receive Threshold (RX TH)		B (down)	na	B (down)	A (up)	B (down)	A (up)	A (up)	na	A (up)	A (up)
3 Link Test		A (up)	na	A (up)	B (down)	A (up)	B (down)	A (up)	na	A (up)	B (down)

JUMPER SETTINGS FOR 3C507TP

	Hub model:	U-B ASM300		U-B ASM310		U-B ASM320		AT&T StarLAN		AT&T StarLAN 10	
		Ethernet version:	Draft D	10BaseT	Draft D	10Baset	Draft D	10BaseT	Pre-10BT	10BaseT	Pre-10BT
J1	DC Sig	off	na	off	off	off	off	off	na	off	off
J2	Link beat	off	na	off	on	off	on	off	na	off	on
J3	RX TH	low	na	low	norm	low	norm	norm	na	norm	norm
J4	Eq	off	na	off	off	off	off	off	na	off	off
J6	Xmit	norm	na	norm	norm	norm	norm	norm	na	norm	norm
J7	Impedance	100 ohms	na	100 ohms	100 ohms	100 ohms	100 ohms	100 ohms	na	100 ohms	100 ohms

Add the 3Com Card to the Server Configuration

After setting the jumpers on the 3C507TP and configuring the card using 3Com's DOS-based utility, you must add the card to your server's configuration and build Banyan drivers for the card.

1. From the Operator Menu at the server console, select System Maintenance. The System Maintenance menu will be displayed.
2. Select Configure/Diagnose Server from the System Maintenance menu.
3. Select the Add-a-card function.
4. Select EtherLink 16 from the scrollable list displayed on the Add/Change card screen.
 - If any card on the Add/Change card screen is already set at I/O address 100, change the card's settings. See the "ICA Card Configuration" instructions below for information about changing the ICA card's settings.
5. Note all settings on a sheet of a paper. Save the settings by pressing <F10>. Shut the server down in the normal fashion. When you reboot, Banyan VINES will build drivers for all the cards.

Configure 3C507 or 3C507TP

The 3C507 comes with a DOS-based utility from 3Com for configuring the card's resources, such as I/O addresses and interrupt levels: if you're installing the card in a CNS server, you must configure it in a DOS-based machine prior to installing it in the CNS. If you didn't receive the configuration utility on disk with your card, you can download it from FsPatches@CTS50@Servers. Filenames for the configuration utilities are 3C507.EXE and 3C507TP.EXE, respectively. To run the utility, simply type 3C507 or 3c507tp at the DOS prompt, and follow the instructions onscreen to accept or change the defaults as needed:

	Recommended Settings		
	Defaults	3C507	3C507TP
I/O Base Address	300	200-3F0, in 10 hex increments	200-3F0, in 10 hex increments
Interrupt Level	3	Can use 3, 5, 7, 9 10, 11*, 12, or 15	Can use 3, 5, 7, 9 10, 11*, 12, or 15
Transceiver Type	On Board	External	Internal
RAM Base Address	0d0000	Can use 0c0000, 0c8000, 0d0000, or 0d8000	Can use 0c0000, 0c8000, 0d0000, or 0d8000
RAM Size	64	use 16 only	use 16 only
ROM Base Address	0c6000	0c6000	0c6000
ROM Size	0	0	0
Zero wait state	Disabled	Disabled	Disabled
Data mode	Turbo	Turbo	Turbo

* The Adaptec SCSI adapter uses interrupt 11 by default. Don't use interrupt 11 if you have an Adaptec.

ICA Card Configuration

The 3C507 is hardcoded to use a second I/O address, I/O 100, in addition to whatever I/O address you configure. According to 3Com, this is necessary so that the configuration program can locate the card. What this means is that you cannot use I/O address for any of the your other cards, so when you install the 3C507 in your server or workstation, be sure to check all other cards' I/O addresses and change any that are set for 100. Since the ICA card's default I/O address is 100, chances are you will have to change that address when you install a 3C507 or 3C507TP.

It is recommended that the address be changed to one of the addresses in the table below at the same time you add the 3Com card: you can change the ICA card's address on the Banyan Add-A-Card screen, then shut down the server, remove the ICA card, correct the jumpers to match the settings already entered in the Add-A-Card screen, put the card back in the server, and reboot. (This method saves a reboot). Note that there is no jumper #8 in the table or on the card -- this isn't a typo.

BANYAN ICA CARD: JUMPER-BLOCK SETTINGS FOR VARIOUS I/O ADDRESSES

	Address			
Jumper	120	140	160	180
5	down	up	down	up
6	up	down	down	up
7	up	up	up	down
9	up	up	up	up

For More Information

As many of you know, the 10BASE-T standard took several years to evolve. The standard was finalized by the IEEE in September 1990, which is why different versions of the specification exist at PG&E today. Draft D was one of the close-to-final versions, but some additional changes, notably the link integrity feature, were made to the spec before 10BASE-T was complete. For more information on 10BASE-T and pre-final 10BASE-T, refer to Hot Tips #8, 11, and 14.

Another setting that's been a source of confusion is the receive threshold (RX TH), which determines how strong a signal from the hub must be before the transceiver will pick it up. The U-B ASM300 concentrator card uses a lower-level signal than the 10BASE-T requirement -- 3Vpp compared to 5Vpp -- which means that any 10BASE-T network interface cards and TPAUs must have their receive threshold decreased in order to pickup the lower-level signals from the ASM300. On the 3C507TP, the receive threshold is controlled via jumper J3. Thus, to connect a 3C507TP to an ASM300 concentrator card, you would use the "low" setting.