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NEAX®2400 IPX

IPTRK Circuit Card System Manual

NOVEMBER, 2000

NEC America, Inc.

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This page is for your notes.

CHAPTER 1 INTRODUCTION

1. GENERAL

This manual explains the installation of the following IPTRK circuit cards, which are used to send/receive voice or FAX (G3) information via the Intranet. Although PA-8IPTB is equipped with a total of eight ports, an optional sub board (PZ-8VCTB) provides an additional eight ports, when mounted on a PA-8IPTB main board.

- PA-8IPTB (with eight ports)
- PZ-8VCTB (optional daughter board provides an additional eight ports to PA-8IPTB)

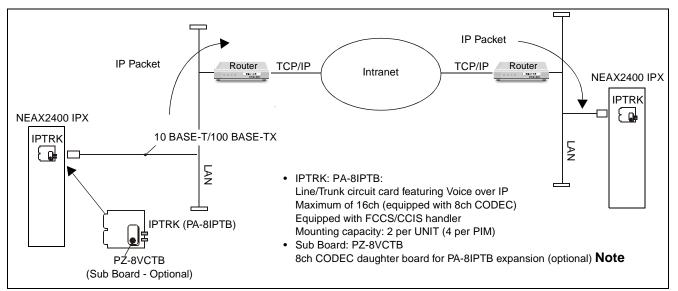


Figure 1-1 Example Network Configuration via Intranet

Note: A single sub board can be mounted on PA-8IPTB, two slots are physically occupied.

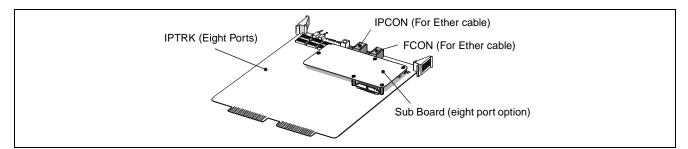


Figure 1-2 Outer View of IPTRK Circuit Card Furnished with a Sub Board (PZ-8VCTB)

FUNCTION	SPECIFICATION	REMARKS	
	G.729a	8 kbps CS-ACELP	
	G.711	PCM of Voice Frequencies	
Voice Encoding/Decoding	G.723.1	Dual rate Speech Coder for Multimedia Communication transmitting at 5.3 and 6.3 kbits/s	

Table I-I Specification of IF ITurn	Table 1-1	Specification	of IP	Trunk
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FUNCTION	SPECIFICATION	REMARKS				
FAX	FAX Relay (T.30)	G3 FAX (V.17, V.21, V.27ter, V.29, V.33) is available Super G3 (V.34, etc.) is not available Note 1				
INTER-OFFICE	SIGNAL LINK					
NEAX2400 IPX $ ightarrow$	NEAX2400 IPX					
FCCS	MP	MP: Point-to-Multipoint				
CCIS	MP					
NEAX2400 IPX $ ightarrow$	NEAX2400 IPX \rightarrow NEAX2000 IVS ²					
CCIS	MP	7				
Jitter	Dynamic Jitter Buffer	Buffer Value (40 ~ 300 ms)				
LAN Interface	10 BASE-T (100 BASE-TX)					
QoS (Quality of Service)	WFQ by ToS	Use Cisco [®] router				
Echo Canceller	G.168	Round Trip Delay = 32 ms Note 2				

Table 1-1 Specification of IP Trunk (Continued)

Note 1: *Transmission speed is within 14.4 kbps.*

Note 2: On a conference call via IPTRK, Echo Canceller cannot be activated when using certain kinds of telephone sets (generally analog telephones).

2. SERVICE FEATURES TO BE PROVIDED

When using an IPTRK circuit card, the following services are available:

- CCIS Networking via IP [C-163]
- FCCS Networking via IP [F-36]

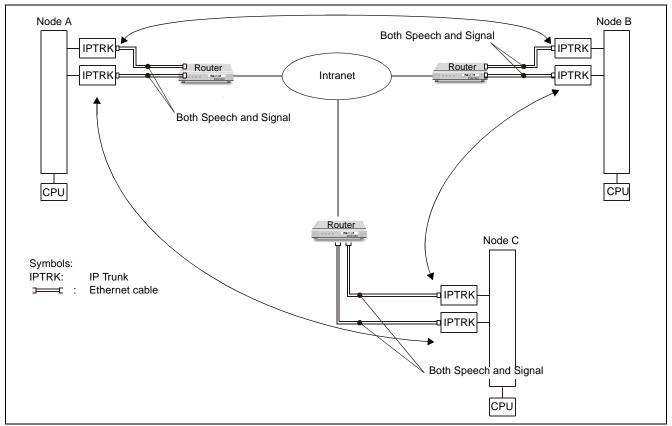


Figure 1-3 represents a block diagram example of CCIS Networking via IP [C-163]. For more detailed information, see CHAPTER 3.

Figure 1-3 Block Diagram - CCIS Networking via IP

Note: As shown, the IPTRK circuit cards in the self-node and its connected node must be 1-to-1 ratio.

INTRODUCTION

Figure 1-4 represents a block diagram example of CCIS Networking via IP [C-163] when an IPTRK circuit card in Node A is connected to the IPTRKs of Node B and C (Point-to-Multipoint connection). For more detailed information, see CHAPTER 3.

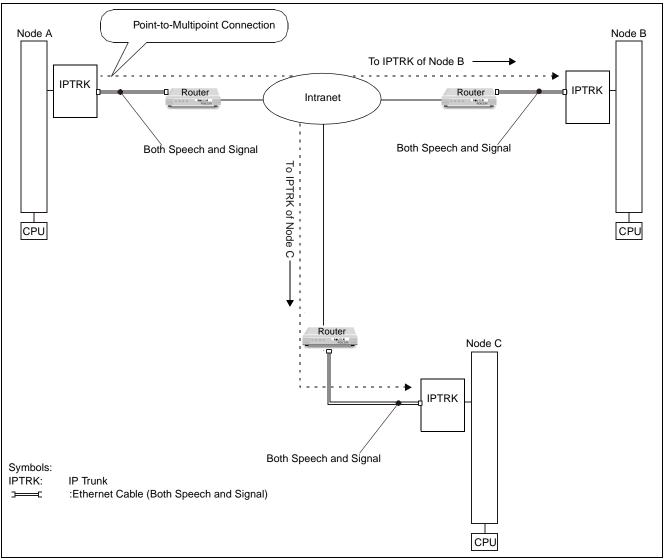


Figure 1-4 Block Diagram - CCIS Networking via IP [Point-to-Multipoint Connection]

Note: As shown, an IPTRK circuit card, accommodated in a node, can be connected to the IPTRK circuit cards of multiple nodes, thus achieving Point-to-Multipoint connection.

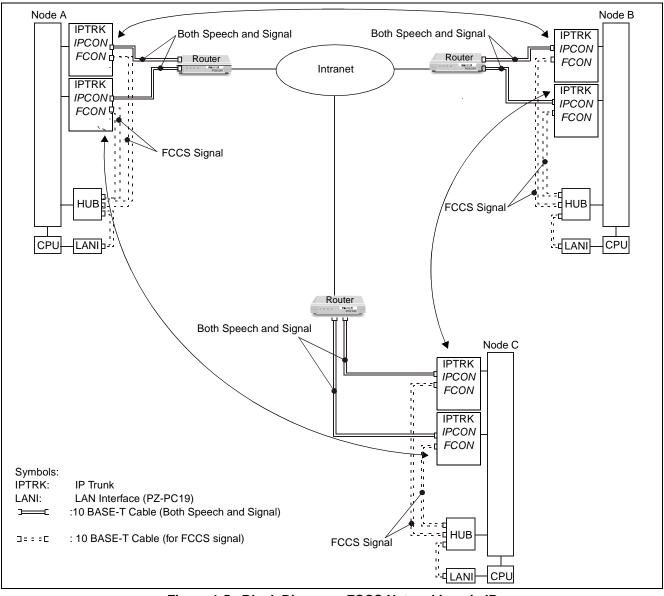


Figure 1-5 represents a block diagram example of FCCS Networking via IP [F-36]. For more detailed information, see CHAPTER 3.

Figure 1-5 Block Diagram - FCCS Networking via IP

Note: As shown, the IPTRK circuit cards in the self-node and its connected node must be 1-to-1 ratio.

3. HOW TO FOLLOW THIS MANUAL AND RELATED REFERENCE MANUALS

This manual describes only items related to the IPTRK circuit cards. Therefore, if you need details on the NEAX2400 IPX, the FCCS network, or the CCIS network, please refer to the related manual. Configuration of this manual and related reference manuals are shown below.

3.1 How to Follow This Manual

• CHAPTER 1 INTRODUCTION

This chapter explains the purpose of this manual.

• CHAPTER 2 CIRCUIT CARD EXPLANATIONS

This chapter explains the functional outline, mounting location, switch and lamp meanings, and external interfaces of the IPTRK circuit card.

• CHAPTER 3 OFFICE DATA PROGRAMMING

This chapter explains details on general descriptions, service conditions, and data programming of the IPTRK-related service features.

• CHAPTER 4 OPERATION TESTS AFTER INSTALLATION

This chapter explains the procedure to verify normal operation of the IPTRK circuit card when installation and necessary data settings have been completed.

3.2 Related Reference Manuals

For more detailed information on the NEAX2400 IPX, the FCCS network, or the CCIS network, refer to the following manuals:

For details on NEAX2400 IPX:

- NEAX2400 IPX Installation Manual
- NEAX2400 IPX Circuit Card Manual
- NEAX2400 IPX Office Data Specification
- NEAX2400 IPX Feature Programming Manual
- NEAX2400 IPX System Operations and Maintenance Manual

For details on the FCCS network:

• NEAX2400 IPX Fusion System Manual

For details on the CCIS network:

• NEAX2400 IPX No. 7 CCIS System Manual

CHAPTER 2 CIRCUIT CARD EXPLANATIONS

1. GENERAL

This chapter provides detailed explanations for the following circuit cards:

- PA-8IPTB
- PZ-8VCTB

2. PA-8IPTB (IPTRK Circuit Card)

2.1 General Function

PA-8IPTB is a Line/Trunk circuit card that is used for providing CCIS/FCCS service via the Intranet, and to send/receive voice or FAX (G3) information over IP. PA-8IPTB is equipped with a total of eight ports, however, an optional sub board (PZ-8VCTB) provides an additional eight ports, when mounted on a PA-8IPTB main board. For more detailed information, see Section 2.6 External Interfaces. This card provides the following functions:

- a.) Voice Data Processing:
- Voice data compression/decompression
- FAX data encoding/multiplexing
- DTMF (analog signal) detection/transmission
- Echo Canceller
- b.) IP Network Interface (10/100 Mbps Ethernet interface to send/receive voice/signal information)
- c.) FCCS Link Interface
- d.) LP-PM Bus Interface (for PM bus dedicated to NEAX2400 IPX series)

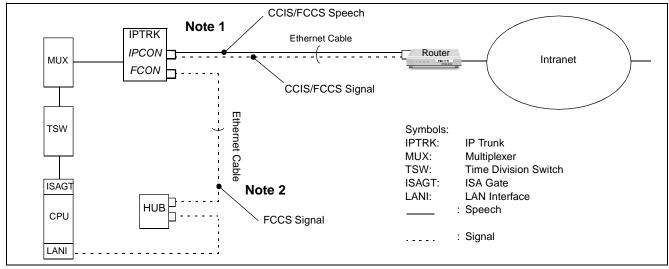


Figure 2-1 Location of PA-8IPTB (IPTRK Circuit Card) within the System

Note 1: When using an IPTRK circuit card for CCIS Networking via IP [C-163], the IPTRK cards in the self node and its connected node must be in 1-to-1 ratio.

Note 2: Used for FCCS only.

Caution:While this circuit card is in use, some LSIs may get hot. Handle this card with care. Do not touch the heated LSI surfaces.

2.2 Mounting Location/Condition

Mounting location/condition of this card is shown below. Mount this card in the following shaded slots:

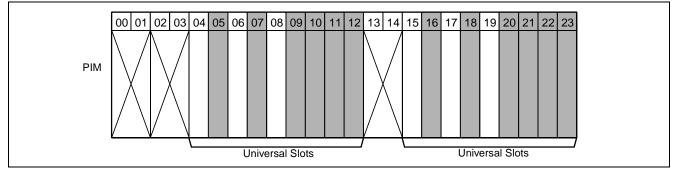


Figure 2-2 PA-8IPTB Circuit Card Mounting Locations

Mounting conditions of this card are as follows:

• When this card is used without a sub board (PZ-8VCTB), and mounted in any of the universal slots 05, 07, 09, 16, 18 or 20:

Although this card physically occupies only one slot, actual ports to be used are those in the evennumbered group of only the left side of the slot (see Figure 2-3).

• When this card is used without a sub board (PZ-8VCTB), and mounted in any of the universal slots 10, 11, 12, 21, 22 or 23:

This card occupies only one slot. In regard to the port accommodation, see Figure 2-3.

• When this card is used with a sub board (PZ-8VCTB):

This card physically occupies a total of two slots. In regard to the port accommodation, see Figure 2-3.

• One UNIT accommodates a maximum of two IPTRK circuit cards (slots 04~12 / slots 15~23). Therefore, the third IPTRK circuit card must be accommodated in a different UNIT of the same/other PIM.

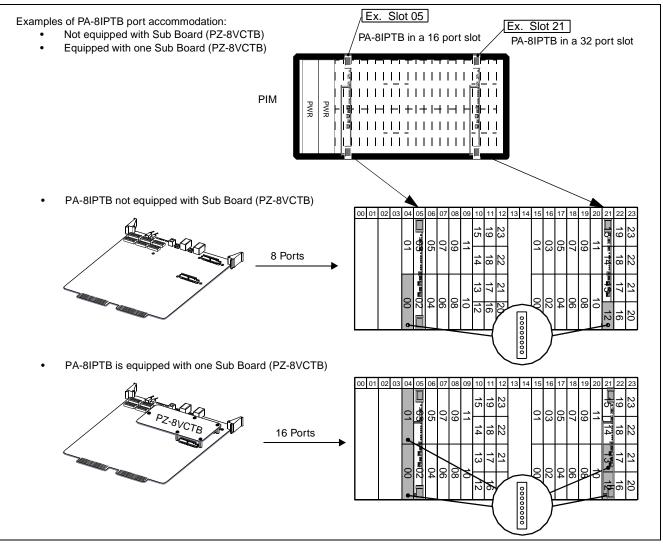


Figure 2-3 Port Assignment for PA-8IPTB Circuit Card

2.3 Face Layout of Lamps, Switches and Connectors

The face layout of lamps, switches and connectors on this circuit card are shown below. For more detailed information, see Section 2.6 External Interfaces.

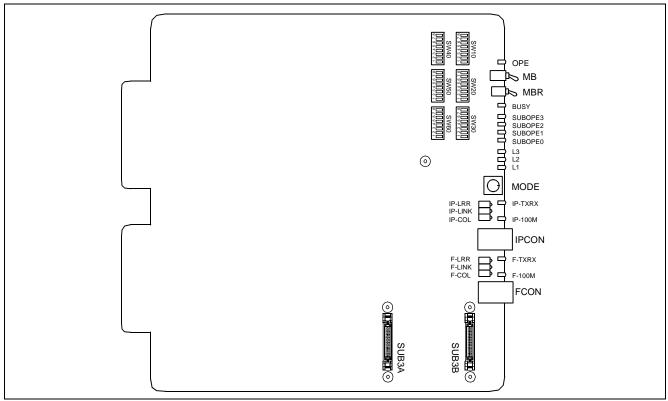


Figure 2-4 Face Layout of PA-8IPTB IPTRK Circuit Card

Note: When mounting the optional sub board (PZ-8VCTB), be sure to use SUB3A and SUB3B connectors.

2.4 Lamp Indications

Lamp indication meanings are shown below:

Table 2-1	Lamp	Indication	Meanings
-----------	------	------------	----------

LAMP NAME	COLOR	MEANING OF INDICATION
OPE	Green	Lights when circuit card is operating normally.
BUSY	Green	Lights when one or more lines are busy.
SUBOPE3	Green	Lights when Sub CPU #3 is in operation.
SUBOPE2	Green	Lights when Sub CPU #2 is in operation.
SUBOPE1	Green	Lights when Sub CPU #1 is in operation.
SUBOPE0	Green	Lights when CPU of IPTRK circuit card's main board is in operation.
L3	Green	Not used.
L2	Green	Not used.
L1	Green	Lights when CCIS/FCCS link is established.
IP-LRR	Green	Lights when this card is used with IP network.

LAMP NAME	COLOR	MEANING OF INDICATION
IP-LINK	Green	Lights when establishing a connection (physically) with the IP network.
IP-TXRX	Green	Lights when sending/receiving data packets.
IP-100M	Green	Lights when 100 Mbps interface is in use.
IP-COL	Yellow	Lights when data packet collision is detected.
F-LRR	Green	Lights when this card is used with FCCS network.
F-LINK	Green	Lights when establishing a connection (physically) with the FCCS network.
F-TXRX	Green	Lights when sending/receiving data packets.
F-100M	Green	Lights when 100 Mbps interface is in use.
F-COL	Yellow	Lights when data packet collision is detected.

Table 2-1 Lamp Indication Meanings (Continued)

2.5 Switch Settings

The meaning of each switch on this card is shown below:

Table 2-2	Switch Setting Meaning	JS
-----------	------------------------	----

SWITCH NAME	SWITCH NUMBER	SETTING	STANDARD SETTING	MEANING
MB	-	ON (UP)		Circuit Card: Make-Busy.
WID	-	OFF (DOWN)	×	Circuit Card: Make-Busy Cancel.
MBR	-	ON (UP)		Circuit Card Make-Busy Request.
MDK	-	OFF (DOWN)	×	Circuit Card Make-Busy Request Cancel.
	-	0	×	Auto Negotiation ON (standard setting).
MODE	-	1		Auto Negotiation OFF.
MODE	-	2		MAC Address Writing Mode.
	-	3-F		Not used.

SWITCH NAME	SWITCH NUMBER	SETTING	STANDARD SETTING			М	EANING		
	1	ON		External Ether 100 Mbps: Fixed Note 1					
	1	OFF	×	External Ether 10 Mbps: Fixed Note 1					
	2	ON		Interna	al Ether	100 Mbp	os: Fixed Note 1		
	2	OFF	×	Interna	al Ether	10 Mbps	: Fixed Note 1		
				PAD F	Pattern S	election			
				SW10-3	SW10-4	SW10-5	PAD PATTERN SELECTION		
				OFF	OFF	OFF	Not used		
	3~5			ON	OFF	OFF	Not used		
				OFF	ON	OFF	µ-law Pattern 1 (for North America)		
				ON	ON	OFF	µ-law Pattern 2 (for North America)		
SW10				OFF	OFF	ON	Not used		
				ON	OFF	ON	Not used		
				OFF	ON	ON	Not used		
				ON	ON	ON	Not used		
				For de	tails on	each PAI	D value, refer to Table 2-1.		
	6	ON		PAD is assigned by ARTD/ACRD Note 2					
	0	OFF	×	PAD is	s assign	ed by AP	AD/AFPD Note 2		
	7	ON		Flexible PAD is used.					
	/	OFF	×	Flexible PAD is not used.					
	8	OFF	×	Echo (to OFI		er nonline	ar processor is not used. (Fixed		

Table 2-2	Switch Setting Meanings	(Continued)
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Note 1: Valid when MODE switch is set to 1 (= Automatic Negotiation OFF).

Note 2: When SW10-6 is ON, PAD value is set as specified by ARTD (for CCIS) or ACRD (for FCCS). PAD value specified by APAD (for CCIS) or AFPG (for FCCS) is not effective in this configuration. When SW10-6 is OFF, PAD value is set as specified by ARTD (for CCIS) or ACRD (for FCCS) as default. However, when any data has been set by the APAD or AFPD command, the specified PAD value is used. The standard setting is OFF.

SWITCH NAME	SWITCH NUMBER	SETTING	STANDARD SETTING			N	IEANIN	IG		
				Designation of Flexible PAD Value Note 1						
				SW20 -1	SW20 -2	SW20 -3	SW20 -4	SW20 -5	SW20 -6	PAD VALUE
				OFF	OFF	OFF	OFF	OFF	OFF	16 [dB]
				ON	OFF	OFF	OFF	OFF	OFF	15 [dB]
				OFF	ON	OFF	OFF	OFF	OFF	14 [dB]
				ON	ON	OFF	OFF	OFF	OFF	13 [dB]
				OFF	OFF	ON	OFF	OFF	OFF	12 [dB]
				ON	OFF	ON	OFF	OFF	OFF	11 [dB]
	1~6			OFF	ON	ON	OFF	OFF	OFF	10 [dB]
				ON	ON	ON	OFF	OFF	OFF	9 [dB]
				OFF	OFF	OFF	ON	OFF	OFF	8 [dB]
SW20				ON	OFF	OFF	ON	OFF	OFF	7 [dB]
				OFF	ON	OFF	ON	OFF	OFF	6 [dB]
				ON	ON	OFF	ON	OFF	OFF	5 [dB]
				OFF	OFF	ON	ON	OFF	OFF	4 [dB]
				ON	OFF	ON	ON	OFF	OFF	3 [dB]
				OFF	ON	ON	ON	OFF	OFF	2 [dB]
				ON	ON	ON	ON	OFF	OFF	1 [dB]
				OFF	OFF	OFF	OFF	ON	OFF	0 [dB]
	7	ON		Fixed to OFF.						
	1	OFF	×	Tixeu	UUUFF.					
	8	ON		Fixed	to OFF					
	0	OFF	×	Fixed to OFF.						

Table 2-2 Switch Setting Meanings (Continued)

SWITCH NAME	SWITCH NUMBER	SETTING	STANDARD SETTING				MEAN	ING			
	1	ON	×	Dynamic Controlling							
	1	OFF		Static Controlling							
				Voice Encoding/Decoding and Payload Cycle:							
				SW30	SW30	SW30	MEANING	SI	ELECTIO	N ORDE	R:
				-4	-3	-2	MEANING	1	2	3	4
				OFF	OFF	OFF	Standard Setting	G.729a	G.723.1 (6.3K)	G.723.1 (5.3K)	G.711
	2~4			OFF	ON	OFF	Voice Quality Precedence Mode	G.711	G.729a	G.723.1 (6.3K)	G.723.1 (5.3K)
				OFF	OFF	ON	Band Precedence Mode 1	G.723.1 (5.3K)	G.723.1 (6.3K)	G.729a	G.711
SW30				OFF	ON	ON	Band Precedence Mode 2	G.723.1 (6.3K)	G.723.1 (5.3K)	G.729a	G.711
							ion Timer	:			
	5~7			SW30 -7	SW30 -6	SW30 -5	TIMER		REN	IARKS	
				OFF	OFF	OFF	1 minute		Standa	rd Setting	
				OFF OFF	OFF ON	ON OFF	2 minute 3 minute				
				OFF	ON	ON	4 minute				
				ON	OFF	OFF	5 minute		F : 14		1
				ON ON	OFF ON	ON OFF	0 minute No Timer		Fixed to Voice/FA	X Automa	
				ON	ON	ON	Preliminar	У	Dist	inction	
	8	OFF	×	Not Used.							
	1~4	OFF	×	Fixe	d to Ol	FF.					
				SW40 -5	SW40 -4	SW40 -3	SW40 -2	MEA	NING	REM	ARKS
	5			ON	OFF	OFF	OFF		Sending	Standar	1 Setting
				OFF OFF	ON ON	ON OFF	OFF OFF		Sending		
SW40				OFF	OFF	ON	OFF		Sending		
	6	OFF	×	Not	used.						
	7 Note 2	ON		FAX	mode	ECM (OFF.				
	/ NULE Z	OFF	×	FAX mode ECM ON.							
	8	OFF	×	Fixe	d to Ol	FF.					
SW50	1~8	OFF	×	Fixed to OFF.							
SW60	1~8	OFF	×	Fixe	d to Ol	FF.					

Table 2-2	Switch Setting Meanings	(Continued)
-----------	-------------------------	-------------

Note 1: *Flexible PAD is made effective when SW10-7 = ON, and PAD No. = 4 in Table 2-3.*

Note 2: *ErrorCorrectionMode(ECM)isusedtocorrecterrors, suchas dataloss, during FAX data sending or receiving.*

PAD NO.	PATTERN 1		PATTERN 2		
FAD NO.	SEND	RECEIVE	SEND	RECEIVE	
7 or 15		0 [dB]		0 [dB]	
1		2 [dB]		3 [dB]	
2		4 [dB]		3 [dB]	
3		6 [dB]		6 [dB]	
4		8 [dB] or Flexible PAD Note		9 [dB] or Flexible PAD Note	
5		0 [dB]		0 [dB]	

Table 2-3 PAD Values of µ-law Pattern 1 / Pattern 2

Note: *Flexible PAD is used when SW10-7 is set ON. For details on Flexible PAD values, refer to SW20-1~SW20-6.*

2.6 External Interfaces

To connect to the Intranet, refer to Figure 2-5 when using PA-8IPTB for CCIS Networking via IP [C-163].

To connect to the Intranet, refer to Figure 2-6 when using PA-8IPTB for FCCS Networking via IP [F-36] (Point-to-Multipoint Connection).

Although PA-8IPTB is equipped with only eight ports, adding the optional sub board (PZ-8VCTB) provides an additional eight ports, when mounted on a PA-8IPTB main board. Figure 2-7 represents optional attachment of a sub board (PZ-8VCTB) onto the main board of PA-8IPTB.

Caution: Use a router when connecting the IPTRK circuit card to the IP network. Do not connect IPTRK circuit cards in the self-node and its connected node directly via the HUB, etc.

Connect an Ethernet cable from IPCON connector to the router, as shown in the following figure. When 100BASE-TX Ethernet cable is connected to IPCON connector, IP-100M lamp lights green. The lamp will not light when 10BASE-T Ethernet cable is used.

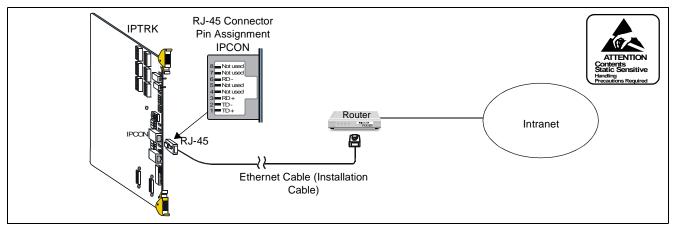


Figure 2-5 Ethernet Cable Connection for CCIS Networking via IP [C-163]

When using an IPTRK circuit card for FCCS Networking via IP [F-36] (Point-to-Multipoint Connection), connect an Ethernet cable from the IPCON connector to the router. Next, connect another Ethernet cable from FCON connector to LANI card (CPR, PCI slot 00/03) via HUB. The following figure is an example when connecting the IPTRK circuit card to the LANI of CPU0, PCI slot 0. When 100BASE-TX Ethernet cable is connected to IPCON/FCON connector, IP100M or F-100M lamp lights green, respectively. When using 10BASE-T Ethernet cable, the lamp does not light.

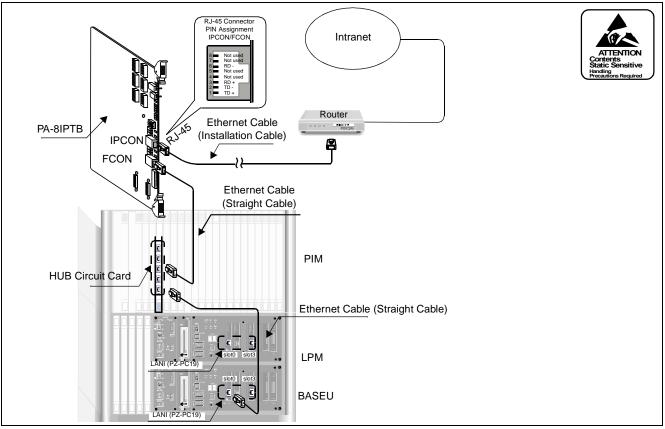


Figure 2-6 Ethernet Cable Connection for FCCS Networking via IP [F-36] [IPTRK: Point-to-Multipoint]

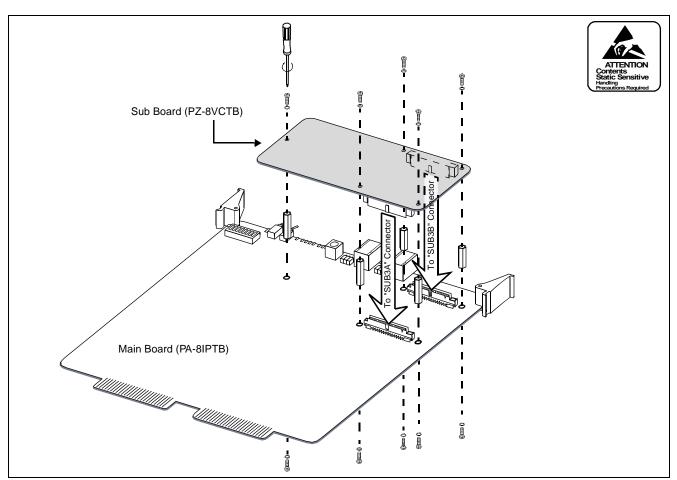


Figure 2-7 Attachment of Sub Board (PZ-8VCTB) onto IPTRK Circuit Card

2.7 Switch Setting Sheet

MODULE	SLOT NO.	SWITCH NAME	SWITCH SHAPE	REMARKS
		MB		
		MBR		
		MODE	O	
		SW10	12345678 ON 0000000 ↑	
PIM		SW20	12345678 00000000 ↑	
		SW30	12345678 00000000 ↑	
		SW40		
		SW50	12345678 00000000 ↑	
		SW60	12345678 00000000 ↑	

 Table 2-4
 Switch Setting Sheet

3. PZ-8VCTB (Sub Board)

3.1 General Function/Mounting Location

PZ-8VCTB is an optional sub board (daughter board), that provides an additional eight ports when mounted on the main board of a PA-8IPTB card. The board can be mounted as shown in the figure below:

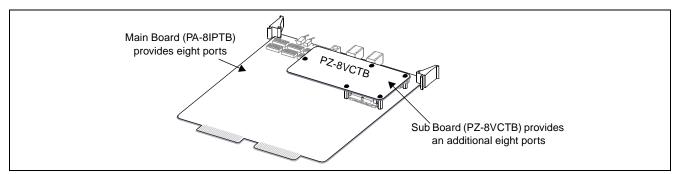


Figure 2-8 Outer View of PZ-8VCTB on the Main Board of PA-8IPTB

Note: When mounting this board, be sure to insert the board onto the SUB3A and SUB3B connectors on the PA-8IPTB card. For details, refer to Section 2.6 External Interfaces.

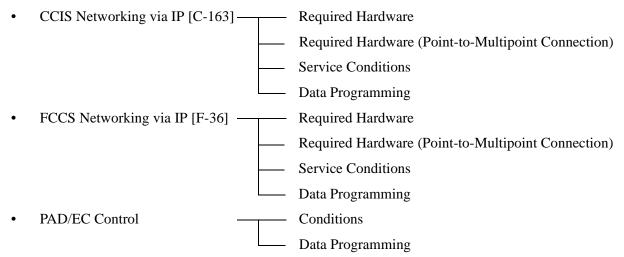
3.2 Lamp Indications and Switch Settings

No lamps or switches are used on this card.

CHAPTER 3 OFFICE DATA PROGRAMMING

1. GENERAL

This chapter explains the procedure to assign the IPTRK circuit card-related office data, located in the following sections:



Note: For details on the IPTRK circuit card, refer to CHAPTER 2.

2. CCIS NETWORKING VIA IP [C-163]

This feature allows the system to use the CCIS network via the Intranet. To establish/release a call, the following figure illustrates a connection pattern.

For both speech and CCIS signal channels, an IPTRK circuit card is used. The IPTRK circuit cards in the selfnode and each of its connected nodes must be in 1-1 ratio. For additional information, see Section 2.4 Data Programming.

When utilizing Point-to-Multipoint Connection for both speech and CCIS signal channels, an IPTRK circuit card is used. The IPTRK circuit card accommodated in the self-node can be connected to multiple destinations (IPTRK circuit cards of multiple nodes). For additional information, see 2.4 Data Programming.

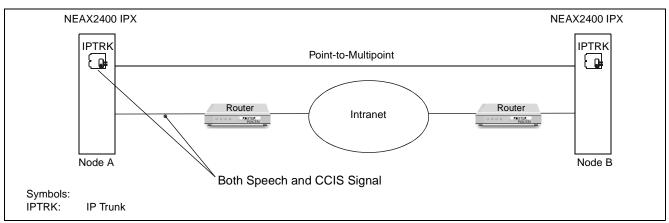


Figure 3-1 Overview of CCIS Networking via IP [C-163]

2.1 Required Hardware

This feature is available using the following hardware. As shown, both signal and speech paths can be provided by connection of IPTRK circuit cards between the nodes.

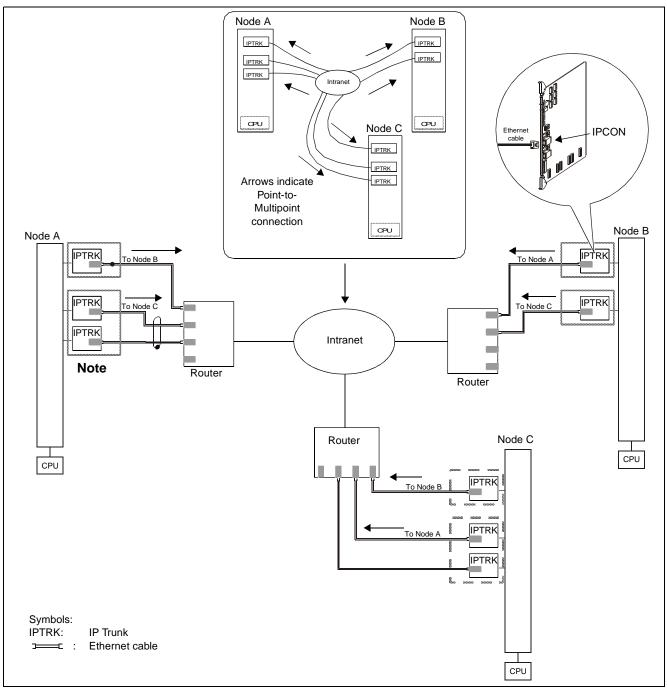


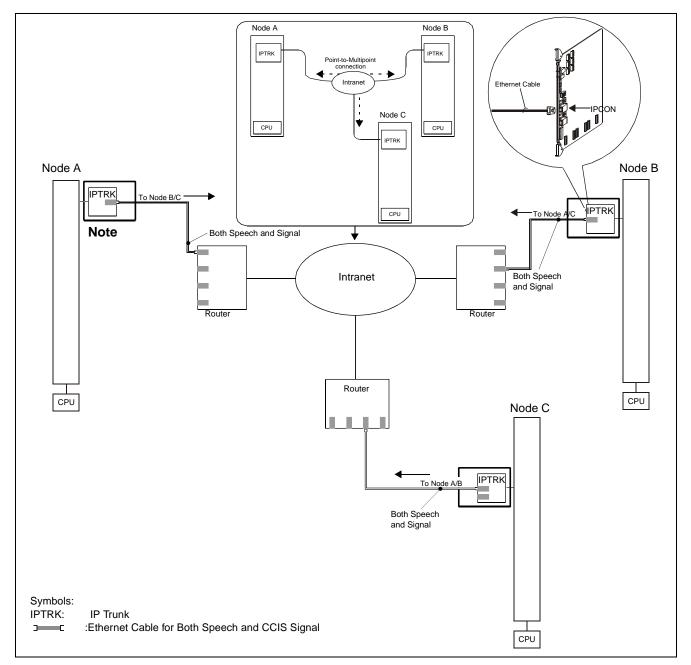
Figure 3-2 Example of Required Hardware for CCIS Networking via IP [C-163]

Note: One IPTRK circuit card assigned as CCH by the ACSC command is assumed as the D-channel controlling card, used as the speech circuit as well. The IPTRK circuit card can control the B-channel of the same card, and a maximum of seven other IPTRK circuit cards.

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2.2 Required Hardware (Point-to-Multipoint Connection)

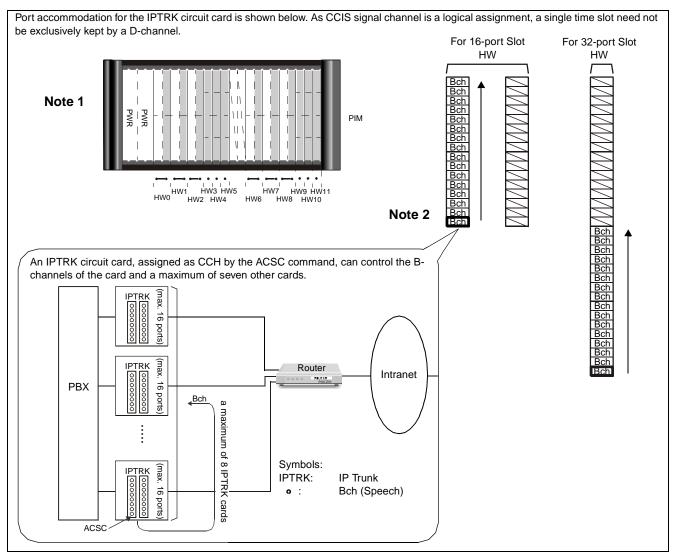
This feature (allowing IPTRK circuit cards for both speech and CCIS signal channels) is available by using the following hardware. Once this feature is set, each IPTRK circuit card can make a Point-to-Multipoint connection with IPTRK circuit cards of multiple nodes.



Note: One IPTRK circuit card assigned as CCH by the ACSC command is assumed as the D-channel controlling card, used as the speech circuit card as well. The IPTRK circuit card can control the B-channel of the same card, and a maximum of seven other IPTRK circuit cards.

2.3 Service Conditions

- 1. To send/receive speech and CCIS signals, each node will use an IPTRK circuit card. At this time, the IPTRK circuit cards in the self-node and each of its connected node can be in either 1-to-1 ratio, or in 1-to-n (n=2 or more) relations. This is referred to as Point-to-Multipoint connection.
- 2. A maximum number of two IPTRK circuit cards per UNIT are allowed. Accordingly, a total of 16 IPTRK circuit cards can be accommodated per IMG.
- 3. Only voice and FAX (G3) information can be sent/received via the IPTRK circuit card.
- 4. An IPTRK circuit card assigned as CCH by the ACSC command is assumed as the D-channel controlling card. The IPTRK circuit card is used as the speech circuit card as well. It is not necessary to assign the trunk data for a time slot as a controlling channel.
- 5. An IPTRK circuit card can control the B-channels of the same card and a maximum of seven other IPTRK circuit cards. See the following figure.



Note 1: An IPTRK circuit card can be accommodated in the shaded slots (a maximum of two cards per UNIT). HW indicates Highway Block.

Note 2: Be sure to assign a B-channel n the first time slot of the controlling card.

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- 6. Tandem Path through function is not provided.
- 7. This feature supports QoS (Quality of Service) function.
- 8. When a system message indicates "TCP link failure" due to data congestion on the router or IP network, a call cannot be made via an IPTRK circuit card. When a call is attempted despite this, the caller hears busy tone.
- 9. When a system message related to "TCP link failure" is created during call origination or speech, that call's speech channel is automatically restored via patrol function.
- 10. The following table represents CCIS features to be provided beyond the nodes.

Table 3-1 Internode Service Features (CCIS)

FEATURE NUMBER	FEATURE NAME	CONDITION
A-45	Attendant Camp-On with Tone Indication - CCIS	Provided
B-9	Busy Verification - CCIS	Provided
C-44	Call Back - CCIS	Provided
C-45	Call Forwarding - All Calls - CCIS	Provided
C-46	Call Forwarding - Busy Line - CCIS	Provided
C-47	Call Forwarding - Don't Answer - CCIS	Provided
C-50	Call Transfer - All Calls - CCIS	Provided
C-54	Call Transfer - Attendant - CCIS	Provided
C-55	Centralized Billing - CCIS	Provided
C-57	Centralized System Management Report - CCIS	Provided
D-68	Data Privacy on Demand - CCIS	Provided independently
D-71	Dial Access to Attendant - CCIS	Provided
D-74	Direct Termination - CCIS	Provided
D-75	Distinctive Ringing - CCIS	Provided independently
E-8	Executive Right of Way - CCIS	Provided
H-12	Hot Line - CCIS	Provided independently
I-17	Individual Attendant Access - CCIS	Provided
M-34	Message Reminder - CCIS	Provided
M-34D	Message Reminder - D ^{term} - CCIS	Provided
M-35	Message Waiting Lamp Setting - Attendant - CCIS	Provided
M-36	Message Waiting Lamp Setting - Station - CCIS	Provided
N-37	Name Display - System - CCIS	Provided independently
O-11	Off-Hook Queuing - CCIS	Provided
S-52	Series Call - CCIS	Provided
S-59	Step Call - CCIS	Provided
S-73	Supervisory Call - CCIS	Provided
V-7	Voice Call - CCIS	Provided

- 11. This feature does not support Broad Band Services H0/H1. Therefore, when assigning the IPTRK circuit card routes by the ARTD command, enter BOB = 0.
- 12. This feature can use link re-connection function. Service conditions are the same as those for the normal CCIS network.
- 13. PAD can be provided for RECEIVE control only.
- 14. On a conference call via IPTRK, Echo Canceller cannot be activated when using certain kinds of telephone sets (generally analog telephones).
- 15. During IPTRK circuit card-related tandem connection, speech quality can become poor, or dual connection failure may occur. DTMF and FAX relay cannot be used.

2.4 Data Programming

To activate this service via the Intranet, perform the data programming as follows:

- **Note:** When office data is assigned/modified, be sure to initialize the IPTRK circuit card (by flipping its MB key $OFF \rightarrow ON \rightarrow OFF$).
- STEP 1: Assignment of basic CCIS network data

Referring to the NEAX2400 IPX No. 7 CCIS System Manual, assign all the basic data (such as ASYD, ARTD, ATRK, ADPC, ACSC, ACIC1, ACIC2, MBTK, etc.), necessary for the establishment of a CCIS Tie line.

When assigning this data, consider the following:

- Enter IPTRK = 1 for B-channel route on the ARTI command.
- For the port assignment (B-ch) of the IPTRK circuit card, see Figure 3-3.

OFFICE DATA PROGRAMMING

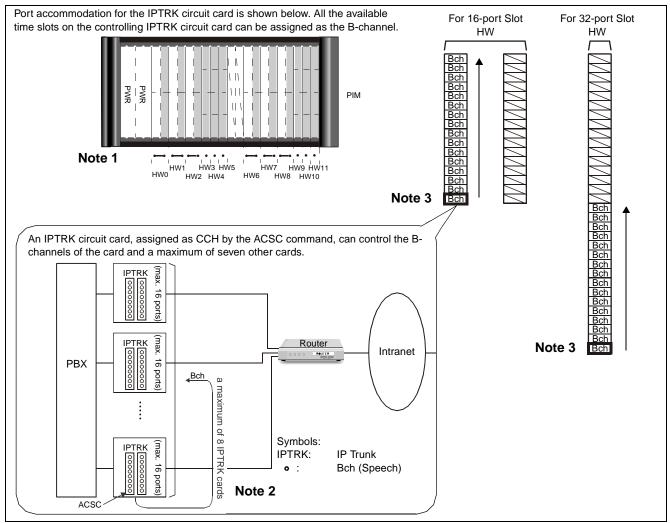
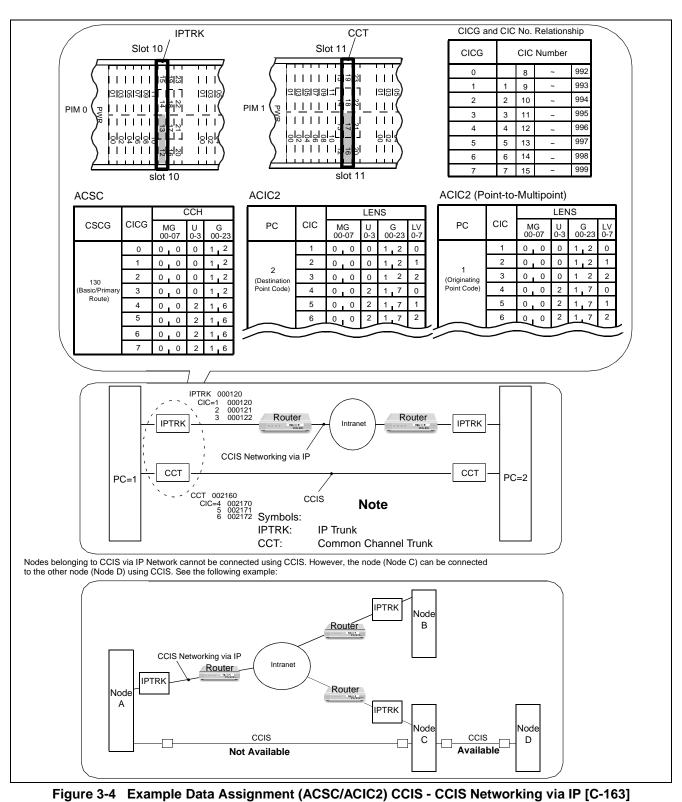


Figure 3-3 Port Assignment of Bch for CCIS Tie Line

- **Note 1:** An IPTRK circuit card can be accommodated in the shaded slots (a maximum of two cards per UNIT). HW indicates Highway Block.
- **Note 2:** *This example represents the port allocation when sub board PZ-8VCTB is mounted.*
- Note 3: Be sure to assign a B-channel in the first time slot of the controlling IPTRK circuit card.
 - CCIS signal controlling channel is determined in accordance with the CIC numbers of speech channel. To provide multiple interfaces for a single Point Code (activating CCIS and CCIS network via IP together within one network), CIC numbers and CIC Group (CICG) must be assigned on the same interface.



Perform the following data assignment using the ACSC/ACIC2 commands.

Note: *This data setting is an example.*

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- In Point-to-Multipoint connection, because it cannot be determined which destination node is to be called until the call is originated, all of the CCIS related data is assigned for the self-node. As to the ACIC1 command, the data must be assigned to all the destination nodes and also to the self-node.
- Designate the Speech Path and Point Code to the assigned Outgoing Route Selection Pattern number by using the AOPRL/AOPRN command (this is required for Point-to-Multipoint connection only).

IPTRK (IP Trunk):	0/1=IP network is used/not used
PC (Point Code):	Enter the Point Code of destination node (1-16367) Note

- **Note:** *This parameter is valid only when IPTRK=1 is selected.*
 - Assign the IP address to the Point Code by using the APIPL/APIPN command (this is required for Point-to-Multipoint connection only).

PC (Point Code): Assign the Point Code of destination node (1-16367)

IP Address: Assign the IP address of the destination IPTRK (maximum of 8 addresses)

STEP 4: **AGIP** - Assign IP addresses of IPTRK circuit card and its connected route.

	LENS (Line Equipment Number):	Assign the first LEN of IPTRK-accommodated HW block				
	KIND (Kind of Selection):	IPTRK (CCIS)				
	IPTK_IP (IP Address of IPTRK):	IP address of the IPTRK circuit card				
	DG_IP (IP Address of Default Gateway):	IP address of the router				
	NETMSK (Net Mask of IP Address):	Net Mask of IP address				
	ToS CONTROL:	IP Precedence or DiffServ (either)				
	QoS1 (QoS Data for signal route):	When IP Precedence is selected, 0-7				
		When DiffServ is selected, 0x00-0x3F				
	QoS2 (QoS Data for speech Path):	When IP Precedence is selected, 0-7				
		When DiffServ is selected, 0x00-0x3F				
	MULT (Kind of Multiple Connection):	Point-to-Multipoint				
	DST_IP (IP Address of Destination IPTRK):	IP address of the Destination Node IPTRK circuit card				
	IRT (Incoming Route):	Incoming Route when Point-to-Multipoint connection is selected Note 1				
	NETID (Network ID):	Fixed to 0				
	CSLINK_NUM (Maximum number of client/	server connection):16 line				
	ARP (Frame Type of ARP):	Select DIX when the "Detail" box is checked Note 2				
Note 1:	When FCCS is used, assign the Logical Route Nu	mber. Assign the Route Number otherwise.				
Note 2:	RTP check box is provided for detail assignment	nt of the following parameters, if required. Usually the				
	default data of "0" is set for all parameters.					
	PKGLOSS (Amount of Packet Loss):	8% (default)				
	JIT_MAX (Maximum Jitter Buffer):	600 ms (default)				
	JIT_MIN (Minimum Jitter Buffer):	80 ms (default)				
	MNGS (Interval of Jitter adjustment):	5 times (default)				
	JIT_COUNT (Interval of Jitter statistics): 1 sec (default)					
	BASE_COUNT (Interval of Time-base correct	ction):10 sec (default)				
	JIT_FAST (Judging rate of fast arrived packet	t):100% (default)				
	TIME_FAST (Time-base correction Judgment):50% (default)					

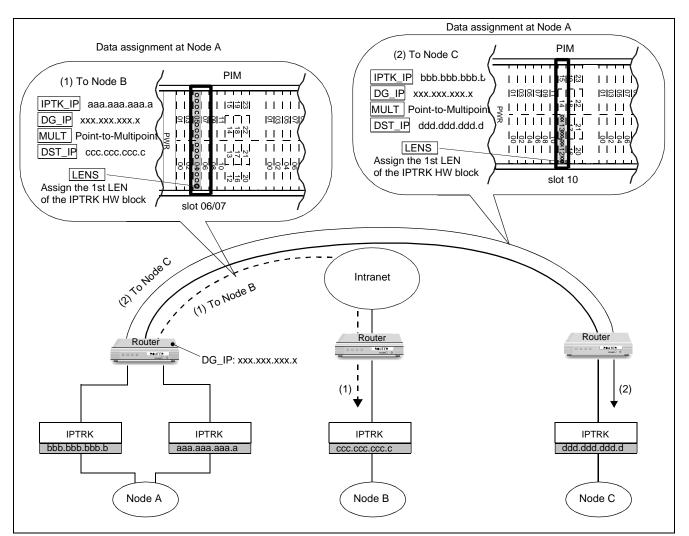


Figure 3-5 Example Assignment of IP Addresses of IPTRK Circuit Card and Connected Router

3. FCCS NETWORKING VIA IP [F-36]

This feature allows the system to exchange both speech and FCCS signals via the Intranet. It is not necessary to use an FCH circuit card. To establish/release a call, the following connection patterns can be selected:

For both speech and FCCS signal channels, an IPTRK circuit card is used. At this time, the IPTRK circuit cards in the self-node and each of its connected node(s) must be in 1-to-1 ratio. See Section 2.4 Data Programming.

When utilizing Point-to-Multipoint Connection for both speech and FCCS signal channels, an IPTRK circuit card is used. At this time, the IPTRK circuit card, accommodated in the self-node, can be connected to multiple destinations (IPTRK circuit cards of multiple nodes). See Section 2.4 Data Programming.

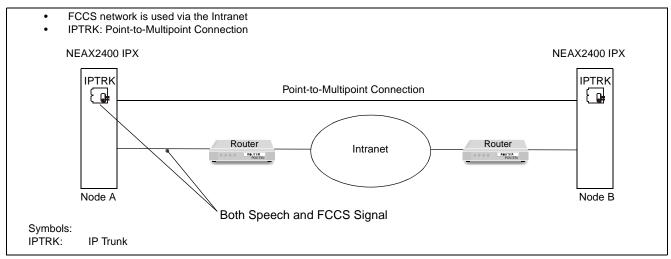


Figure 3-6 Overview of FCCS Networking via IP [F-36]

3.1 Required Hardware

This feature is available by using the following hardware. As shown, both speech and FCCS signal channels between the nodes must be provided by IPTRK circuit cards with 10 BASE-T cables.

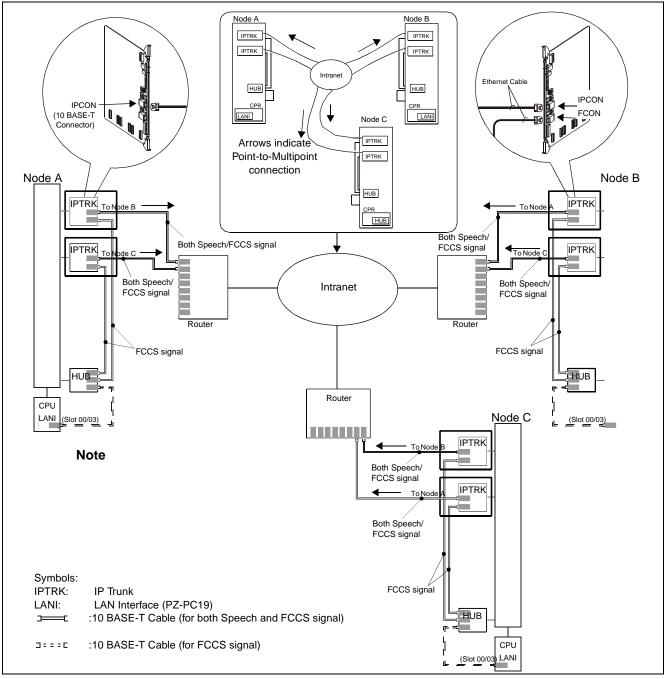


Figure 3-7 Example Required Hardware for FCCS Networking via IP [F-36]

Note: An IPTRK circuit card, assigned as the FCCS signal control card by the AFCH command, can also control the B-channels of the same card, and also a maximum of 15 other cards. The IPTRK circuit card is used as the speech circuit card as well.

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3.2 Required Hardware (Point-to-Multipoint Connection)

This feature (allowing IPTRK circuit card for both speech and FCCS signal channels) is available by using the following hardware. Once this feature is set, each IPTRK circuit card can make a Point-to-Multipoint Connection with IPTRK circuit cards of multiple nodes.

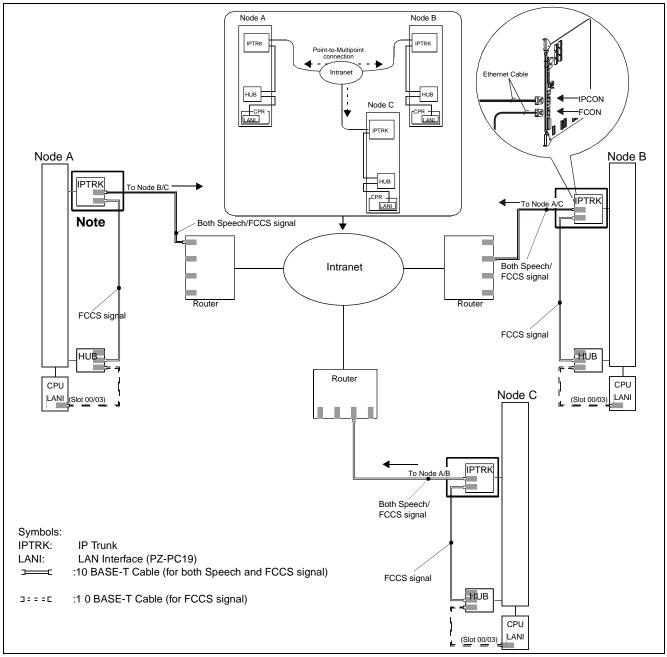
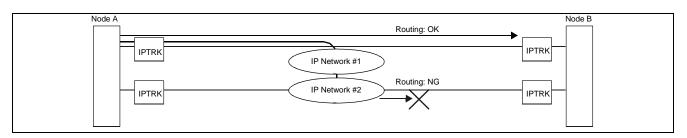


Figure 3-8 Example Required Hardware for FCCS Networking via IP [F-36] [IPTRK: Point-to-Multipoint]

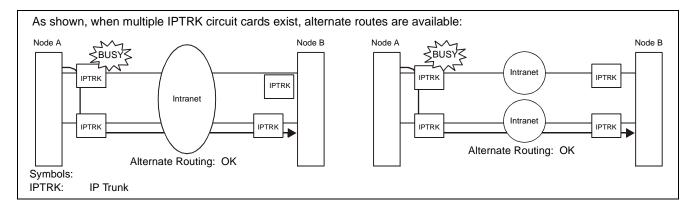
Note: An IPTRK circuit card, assigned as FCCS signal control card by the AFCH command, can control the *B*-channels of the same card, and also a maximum of 15 other cards. The IPTRK circuit card is used as the speech circuit card as well.

3.3 Service Conditions

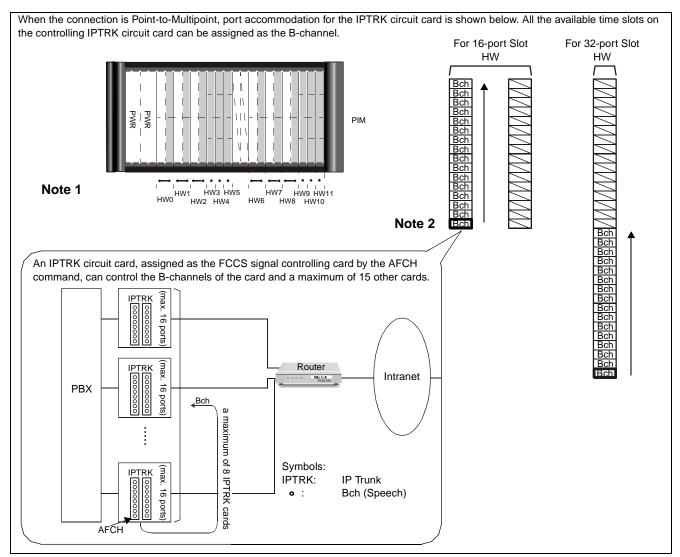
- 1. To send/receive voice information, each node will use an IPTRK circuit card. At this time, the IPTRK circuit cards in the self-node and its connected node(s) can be either in 1-to-1 ratio, respectively, or in 1-to-n (n=2 or more) relations (referred to as Point-to-Multipoint connection).
- 2. Be sure to use a router for connections between IP network and IPTRK circuit card.
- 3. A maximum of two IPTRK circuit cards per UNIT are allowed. Accordingly, a total of 16 IPTRK circuit cards can be accommodated per IMG.
- 4. Only voice and FAX (G3) information can be sent/received via IPTRK circuit card.
- 5. A call cannot be established/routed across multiple IP networks. See the following figure.



6. When multiple IPTRK circuit cards are used for node-to-node connection and all the lines on an IPTRK are busy, alternate routes are available (see the figure below). However, if a router cannot be used, all the related IPTRK routes are made unavailable.



7. For Point-to-Multipoint connection, one IPTRK circuit card (assigned as FCCS signal controlling card by the AFCH command), can control the B-channels of the same card, and also a maximum of 15 other IPTRK circuit cards. It is not necessary to assign the trunk data for a time slot as a controlling channel.See the following figure.



Note 1: *The IPTRK circuit card can be accommodated in the shaded slots (a maximum of two cards per UNIT). HW indicates Highway Block.*

Note 2: Be sure to assign a B-channel in the first time slot of the controlling IPTRK circuit card.

- 8. During IPTRK circuit card-related tandem connection, speech quality can become poor, or dual connection failure may occur. DTMF and FAX relay cannot be used.
- 9. Any service that is not available for the FCCS network, is not available utilizing this service.
- 10. This feature supports QoS (Quality of Service) function.
- 11. When a system message indicates "TCP link failure" due to data congestion on the router or IP network, a call cannot be made via an IPTRK circuit card. When a call is attempted despite this, the caller hears busy tone.
- 12. When a system message, related to "TCP link failure", is created during call origination or speech, that call's speech channel is automatically restored via patrol function.

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13. When all lines of an IPTRK circuit card are busy, alternate routing to C.O. line or Tie line is available. Details on alternate routing patterns are shown in the table below:

	FROM FCCS NETWORKING VIA IP (POINT-TO-MULTIPOINT)	TO FCCS NETWORKING VIA IP (POINT-TO-MULTIPOINT)
Analog C.O. line	Not Available	Not Available
Analog Tie line	×	Not Available
CCIS	×	Not Available
ISDN	× (via Sub Address-Addressing only)	Not Available
Dp Channel	×	Not Available
FCCS network over Intranet (via DTI)	×	×
FCCS network via ISW (IPX-U)	×	×
FCCS Networking via IP (Point-to-Multipoint)	×	×
CCIS Networking via IP (Point-to-Multipoint)	×	Not Available

Table 3-2 Alternate Routing to be Provided/Not Provided (FCCS Networking via IP [F-36])

14. PAD can be provided for RECEIVE control only.

- 15. This feature does not support Broad Band Services H0, H1 of ISDN/CCIS line. This feature supports 1B only.
- 16. This feature does not support any OAI/ACD services.
- 17. Depending to the firmware version of the IPTRK circuit card, the following system data assignment is required. The system data varies depending on the combination of the main PBX software version and the IPTRK firmware.

ASYDL, SYS 1, Index 527, b6: 0=PA-8IPTB (SW-404 IPTRK PROG-C) is used

1=PA-8IPTB (SW-390 IPTRK PROG-B) is used

Table 3-3 PBX Software/IPTRK Circuit Card Firmware

PA-8IPTB SW-390 IPTRK PROG-B (NR-575835-000)	Assign the data to 1
PA-8IPTB SW-404 IPTRK PROG-C (NR-577024-000) or later version	Assign the data to 0

3.4 Data Programming

To allow FCCS networking via IP [F-36] service, perform the data programming as follows:

 $ASYDL \rightarrow ACRD \rightarrow ACTK \rightarrow MBCT \rightarrow AFCH \rightarrow AETH \rightarrow ACAN \rightarrow AFRT \rightarrow AGIP$

- **Note:** When office data is assigned/modified, be sure to initialize the IPTRK circuit card (by flipping its MB key $OFF \rightarrow ON \rightarrow OFF$).
- STEP 1: ASYDL Provided that the IPTRK circuit card is equipped in the node within the FCCS network, NDM data broadcasting is not to be executed. Therefore, when the IPTRK circuit card is used in the FCCS network, perform the following data assignment at the Network Control Node (NCN). SYS1, INDEX 534, b7=1 (NDM data individual broadcasting from NCN to each LN)

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STEP 2: **ACRD** - Assign Route Class Data of speech routes. It is not required to assign the signal route data. IPTRK circuit card assigned by the AFCH command is used as the FCCS signal channel controlling card. An example data assignment is shown in the following figure.

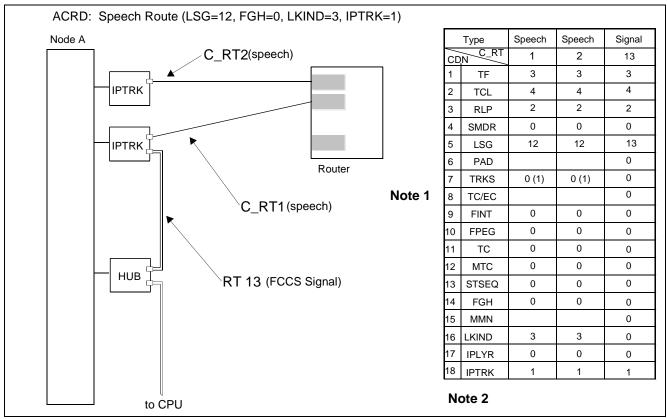


Figure 3-9 Example Data Assignment (ACRD)

- **Note 1:** This CDN, TC/EC is used for setting Echo Canceller. Assignment is 0=Echo Canceller OFF, 1=Echo Canceller ON.
- Note 2: This data setting is an example.

STEP 3: **ACTK** - Assign the connection trunk data of IPTRK circuit card. It is not required to assign the trunk data for D-channel. An example data assignment is shown in the following figure.

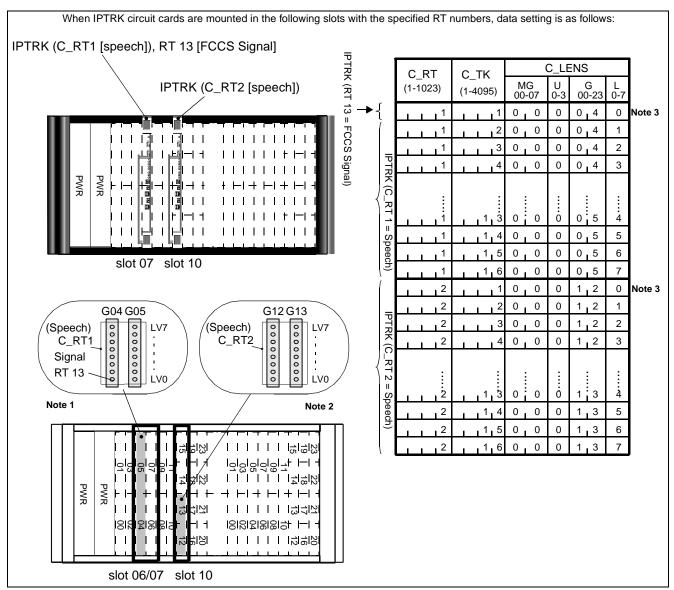
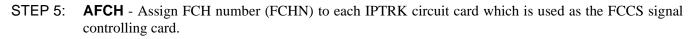


Figure 3-10 Example Data Assignment (ACTK)

- **Note 1:** When the IPTRK circuit card is furnished without a sub board (PZ-8VCTB), only LV0-LV7 of Group 04 are used.
- **Note 2:** When the IPTRK circuit card is furnished without a sub board (PZ-8VCTB), only LV0-LV7 of Group 12 are used.
- Note 3: Be sure to assign a speech channel to the first port of the IPTRK circuit card controlling FCCS signal.
- STEP 4: **MBCT** Unbusy the connection trunk data assigned in the previous step, by using the MBCT command.



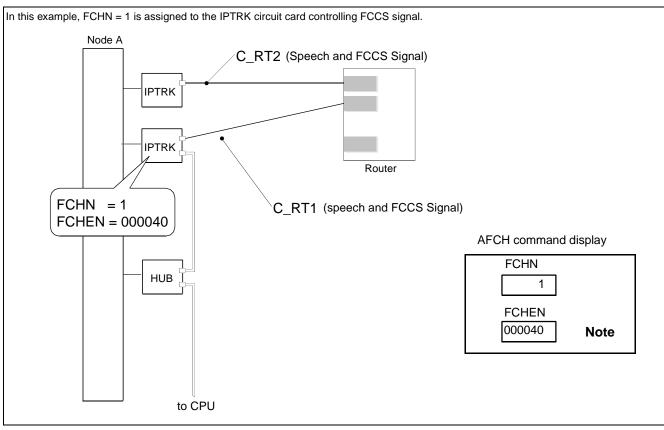


Figure 3-11 Example Assignment of FCHN

Note: *This setting is an example.*

STEP 6: **AETH** - Assign the following data:

FPC (Fusion Point Code):	FPC number (1-253) of the Destination Node
FCHN (FCH Number):	FCH Number, specified in Step 5
C_RT (Connection Route):	Connection Route Number of speech channel (1-1023)
DST_IP (Destination IP Address):	IPTRK IP address of the Destination Node
NEXT_IP (Next IP Address):	IPTRK IP address of the Destination Node
Example data assignment is shown	in the following figure and the Example Data Sheets (Figu

Example data assignment is shown in the following figure, and the Example Data Sheets (Figure 3-15 through Figure 3-19) at the end of CHAPTER 3.

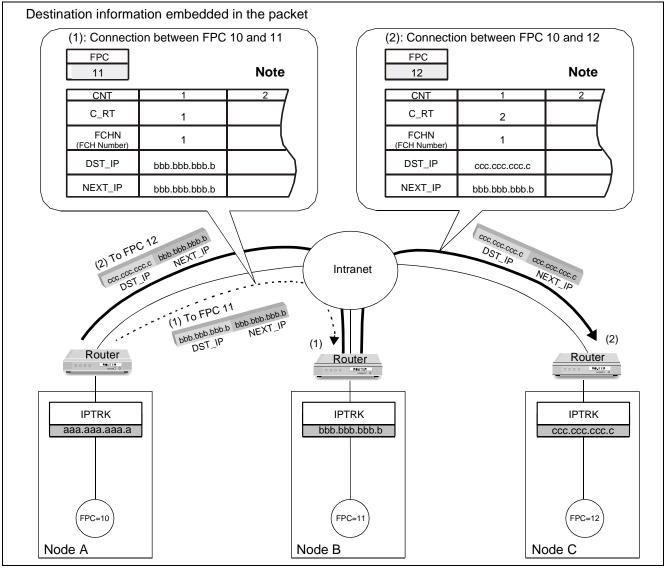


Figure 3-12 Example Assignment of Destination IP and Next IP (AETH)

Note: A maximum of eight routes are available.

STEP 7: ACAN - Assign the Fusion Connection Index Code (FCIC) to Self node FPC: FPC (Fusion Point Code): FPC number (1 - 253) of the Self node FCIC (Fusion Connection Index Code): Unique Fusion CICs in Self node C_LENS (Connection_LENS): IPTRK LENS data (speech channel data) specified in Step 3 Example data assignment is shown in Figure 3-13.

STEP 8: **AFRT** - Set Connection Route Numbers of the speech channels for the FCHN, which was assigned in Step 5.

FCHN (FCH Number):

FCHN, specified in Step 5

C_RT (Connection Route): Connection Route of the speech channels, specified in Step 2 Example data assignment is shown in the following figure.

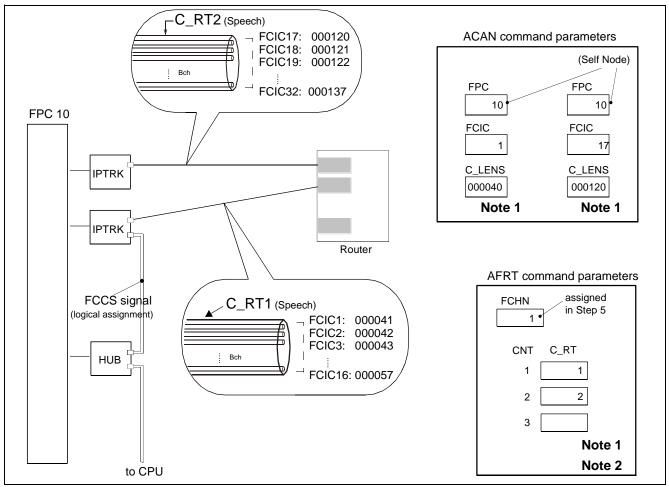


Figure 3-13 Example Data Assignment (ACAN/AFRT)

Note 1: *This setting is an example.*

Note 2: *A maximum of eight C_RT can be programmed.*

STEP 9: AGIP - Assign IP addresses of IPTRK circuit card and its connected route.

LENS (Line Equipment Number):	Assign the first LEN of IPTRK-accommodated	
	HW block	
KIND (Kind of Selection):	IPTRK (FCCS)	
IPTK_IP (IP Address of IPTRK):	IP address of the IPTRK circuit card	
DG_IP (IP Address of Default Gateway):	IP address of the router	
NETMSK (Net Mask of IP Address):	Net Mask of IP address	
ToS CONTROL:	IP Precedence or DiffServ (either)	
QoS1 (QoS Data for signal route):	When IP Precedence is selected, 0-7	
	When DiffServ is selected, 0x00-0x3F	
QoS2 (QoS Data for speech Path):	When IP Precedence is selected, 0-7	
	When DiffServ is selected, 0x00-0x3F	
MULT (Kind of Multiple Connection):	Point-to-Multipoint Note 1	
NETID (Network ID):	Fixed to 0	
CSLINK_NUM (Maximum number of client/server connection): 16 line		
ARP (Frame Type of ARP):	Select DIX when the "Detail" box is checked	
	Note 2	

Note 1: Be sure to select "Point-to-Mult".

Note 2: *RTP* check box is provided for detail assignment of the following parameters, if required. Usually the default data of "0" is set for all parameters.

PKGLOSS (Amount of Packet Loss):	8% (default)
JIT_MAX (Maximum Jitter Buffer):	600 ms (default)
JIT_MIN (Minimum Jitter Buffer):	80 ms (default)
MNGS (Interval of Jitter adjustment):	5 times (default)
JIT_COUNT (Interval of Jitter statistics):	1 sec (default)
BASE_COUNT (Interval of Time-base correction):	10 sec (default)
JIT_FAST (Judging rate of fast arrived packet):	100% (default)
TIME_FAST (Time-base correction Judgment):	50% (default)

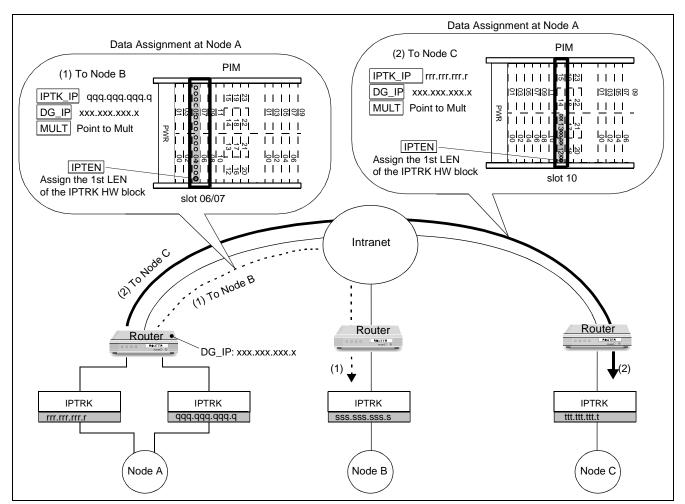


Figure 3-14 Example Assignment of IP Addresses of IPTRK Circuit Card and Connected Router

3.4.1 FCCS Routing Example Data Sheets

This figure represent example data for FCCS Networking via IP [F-36] (Point-to-Multipoint).

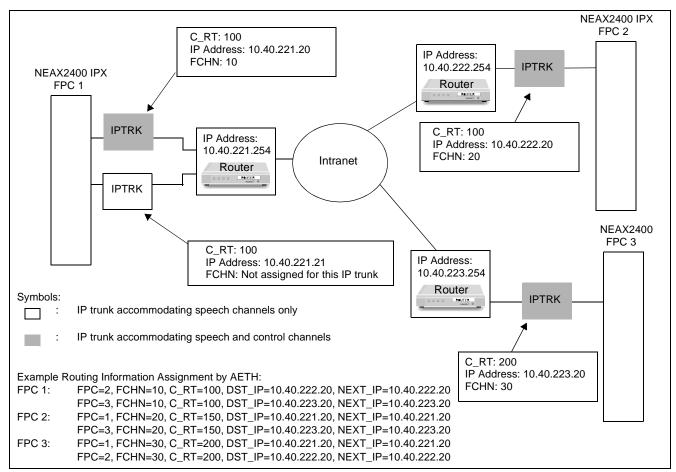
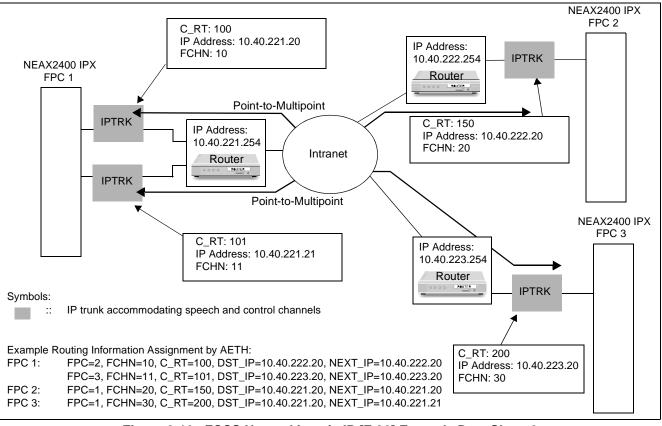


Figure 3-15 FCCS Networking via IP [F-36] [Point-to-Multipoint Connection] Example Data Sheet 1



This figure represent example data for FCCS Networking via IP [F-36].

Figure 3-16 FCCS Networking via IP [F-36] Example Data Sheet 2

This figure represent example data when ASPC and AETH commands are required for an identical FPC at the tandem node.

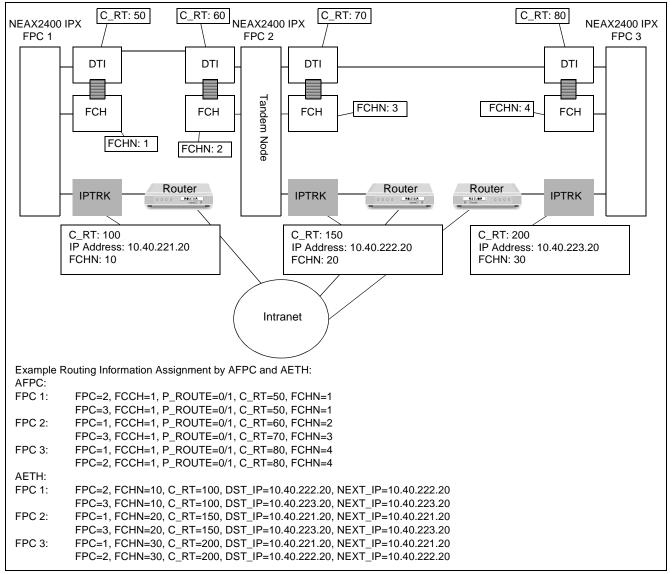
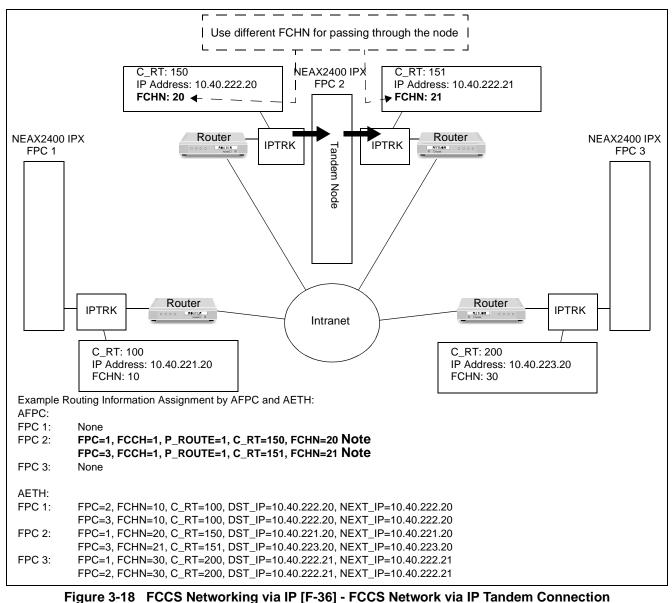


Figure 3-17 FCCS Networking via IP [F-36] and FCH FCCS Networking (both ASPC and AETH commands) Example Data Sheet 3

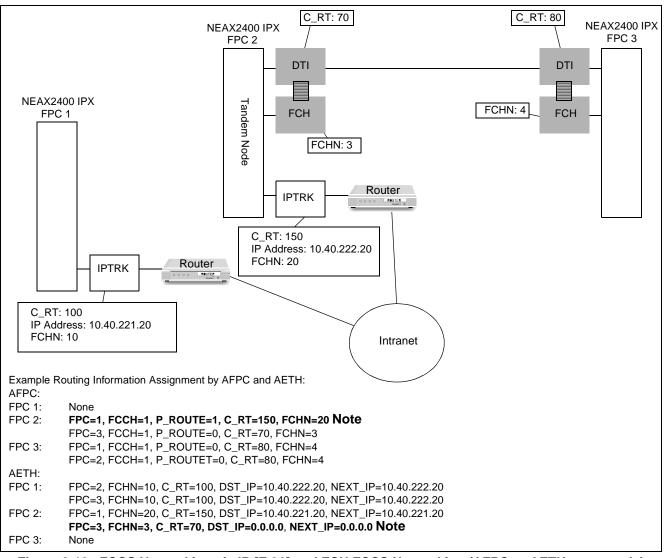
Note: Provided that both FCCS Networking via IP and FCH FCCS Networking are configured, it depends on the setting of the P_ROUTE parameter, which routing takes precedence. To take priority for FCCS Networking via IP routing, assign data "1" to the P_ROUTE parameter.

This figure represent example data when FCCS routing data is not assigned by using the AFPC command. Be sure to assign the following dummy data when using this configuration.



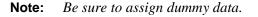
(AFPC Dummy Data) Example Data Sheet 4

Note: *Be sure to assign dummy data.*



This figure represent example data when AFPC and AETH commands are required for an identical FPC at the tandem node.

Figure 3-19 FCCS Networking via IP [F-36] and FCH FCCS Networking (AFPC or AETH commands) Example Data Sheet 5



ATTENTION Contents Static Sensitive

Handling Precautions Require

CHAPTER 4 OPERATION TESTS AFTER INSTALLATION

1. GENERAL

This chapter explains the procedure to verify the normal operation of the IPTRK circuit card, when installation and necessary data setting have been completed. This chapter also explains the procedures to test and correct possible IPTRK circuit card-related faults.



When using the H.323 Handler (PA-8IPTB-A) as a signaling interface for Voice over IP (H.323), perform the following circuit card operation tests. If necessary, perform fault repairs.

Caution: *Some LSIs on this circuit card may be hot. Handle with care.*

- 1. Test of OPE lamp on IPTRK circuit card: Note
- Note: H.323 Handler (PA-8IPTB-A).
 - a.) See if the OPE lamp on the IPTRK circuit card **Note** is lighting green. This lamp lights if the circuit card is operating normally.
- Note: H.323 Handler (PA-8IPTB-A).
 - b.) When the OPE lamp is OFF, initialize the circuit card, or perform the insertion/extraction of the circuit card once or twice. If the lamp still does not light, replace the circuit card.

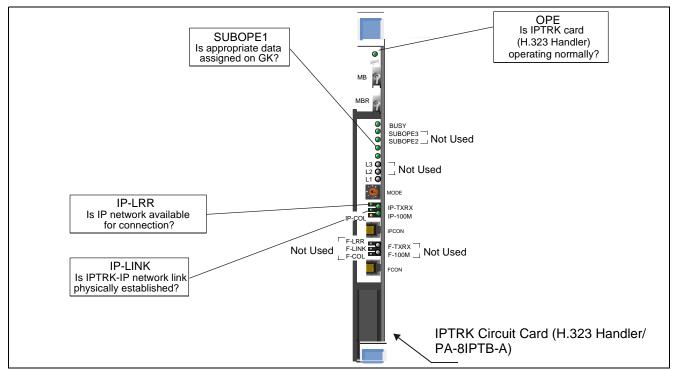


Figure 4-1 Lamps to be Tested (CCIS Networking via IP [C-163])



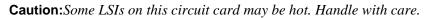
- 1. Test of IP-LINK lamp on IPTRK circuit card: Note
- Note: *H.323 Handler (PA-8IPTB-A).*
 - a.) See if the IP-LINK lamp on the IPTRK circuit card **Note** is lighting green. This lamp will light if the circuit card is physically connected to the IP network.



- Note: H.323 Handler (PA-8IPTB-A).
 - b.) When the IP-LINK lamp is OFF, make sure that the Ethernet cable is securely connected to the IPCON connector. Make sure that neither the Ethernet cable nor the router are faulty. If necessary, replace the Ethernet cable.
 - 2. Test of SUBOPE1 lamp on IPTRK circuit card Note:
- Note: *H.323 Handler (PA-8IPTB-A).*
 - a.) See if the SUBOPE1 lamp on the IPTRK circuit card **Note** is lighting green. This lamp will light when the appropriate data has been assigned on the Gate Keeper (GK) side.
- Note: H.323 Handler (PA-8IPTB-A).
 - b.) When the SUBOPE1 lamp is OFF, make sure that the related office data is correctly assigned on both the PBX side and the Gate Keeper (GK) side.
 - 3. Test of IP-LRR lamp on IPTRK circuit card: Note
- Note: H.323 Handler (PA-8IPTB-A).
 - a.) See if the IP-LRR lamp on the IPTRK circuit card **Note** is lighting green. This lamp will light if the IP network is available for connection establishment.
- Note: H.323 Handler (PA-8IPTB-A).
 - b.) When the IP-LRR lamp is OFF, make sure that the related office data was correctly assigned. Make sure that each IP address assigned on the AGIP command is correct.
 - 4. Test of Speech Conditions with Distant Node:
 - a.) Perform the connection test to see if speech can be made with the counterparts of the connected node.
 - b.) If any test result is abnormal, make sure that the related office data was assigned correctly.
 - 5. Test of System Messages:
 - a.) When an IPTRK circuit card **Note** is installed, the following messages may be created:
- Note: H.323 Handler (PA-8IPTB-A).
 - For CCIS Networking via IP [C-163]:
 - 33-R IP CARD WARNING
 - 33-S IP CARD FAILURE
 - 33-T IP CARD RECOVERY
 - 33-U H.323 INFORMATION NOTICE
 - b.) When any of the messages above are created, make sure that the Ethernet cable is securely connected to the IPCON connector (on the IPTRK circuit card), or perform the continuity test of the cable (voltage and resistance measurement), using a voltmeter. Otherwise, replace the IPTRK circuit card or H.323 Handler.

3. FCCS NETWORKING VIA IP [F-36]

When using the IPTRK circuit card for FCCS Networking via IP [F-36] (Point-to-Multipoint Connection), perform the following circuit card operation tests. If necessary, perform fault repairs.



- 1. Test of OPE lamp on IPTRK circuit card:
 - a.) See if the OPE lamp on the IPTRK circuit card is lighting green. This lamp will light if the circuit card is operating normally.
 - b.) When the OPE lamp is OFF, initialize the circuit card, or perform the insertion/extraction of the circuit card once or twice. If the lamp still does not light, replace the circuit card.
- 2. Test of SUBOPE0 and SUBOPE1 lamps on IPTRK circuit card:
 - a.) See if the SUBOPE0 and SUBOPE1 lamps on the IPTRK circuit card are lighting green. Note that SUBOPE1 should light if the circuit card is furnished with an optional sub board (PZ-8VCTB).
 - b.) When either (or both) of the lamps are OFF, initialize the circuit card, or perform the insertion/ extraction of the circuit card once or twice. Also, if a sub board is in use, make sure the daughter board is securely attached to the IPTRK circuit card (main board). If the lamp still does not light, replace the circuit card.

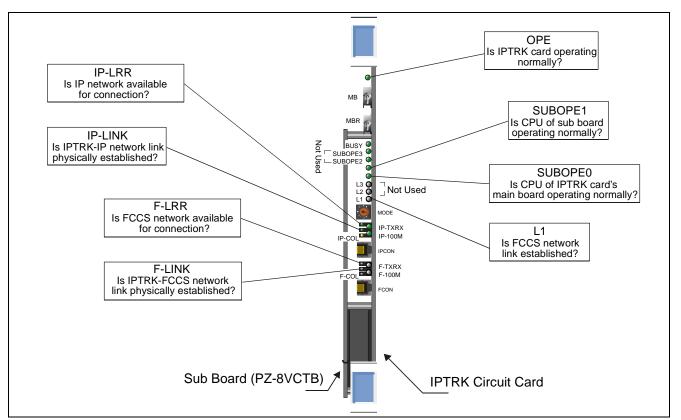


Figure 4-2 Lamps to be Tested (FCCS Networking via IP [F-36] [Point-to-Multipoint Connection])



- 3. Test of IP-LINK lamp on IPTRK circuit card:
 - a.) See if the IP-LINK lamp on the IPTRK circuit card is lighting green. This lamp will light if the circuit card is physically connected to the IP network.
 - b.) When the IP-LINK lamp is OFF, make sure that the Ethernet cable is securely connected to the IPCON connector. Make sure that neither the Ethernet cable nor the router are faulty. If necessary, replace the Ethernet cable.
- 4. Test of L1 lamp on IPTRK circuit card:
 - a.) See if the L1 lamp on the IPTRK circuit card is lighting green. This lamp will light if the FCCS network link is established.
 - b.) When the L1 lamp is OFF, make sure the office data was correctly assigned. If necessary, replace the circuit card.
- 5. Test of IP-LRR lamp on IPTRK circuit card:
 - a.) See if the IP-LRR lamp on the IPTRK circuit card is lighting green. This lamp will light if the IP network is available for connection establishment.
 - b.) When the IP-LRR lamp is OFF, make sure that the related office data is correctly assigned. Make sure that each IP address assigned on the AGIP command is correct.
- 6. Test of F-LINK lamp on IPTRK circuit card:
 - a.) See if the F-LINK lamp on the IPTRK circuit card is lighting green. This lamp will light if the circuit card is physically connected to the FCCS network.
 - b.) When the F-LINK lamp is OFF, make sure that the Ethernet cable is securely connected to the FCON connector. Make sure that neither the Ethernet cable nor the router are faulty. If necessary, replace the Ethernet cable.
- 7. Test of F-LRR lamp on IPTRK circuit card:
 - a.) See if the F-LRR lamp on the IPTRK circuit card is lighting green. This lamp will light if the FCCS network is available for connection establishment.
 - b.) When the F-LRR lamp is OFF, make sure that the related office data was assigned correctly. Make sure that each IP address assigned on the AETH or AGIP command is correct.
- 8. Test of Speech Conditions with Distant Nodes:
 - a.) Perform the connection tests to see if speech can be made with the counterparts of the connected nodes.
 - b.) If any test result is abnormal, make sure the related office data was assigned correctly.
- 9. Test of System Messages:
 - a.) When an IPTRK circuit card is installed, the following messages may be created:
 - 23-S FCCS FAILURE
 - 23-T FCCS FAILURE RECOVERED Note
 - b.) When any of the messages above are created, make sure that the Ethernet cable is securely connected to the IPCON/FCON connector (on the IPTRK circuit card), or perform the continuity test of the cable (voltage and resistance measurement), using a voltmeter.
- **Note:** Although this message is issued soon after performing system/circuit card initialization, it does not necessarily mean a result of fault information. In this case, the message generally indicates the placement of the IPTRK circuit card in to normal operation mode.

