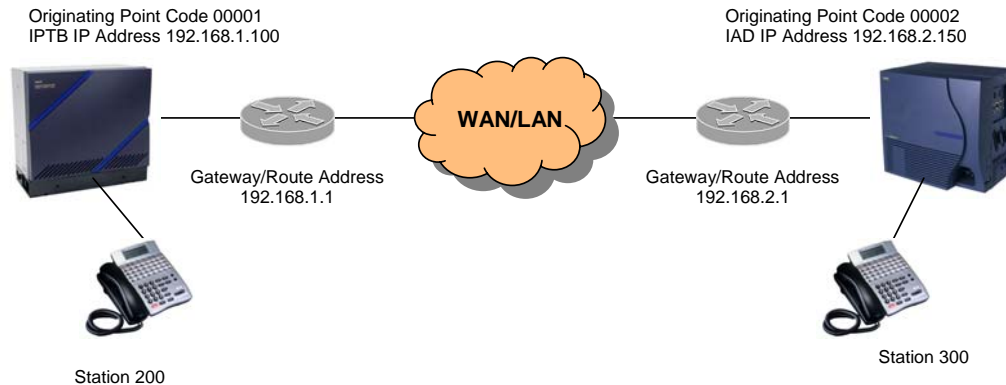# IP CCIS Trunking to IPK

Here is an example of IP CCIS trunking to an NEC IPK. IP addressing, trunk, route, and station numbers are for example only. The programming examples for either system can be used for connection to any other like system or the NEAX 2400.

Originating Point Code 00001
IPTB IP Address 192.168.1.100

Originating Point Code 00002
IAD IP Address 192.168.2.150

WAN/LAN

Gateway/Route Address
192.168.1.1

Gateway/Route Address
192.168.2.1

Station 300

Station 200

Before you start with the IPS you should……

1. Confirm the revision of the IPTB card to be version B2 2.06 or higher. Check the white revision sticker on the board or in programming with CM F85>XX11>, CM F85>XX>12, and CM F85>XX13> where XX = the sense wheel of the IPTB board.

2. Confirm the 3 cables from the IPTB board to the VCTI boards are connected as per the IVS2 IP Manual (rev 3) Chapter 2 page 29. Do this wrong and you will smell smoke.

3. The IPTB board with VCTI cards have very specific power requirements in that depending on the number of cards to be installed you must have vacant slots available in the PIM. These conditions **MUST** be confirmed with the IVS2 IP Manual (rev 3) Chapter 2 page 27.

4. VCTI boards can be mounted in LT slots 08~11 if required.

5. Out of the box the IPTB boards on the NEAX 2000 are defaulted to G729a voice compression. The IPK IAD card does G 7.11. Obviously one side **MUST** be changed.

6. The IPTB board CAN be set for 10 or 100 Mbps (MODE Rotary SW and SW2) but in either setting the data is at half duplex only.

7. Fax is available through the IPTB but modem data communication is not.

8. CM F88 must have 1 CCIS license (F88>05>) and 1 IP license (F88>11>) for each IPTB installed in the system. Total of 8 IPTB's can be installed each with 4 VCTI's (total of 128 IP CCIS trunks).

9. See item 5 in "Before you start with the IPK you should…..".

Before you start with the IPK you should……

1. Load Service pack 4 to the IAD board and the Key System must be at minimum R2500. CPU software must be either 2.5, 3.5, 4.5, 4.6 or 4.7 to support IP_CCIS.

2. To load Service Pack 4 to the IAD board.
    a. Insert the IAD (8)-U ( ) ETU in to any slot in the KSU. Make sure that all the switches in S2 are set to the ON position (factory default).
    b. Once the LED's CH8 and CH7 are lit solid and the Status LED is flashing red, connect your PC to the IAD (8)-U ( ) ETU Ethernet connector (The bottom RJ-45 connector).
    c. The IAD (8)-U ( ) ETU Default IP Address is : **192.168.1.100**
        Set your PC so that it is statically assigned an IP address of **192.168.1.xxx** with a subnet mask of **255.255.255.0** to ensure it is in the same network as the IAD(8)-U( ) ETU.
    d. Point the Microsoft Internet Explorer browser (Version 6 or higher) to the internet navigational bar and type the following IP address: **192.168.1.100**
    e. On the IAD (8)-U ( ) ETU Login screen enter the following information. Default Login ID= **admin** (Lower case). Default Password= **password** (Lower case).
    f. On the IAD (8)-U ( ) ETU Welcome screen check to see what service pack is currently loaded. If *Service Pack 4* is already loaded go to step 3. If the card is at Service Pack 2 or 3 go to step j. If there is no Service Pack, select **Browse** and locate: **SP02_Prep.pkg**.
    g. Click **Upload.**
    h. Once the preparation package has been successfully loaded, the IAD (8)-U ( ) ETU Message Screen for SP02 Prep Pack is displayed. Wait about **30 seconds** and then remove the IAD (8)-U ( ) ETU and set all the Dip Switches to the **OFF** position. Insert the IAD (8)-U ( ) ETU back into the system.
    i. Log back into the card. Default Login ID = **admin** (Lower case). Default Password = **password** (Lower case).
    j. On the Welcome screen, select **Browse** and locate the file named: **IAD(8)-U10 SP04.spk** from your PC. File should be loaded from PC hard drive and not from a CD or from a jump drive. Upload this file.
    k. Once Service Pack 4 has been successfully loaded, the IAD (8)-U ( ) ETU Message Screen for SP 04 Service Pack is displayed. Remove the IAD card and set all the DIP switches to the "ON" position.
    l. Service Pack 4 is now loaded to the card and you can begin to program.

3. For station to station calls over CCIS you can use the 16 closed numbering blocks or you can use ARS to set up the closed numbering if more than 16 different entries are needed. If you use ARS for the closed numbering use function number 604.

4. If you need to access trunks out of the 2000 IPS over the CCIS you must use ARS programming so as to add the other sites trunk access code in front of the dialed number.

5. Always try to bench test. If possible take the IPK to the PBX site or vice versa and connect the IAD card to the IPTB card with a cross over cable to test operation. This will save you hours of second guessing your work when you plug into the customers network and there is no speech path due to a network configuration issue. The cross over cable between to two devices eliminates any network issues and testing should include a voice call and call back, in both directions, between sites to confirm IP and point code programming.

Feature Programming NEAX 2000 IPS
Programming for the IPS with IPTB board in LT06 and VCTI boards in LT07 and LT08. LT slots 09, 10, and 11 are empty. The IPTB Sense wheel is on a 08. IP addressing, trunk, route, and station numbers are for example only.

1. CM 050>08>38
2. CM 0607>0>08
3. CM 14>00056>D100
4. CM 14>00057>D101   The example shows the VCTI's in LT07 and LT08.
5. CM 14>00058>D102   This is to help identify how utilizing the 4 port only
6. CM 14>00059>D103   slot (LT08) can enable another 4 port card to be used
7. CM 14>00036>D104   in LT 04, as shown in this case. Also as shown
8. CM 14>00037>D105   another 4 port card could also be installed in LT11
9. CM 14>00038>D106   using the LENs 060~063 (top half of LT 07).
10. CM 14>00039>D107
11. CM 14>03063>D254   This CCH trunk must be assigned to an unused LEN.
12. CM 3000>100~107>30
13. CM 3500>30>04
14. CM 3504>30>2
15. CM 3509>30>03
16. CM 3520>30>00
17. CM 3590>30>0
18. CM 3591>30>0   If wired CCIS is also in the system the IP should use CCH 0.
19. CM 3035>100~107>001~008
20. CM 3044>100~107>01~08   Setting 01 must be set to the first trunk on the first VCT
    connected to the IPTB board. Therefore it is always recommended to install the VCTI boards to
    the right of the IPTB. This helps keep the programming in a more orderly fashion.
21. CM A700>0>254
22. CM A701>0>00001
23. CM A702>0>NONE
24. CM A726>0>0   To send station name display to the IPK.
25. CM A728>0>0   To send received caller ID to the IPK.
26. CM A740>0>192168001100
27. CM A741>0>255255255000
28. CM A742>0>192168001001
29. CM A746>0>0
30. CM 200>3>A129
31. CM 8AA000>3>4007
32. CM 8A4007>3>0030
33. CM 8A0030>1>03020
34. CM 8A5030>167>030
35. CM 8A5030>168>00002
36. CM 5B01>03000>192168002150 This is the only place you enter the dest. IP address.
37. CM A8>00002>0
38. CM 08>253>0
39. CM 08>379>0

Additional assignments that may be required….
1. CM 08>373>0   If centralized VM
2. CM 08>376>0   If centralized VM
3. CM 35134>30>XX   For QOS when IP network uses TOS field Precedence
4. CM A744>0>XX   For QOS when IP network uses TOS field Precedence
5. CM 35161>0>XX   For QOS when IP network uses Diffserv DS code point
6. CM A750>0>XX   For QOS when IP network uses Diffserv DS code point
7. CM 8A5030>174>0   To allow link reconnect to 2400 ONLY.
8. CM A761>0>4~7   To change or cancel the Voice compression rate.

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System Programming Elite IPK
1. MB 7-1 assign the card as a DTI (8)
2. MB 1-11-03 assign CCIS over IP as YES
3. MB 1-11-05 turn ON the first 8 line keys
4. MB 1-11-07 set TRK 1 and 2 to E&M
5. MB 3-91 assign all 8 channel's as TIE
6. MB 3-03 assign all 8 channel's to trunk group 10. (This is only an example, you can use any trunk group except trunk group 01)
7. MB 3-04 assign all trunks as YES
8. 1-8-08 turn ON the following:

    Pg. 3 line key 5 (Station trunk to trunk transfer)
    Pg. 4 line key 3 (Caller ID)
    Pg. 5 line keys 4&7 (Call forward Off Prem. & Caller ID Name and Number)
9. MB 4-18 assign station names
10. MB 4-12 assign CAP keys on all phones
11. MB 1-8-26 assign the Voice Mail Pilot number if you are using Centralized Voice Mail.
12. MB 1-15-00 set to REMOTE (This is new with 2.5 software and above, older software does not require this MB to be turned on).

Closed Numbering Plan
1. MB 1-1-46 assign 2 = 401
2. MB 1-1-49 assign 01 = RT 110 (This is because the trunks are in trunk group 10)
3. MB 1-1-50 assign 01 = 2

IAD Setup
1. Once the LED's CH8 and CH7 are lit solid and the Status LED is flashing red, connect your PC to the IAD (8)-U ( ) ETU Ethernet connector (The bottom RJ-45 connector).
2. The IAD (8)-U ( ) ETU Default IP Address is: **192.168.1.100**.
   Set your PC so that it is statically assigned an IP address of **192.168.1.xxx** with a subnet mask of **255.255.255.0** to ensure it is in the same network as the IAD(8)-U( ) ETU.
3. Point the Microsoft Internet Explorer browser to the internet navigational bar and type the following IP address: **192.168.1.100**
4. On the IAD (8)-U ( ) ETU Login screen enter the following information. Default Login ID= **admin** (Lower case). Default Password= **password** (Lower case).
5. On the Welcome screen make sure that the card is service pack 4. If the card is at service pack 4 then click on **Browse** and locate the **IPCCH_NEAX** package and **Upload** the file. At time of writing the latest firmware package is 4.04 (file name **IPCCH_NEAX_Ver4.04T1.pkg**)
6. Once the screen pops shows that the Package has been successfully delivered wait about 30 seconds and remove the IAD(8)-U( ) ETU.
7. Set dip switch 2 to have only **5**, **6**, and **7 ON**. The rest of the switches should be **OFF**. (This is for an 8 port configuration).
8. Insert the IAD (8)-U ( ) ETU back into the system and wait until all 8 LED's go out and the only light left flashing is the Live Led.
9. Log back into the card with the default Login and Password.
10. You will now be on the Card Configuration screen.

    Change the IP Address to 192.168.2.150
    Change the Subnet Mask to 255.255.255.0
    Change the Default Gateway to 192.168.2.1
    Click the Submit Tab at the bottom of the page. (These changes will not take place until the card has been rebooted)

11. Click on the Port Tab on the top of the screen.
    Change the preference to G.729 (The 2000 is set for G.729)
    Uncheck the use all available Codec's for incoming calls (If this is checked it does not follow the preferences it has its own default values)
    Click on the Submit Tab at the bottom of the page. (These changes will not take place until the card has been rebooted)
12. Click on the Numbering Tab on the top of the screen.
    Click on Add
    Set Dialed Digit 2 to Point Code 1 and PBX to YES. (The comment field is just for information it does not affect the operation).
    Set Dialed digit 3 to Point Code 2 and PBX to NO.
13. Click on the Destinations Tab on the top of the screen
    Click on Add
    Set point Code 1 to IP Address 192.168.1.100, the ports section to PBX, the trunk number to 1, and the comments is just for information.
    Set Point Code 2 to IP Address 192.168.2.150, the ports section to 8, the trunk number to the first trunk on the IAD card from MB 7-1, and the comments is just for information.
14. Click on the System Tab.
    Click on Reset Card
    Click on Forced Reset
15. When the card reboots you should be able to call across the network.

Additional Requirements/Trouble Shooting

NEAX 2000IPS

9. **CM 08>373>0**   If centralized VM
10. **CM 08>376>0**   If centralized VM
11. **CM 35134>30>XX**   For QOS (Voice packets) when IP network uses TOS field
    Precedence(**XX**)
12. **CM A744>0>XX**   For QOS (Signaling packets) when IP network uses TOS field
    Precedence(**XX**).
13. **CM 35161>0>XX**   For QOS (Voice packets) when IP network uses Diffserv DS code point
    (**XX**)
14. **CM A750>0>XX**   For QOS (Signaling packets) when IP network uses Diffserv DS code
    point(**XX**)
15. **CM 8A5030>174>0**   To allow link reconnect to 2400 ONLY.
16. **CM A761>0>4~7**   To change or cancel the Voice compression rate. **0** = CCH route
17. **CM 35145>XX>0**   Caller ID from key system to pass out IPS ISDN B channel route (**XX**) in
    IPS.

Trouble Shooting

a. Make sure voice and signaling ports are open through the IP Network. See *IP Port Numbers Used For CCIS* below. Test systems back to back to rule out network issues.
b. If there is also regular T1 CCIS in the system the CIC's in CM 3035 must be unique to all trunks or link re-connect will not work. E.g. In this cheat sheet example CIC's 1~8 were used. If a T1 CCIS span were installed its CM 30-35 cannot contain CIC's 1~8.
c. Point to Muti-Point CCIS over IP should use CCH 0. If there is also Peer to Peer CCIS to other NEAX systems the CCIS IP trunking will be CCH1 with the Peer to Peer as CCH 0. T1 CCIS would utilize CCH's 2 and higher.
d. Make sure the CCH trunk D254 assigned in A700>X is not assigned any setting in CM 30.
e. Sometimes after all programming is complete on this application and confirmed correct the MP requires one last reset before calls can be completed.

f. Make sure CCIS Centralized Billing assignments in CM A7 and CM 08 are not assigned until the correct call operation is confirmed to the other site. If they have been set and you cannot call across the link you must un-assign and then reset the PBX before continuing to trouble shoot.

NEC IPK

1. ***MB 1-8-26*** For Centralized VM in the NEAX 2000 IPS enter the pilot of the VM.
2. Internal paging over CCIS and Call Park Retrieve over CCIS can only be done to the IPKII from the NEAX 2000 IPS and not in the other direction.
3. ***MB 1-15-12*** Centralized Billing to the NEAX 2000 IPS si available. IPK can only be assigned as a remote office in a Centrallized Billing network.
4. ***MB 1-15-15 and MB 1-15-16*** DSS/BLF over CCIS can be assigned to the NEAX 2000 IPS.
5. For QOS go to and assign either IP Precedence or DiffServ to protocols to the main page of the IAD card.
6. For CCIS Voice Codec. The IAD is default G711. NEAX 2000 default is G729. One side should be changed.

Trouble Shooting
   a. Make sure ***MB 3-70*** and ***MB 5-05*** are **NOT** assigned for the IP-CCIS.
   b. The NEAX 2000 IPS is default codec G729 while the IPKII is default G711. One side MUST be changed.
   c. Make sure you have CAP keys assigned so as to make and receive a call over the CCIS trunks.
   d. If there is no T1 CCIS assigned confirm there are no assignments in ***MB 1-15-03*** and ***MB 1-15-05.***

IP Port Numbers Used For CCIS

CCIS Control Messages TCP port 57000

CCIS Voice UDP ports 56000~56262