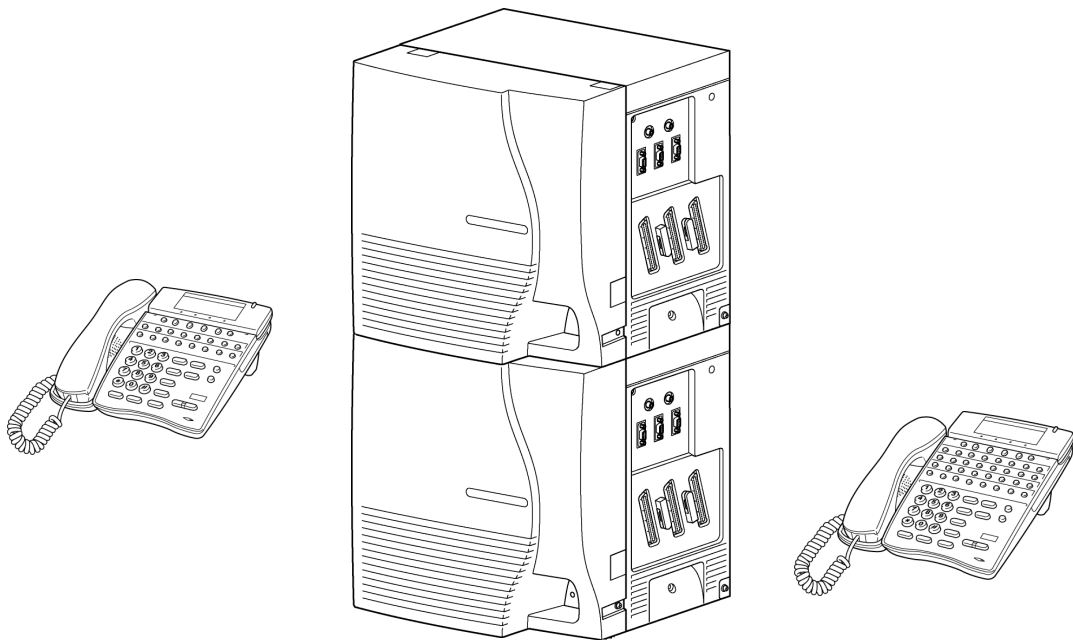


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NEC

Electra **Elite**[®] IPK



SIP TRUNK HARDWARE, INSTALLATION AND MAINTENANCE MANUAL

NEC Unified Solution, Inc.

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Technology Development

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CHAPTER 1 *Electra Elite IPK IAD(8)-U() ETU*

SECTION 1 DESCRIPTION

The IAD(8)-U() ETU is an optional interface package for Electra Elite IPK KTS that can combine trunk and tie line calls into SIP trunks. This ETU can be assigned as a 2-port TLI(2)-U10, 4-port DID (4)-U10, 4-port or 8-port DTI-U10 ETU, COI/COID(4)-U10, 8-port COI/COID(8)-U10 or DTI(4)/DTI(8) ETU.

The onboard 10/100 base T-connector provides WAN/LAN connectivity. The NEC IAD ETU contains a regular TCP/RTP/IP stack that can handle real time media, supports industry standard SIP communication on the WAN side, and interfaces with the Electra Elite IPK as a regular interface board. The IAD card, from the network administration perspective, is an end-point on the IP network. For the Electra Elite IPK system technician, it is just like any other trunk interface (depending on the operating mode described in [Chapter 4 IPK IAD\(8\)-U\(\) Configuration](#)).

This interface can provide:

- DTMF detection
- DTMF generation
- Real-Time Transfer Protocol (RTP) port number designation)
- Type of Service (TOS) field Quality of Service (QOS) support
- Tone generation
- General Tone detection
- G.711, G.723 and G.729a voice compression
- 10/100 BASE-T LAN interface
- Caller ID detection (when in COID mode/DTI/ANI)
- Remote configuration and maintenance

The IAD(8)-U() ETU can support up to eight voice channels and operate either as a TLI(2)/DID(4)/COI(4)/COID(4), COI(8)/COID(8), DTI(4)/DTI(8) with eight active channels. When configured for DTI mode, the IAD(8)-U() will support up to eight DID, TLI, COI, or COID trunks.

Refer to the [Appendix D Electra Elite IPK IAD\(8\)-U\(\) ETU Installation](#) for instructions for installing the IAD ETU.

SECTION 2 INDICATORS, SWITCHES, AND CONNECTORS

2.1 LED Indicators

The total of nine LEDs on this ETU are described in [Table 1-1 Default Boot Sequence: In Active IAD\(8\)-U10 ETU - Without IP Application Loaded](#).

2.1.1 Status LED

This LED chart shows the status of the IAD(8)-U() ETU during boot up. The conditions change as the IAD(8)-U() ETU boots up and passes through different boot states. This boot sequence will occur with the IAD(8)-U10 ETU, when there is no IP Application loaded and the card is at default.

Table 1-1 Default Boot Sequence: In Active IAD(8)-U10 ETU - Without IP Application Loaded

State	D8 CH 1	D6 CH 2	D4 CH 3	D2 CH 4	D7 CH 5	D5 CH 6	D3 CH 7	D1 CH 8	D12* LIVE	Approximate Time
1	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	FLASH	1 second (from Cold Boot)
2	ON	ON	ON	ON	OFF	OFF	OFF	OFF	FLASH	5 seconds
3	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	FLASH	3 seconds
4	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	FLASH	5 seconds
5	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	FLASH	5 seconds
6	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	FLASH	5 seconds

* LIVE LED D12 also flashes when the ETU is receiving power from the KSU.

The boot sequence shown below will occur on the IAD(8)-U10 ETU when an IP Application has been loaded.



The IAD(8)-U10 ETU should not be removed while booting up. Only after the ETU has passed through states A~H, and all LEDs are off, should the IAD(8)-U10 be removed.

Table 1-2 Active IAD(8)-U10 ETU - With IP Application Loaded

State	D8 CH 1	D6 CH 2	D4 CH 3	D2 CH 4	D7 CH 5	D5 CH 6	D3 CH 7	D1 CH 8	D12* LIVE	Approximate Time
1	ON	ON	ON	ON	OFF	OFF	OFF	OFF	FLASH	1 second (from Cold Boot)
2	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	FLASH	5 seconds
3	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	FLASH	3 seconds
4	ON	ON	ON	ON	OFF	OFF	OFF	OFF	FLASH	5 seconds
5	ON	ON	ON	ON	ON	OFF	OFF	OFF	FLASH	5 seconds
6	ON	ON	ON	ON	ON	ON	OFF	OFF	FLASH	5 seconds
7	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	FLASH	5 seconds
8	ON	ON	ON	ON	ON	ON	ON	ON	FLASH	5 seconds

* LIVE LED D12 also flashes when the ETU is receiving power from the KSU.

2.1.2 Hot Swap

The IAD(8)-U() does not require powering down the ETU or KSU. The user can remove the IAD(8)-U() ETU from the Electra Elite IPK KSU the same way any other ETU is removed.

2.1.3 Ethernet Status

There are two built-in LEDs on the front of each RJ-45 connector to indicate Ethernet connection status. These LEDs indicate data transmission and reception (Transmit and Receive LED).

2.2 Switch Settings

The IAD(8)-U() ETU has two switches that are described below.

- Switch S1 is a Press to Reset switch
- Switch S2 is a Card Configuration switch. Refer to [Table 1-3 IAD\(8\)-U\(\) Switch Settings](#).

Table 1-3 IAD(8)-U() Switch Settings

Switch	Setting			Description
S1	Press to Reset			Host Reset Switch
S2	Shown below			8-position DIP Switch
S2-1 ~ 3	Always Off			Reserved
S2-4	On to enable Off to disable			Auto Card Discovery Selection
S2-5	On — enable 8 ports Off — enable 4 ports			Number of Voice Port Selection
S2-6 ~ 8	Setting Position			
	6	7	8	Mode Selection
	ON	ON	ON	COI
	OFF	ON	ON	COID
	ON	OFF	ON	DID
	OFF	OFF	ON	TLI
	ON	ON	OFF	DTI

2.3 Connectors

This ETU has the following connectors:

- P1 Connects to the backboard
- J1, J10, J11 Reserved for future use
- J5 RJ-45 Ethernet connector for future use
- J6 Default RJ-45 Ethernet connector

2.4 Installation

The IAD (8)-U() ETU can be installed in any KSU slot that supports the applicable simulated ETU.

2.5 Pushbutton Switch

S1 is the reset switch.

2.6 Environmental Conditions

The following environmental conditions apply for IAD (8)-U() ETU operation:

Operating Temperature: +32 to 104°F
(0 to 40C)

Operating Humidity: 10% to 90 % (non-condensing)

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CHAPTER 2 *IPK IAD(8)-U() ETU Setup*

SECTION 1 **INSTALLING THE IAD ETU**

1.1 **System Requirements**

The IAD(8)-U() ETU can be viewed and installed like any other ETU used in the KTS system. (Refer to [Appendix D Electra Elite IPK IAD\(8\)-U\(\) ETU Installation](#).) However, the CAT5 Ethernet cable plugs into the Ethernet connector on the front of the ETU, and not through the regular connections as with other interface boards.

1. Set the IAD(8)-U() ETU to desired card type in accordance with the dip switch settings. (Refer to [Table 1-3 IAD\(8\)-U\(\) Switch Settings on page 1-4](#).)
2. Place the IAD(8)-U() ETU in the Electra Elite IPK KSU.
3. Connect the Ethernet cable to J6 connector.
4. The CH1~CH8 LEDs start to run indicating that the system is initializing the IP networking parameters. The status LED is red (ref: Table 1 LED Boot Sequence)
5. Once all LEDs are off and the status LED (D12) is flashing red, the IAD (8)-U10 ETU can be set up with the system.

1.2 **Installation Precautions**

As with all static sensitive devices, the ETU must be installed following the Electra Elite IPK hardware installation general directions.

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CHAPTER 3 *IPK IAD(8)-U() Programming*

SECTION 1 SYSTEM PROGRAMMING



The IAD (8)-U10 ETU is recognized by the Electra Elite IPK system as a COI(4)/(8)-U10 ETU, a COID(4)/(8)-U10 ETU, a DID(4)-U10 ETU, or a TLI(2)-U10 ETU, DTI ETU based on the configuration on the ETU. This ETU takes longer to initialize than the other Electra Elite IPK ETUs and must be programmed using Memory Block 7-1 (Card Interface Slot Assignment).

The following procedure provides the general directions for Electra Elite IPK programming for the ETU Interface Slot Assignment.

1. From port 01 or 02, enter the programming mode.
2. Press **Feature** , **Hold** , **#** , **0_{OPER}** and ***** .
3. Assign the Card Interface Slot Assignment by pressing LK7 and LK1.
4. Press **1** , **2_{ABC}** or **3_{DEF}** for the cabinet number of KSU where the IAD(8)-U() ETU is installed.
5. Press **#** to move the cursor to the right.
6. Enter slot number (1~8) of the KSU containing the IAD(8)-U() ETU.
7. Refer to Table 1 IAD Trunk Card Configuration and press the "line key" button corresponding to the operating mode of the IAD(8)-U() ETU, for line key slot type.

Table 3-1 IAD Trunk Card Assignment

PG/LK No.	Slot Type	PG/LK No.	Slot Type
PG1/LK 2	COI(4)-U10	PG1/LK6	COID(8)-U10
PG1/LK3	COI(8)-U10	PG1/LK7	TLI(2)-U10
PG1/LK5	COID(4)-U10	PG1/LK8	DID(4)-U10
PG6 LK1	DTI 4	PG6 LK2	DTI 8

8. Press  to write the data.
9. Follow the normal Electra Elite IPK programming procedures for assigning Line Key Selections for Telephone Mode, and other necessary features.
 -  PC Programming can also be used to program the Electra Elite IPK system.

CHAPTER 4 *IPK IAD(8)-U() Configuration*

SECTION 1 CONFIGURING IAD(8)-U() ETU

When installed for the first time, the IAD(8)-U() ETU, comes up with factory set default parameters as shown in [Table 4-1 Factory Network Settings](#).

Table 4-1 Factory Network Settings

Computer Name	neciad
IP Address	192.168.1.100
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1

In this configuration, the ETU cannot run in any randomly given environment, and its parameters must be redefined before the IAD(8)-U() ETU can work in your environment.

The required parameters can be set by using your web browser and connecting to the default IP Address (192.168.1.100) in the browser navigation address bar. Refer to [Appendix A Web-Based Setup and Configuration](#) for a detailed description of this configuration utility.

SECTION 2 PC PARAMETERS

The initial configuration is performed using a PC (or laptop computer) connected to the IAD(8)-U() ETU using a crossover Ethernet cable (one-to-one connection) or connecting with a hub. Make sure that the PC has the networking parameters set as shown in [Table 4-2 Network Settings for the PC](#).

Table 4-2 Network Settings for the PC

IP Address	192.168.1.XXX
Subnet Mask	255.255.255.0

SECTION 3 SAMPLE SETUP PROCEDURE

To setup the IAD ETU:


1. Set the card type according to the settings specified in [Table 1-3 IAD\(8\)-U\(\) Switch Settings on page 1-4](#) and then install the ETU in the Electra Elite IPK KSU.
2. Boot up the Statically assigned PC.
3. Connect to the IAD (8)-U() ETU via your Web Browser.
4. Set the IP Address, Subnet Mask, Computer Name, and Default IP parameters in the IAD (8)-U() ETU configuration tab. Select **Submit** to store the new configuration information
5. Set the parameters in the Station Settings tab. Select **Submit** to store the new configuration information

For COID/COI modes, the incoming numbers to a particular trunk on the Electra Elite IPK are mapped to the Station Settings tab dialed number.

For COID, the caller ID is the outgoing Caller Name field.

Example:

Trunk Number	Caller ID	Dialed Number
1	Sales	9727517653
2	Marketing	9727517646
3	Station 3	102

 When the IAD (8)-U() ETU (COI/COID) receives 9727517646 as the digits from the calling IAD system, it presents the call on Trunk 2. For outgoing calls made on Trunk 2, the Gateway ETU sends the caller name as Marketing.

6. Set the parameters for outgoing calls in the Address Translation tab. This information maps the dialed digits to the IP address of the receiving IAD(8)-U() ETU.

Example:

Dialed Number	Address
214	10.1.0.100

When the user dials any number beginning with 214 (e.g., 2145551234), the call is routed to a IAD(8)-U() ETU with IP Address 10.1.0.100.

7. When all parameters have been configured, select **Submit**.
8. Select the **System** tab, then select the **Reset the Card** option. The ETU goes through a reboot cycle and may take a few minutes.
9. Disconnect the crossover cable and connect the IAD (8)-U() ETU to the LAN port.

The ETU is now ready for operation, assuming that the Electra Elite IPK system has been programmed to recognize this ETU. In system programming, use Memory Block 7-1 (Card Interface Slot Assignment) to ensure that the operation mode matches the card type.

SECTION 4 SHUTDOWN PROCEDURE

The IAD(8)-U() ETU is a hot swappable ETU and can be removed from the Electra Elite IPK KSU without powering down the IAD(8)-U() ETU or the Electra Elite IPK system.

If the Electra Elite IPK KSU requires a system reset, the IAD(8)-U() ETU will come back online.

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APPENDIX A *Web-Based Setup and Configuration*

This chapter describes all the screens used during the configuration of the IAD (8)-U() ETU with SIP Trunk Package installed.

SECTION 1 **ACCESSING WEB-BASED SETUP**

The IAD(8)-U() ETU SIP Trunk Application is configured using an internet browser. It is recommended to use MicroSoft Internet Explorer 6.0 or higher.

The Login page allows users to enter their user name and password for their network access.

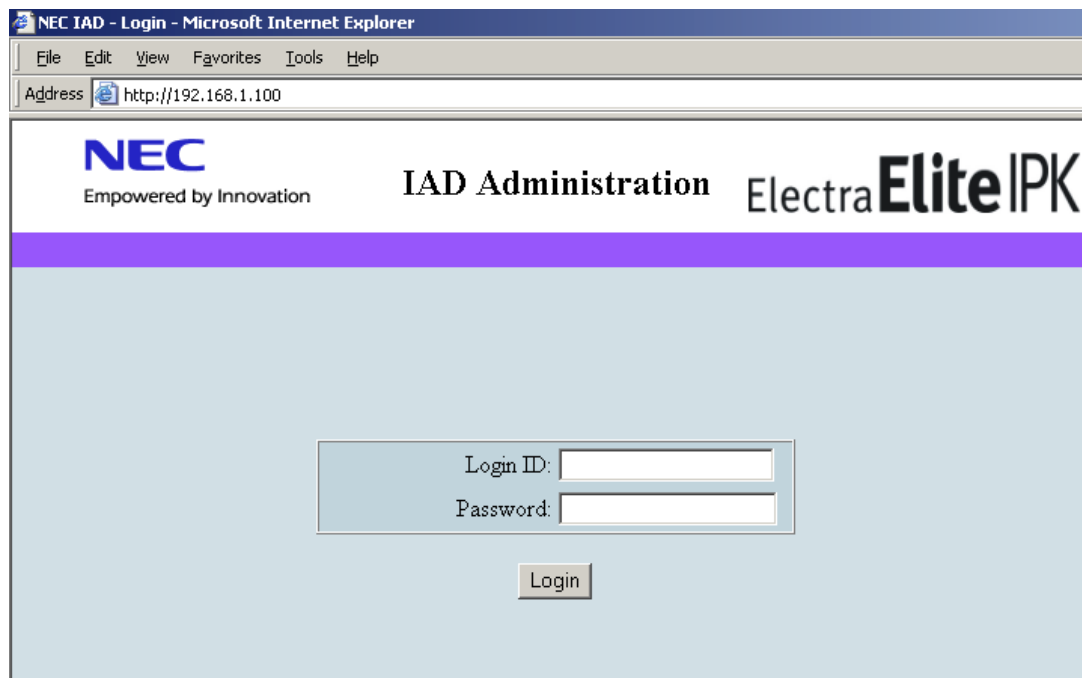


Figure A-1 Web Browser Login Screen

1. Start your Internet Explorer from a PC that is connected to the same network as the IAD(8)-U() ETU.
2. The IAD(8)-U() ETU default IP Address 192.168.1.100.
3. Enter the default IP Address in the address link of your browser.
4. When the login screen appears enter the Login ID and password.
5. Click **OK**.
 - Default Login ID = admin
 - Default Password = password

SECTION 2 CARD CONFIGURATION PROGRAM MENUS

This screen allows the user to set IP parameters for the IAD(8)-U() ETU (SIP Trunk card) and other parameters that commonly apply for the operation of the IAD(8)-U() ETU.

The screenshot shows a web browser window titled "NEC IAD Administration - Microsoft Internet Explorer". The address bar shows "http://192.168.1.100/NecIad.htm". The page header includes the NEC logo, "IAD Administration", and "ElectraEliteIPK". Below the header is a navigation bar with "Card", "Port", "Tracing", "System", "Help", and "Logout". The main content area contains a form with the following fields:

Host Name	neciad	IP Address	192.168.1.100
Default Gateway	192.168.1.1	Subnet Mask	255.255.255.0
Starting RTP port number	49150	Country	North America
Transmit Pad	0	Receive Pad	0
Signaling TOS (hex)	c0	Media TOS (hex)	c0
Page Timeout	10 minutes	Echo Calibration	0
Ethernet Interface	Auto Negotiate		

Below the form is a warning box: "Changes to IP Address, Default Gateway, and/or Subnet Mask will not become effective until the card has been rebooted." A "Submit" button is located at the bottom of the form.

Figure A-2 Setting IP Parameters

Host Name: (Default Value: neciad)

Enter the Computer Name for the IAD ETU. The IAD(8)-U() ETU is displayed as a computer on the IP network.

- ✎ When naming the host machine, the host name may contain only alpha characters, numeric digits, and a dash. (A space and/or special characters are not allowed in the host name field).

IP Address: (Default value: 192.168.1.100)

This is the static IP address that is needed for the configuration. If used in a DHCP environment where the IP address is automatically allocated by a DHCP server on the LAN, make sure that the IP address is marked as RESERVED on the DHCP server.

Default Gateway: (Default value: 192.168.1.1)

Enter the default gateway for the IAD(8)- U() ETU in this field.

Subnet Mask: (Default value: 255.255.255.0)

Enter the Subnet mask for the IAD(8)- U() ETU. This is the same one you have been using on your subnet.

Starting RTP Port Number: Default value: (49150)

Use this field to specify the RTP port number to be used. NEC recommends leaving this field in its default value, unless otherwise required by the network administrator.

Transmit/Receive Pad TX, RX: (Default value: (0,0))

These fields are useful for TLI/DID operation and provide the attenuation applied to obtain adequate voice levels for the end users. Altering this value is *not* recommended unless solving issues related to voice quality or echo.

Country: (Default value: North America)

Choose the country where this card will be operating. When operating the card in the United States and Canada choose North America.

Media TOS: (Default value: 0xC0)

IAD(8)-U() ETU sets this value (in Hex) in the 1-byte TOS field for outgoing voice RTP packets. Refer to IETF RFC791 and subsequent RFCs describing the usage of TOS field in the Internet.

Signaling TOS: (Default value: 0xC0)

IAD(8)-U() ETU sets this value (in Hex) in the 1-byte TOS field for outgoing SIP messaging UDP packets. Refer to IETF RFC791 and subsequent RFCs describing the usage of TOS field in the Internet.

Page Timeout: (Default value: 10 minutes)

The page timeout setting applies to the time Web Configuration Utility remains active.

Echo Calibration (Default value: 0)



When a VoIP call is transferred to a 2-wire loop start circuit, it has a potential to generate large side tone towards the VoIP path. Due to the nature of delays involved in a VoIP communication network, the side tone can be heard as large echo at the distant end. However, as the loop start trunk characteristics vary depending on the distances from the repeater/CO, further fine-tuning may be required for optimum echo performance. This field can be used to fine-tune the echo performance for a given trunk. As a general rule of thumb, if the trunk is "hot" use the negative numbers. The hotter the trunk, the larger the negative number.

DTMF Duration: (Default value: 110ms/80ms)

This field is used to set dual-tone multifrequency (DTMF) duration and interdigit time.

Ethernet Interface (Default value: Auto Negotiate)

The Ethernet Interface setting allows for manual configuration of the Ethernet port connection mode. This can be set to operate in the following port speed and duplex mode: 10MB/Full Duplex, 100MB/Half Duplex, and/or 100MB Full Duplex. At default, this will be set to **Auto Negotiate**. When set to Auto Negotiate, the IAD card will sense the peer connection (wherever the cable is connected to (e.g. Hub, Switch, or Router) hardware capabilities and negotiate the best possible speed and operation mode.

-  When set to Auto Negotiate, make sure that the peer (the other side of the Ethernet cable) is capable of Auto Negotiate (some Routers may not have this feature).
-  When set to a default other than Auto Negotiate, make sure that the peer is configured to operate in the same manner. Speed and duplex mode must match on both sides of the cable.

SECTION 3 PORT SETTINGS

Using this screen, the voice over IP encoding parameters can be set per channel (or port).

The screenshot shows the 'NEC IAD Administration' web interface in Microsoft Internet Explorer. The address bar shows 'http://192.168.1.100/Neclad.htm'. The page title is 'IAD Administration ElectraEliteIPK'. The navigation menu includes 'Card', 'Port', 'Address', 'Station', 'Access Codes', 'Tracing', 'System', 'Help', and 'Logout'. The main content area is a table for configuring port settings.

Port	Preference 1		Preference 2		Preference 3		Jitter Depth (ms)
	Encoding	Size (ms)	Encoding	Size (ms)	Encoding	Size (ms)	
1	G.711 mu-law	20					30
2	G.711 mu-law	20					30
3	G.711 mu-law	20					30
4	G.711 mu-law	20					30
5	G.711 mu-law	20					30
6	G.711 mu-law	20					30
7	G.711 mu-law	20					30
8	G.711 mu-law	20					30

Use all available codecs for incoming calls - this overrides the selections made above for incoming calls.

Submit

Figure A-3 Port Setting Parameters

Port Number

This identifies the port or channel number.

Encoding Preferences:

Select the preferred encoding protocol (codec) for making outgoing calls.

Packet Size (ms)

This defines the packet size. Select the preferred packet size for incoming calls.

The calling party side codec in an incoming call 'INVITE' request will be matched against the preferences set in this page, starting from preference 1. If a matching codec is found the call will be accepted, with the packet size set in the *receiving* side.

The matching process does not apply if the "User all available codecs for incoming calls" is checked (at the bottom of the page). In such a case, the first matching codec is selected in the following order:

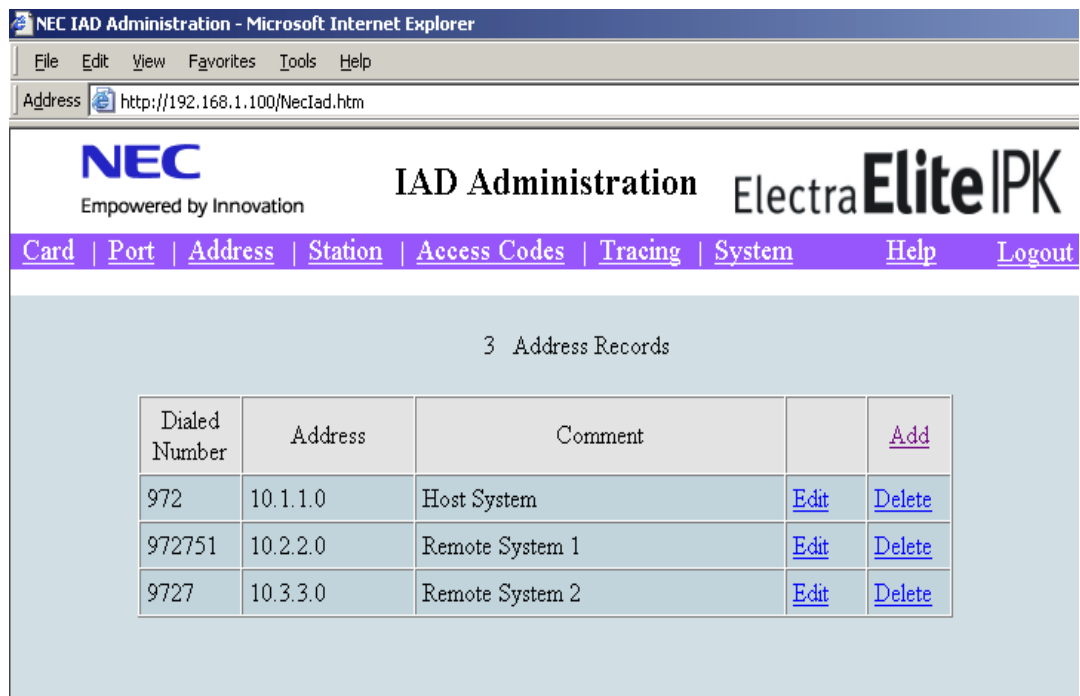
- First Preference: G.711 mu-law/20ms
- Second Preference: G.711 a-law/20ms
- Third Preference: G.723.1/30ms
- Fourth Preference: G.729/20ms

Jitter Depth (ms):

The jitter buffer value must be at least 10 ms more than the largest packet size in your preference selections. For better delay performance, keeping the minimum allowed value is recommended.

SECTION 4 ADDRESS

This table defines the destination of an outgoing call using the IAD(8)- U() ETU. When the first dialed digits on an outgoing call match any of the numbers in the Dialed Number column, that call is routed to the applicable IP address. You can add the dialed number and IP address pairs by clicking on the “Add” hyperlink. To delete an address record you can press the Delete hyperlink. The Edit hyperlink allows you to edit comments.



The screenshot shows a web browser window titled "NEC IAD Administration - Microsoft Internet Explorer". The address bar shows "http://192.168.1.100/NecIad.htm". The page header includes the NEC logo, "IAD Administration", and "ElectraEliteIPK". A navigation menu contains links for Card, Port, Address, Station, Access Codes, Tracing, System, Help, and Logout. The main content area displays "3 Address Records" and a table with the following data:

Dialed Number	Address	Comment		Add
972	10.1.1.0	Host System	Edit	Delete
972751	10.2.2.0	Remote System 1	Edit	Delete
9727	10.3.3.0	Remote System 2	Edit	Delete

Figure A-4 Address Translation Parameters

If the dialed number column has multiple matches, the most complete match is selected. The table entries might be:

- If the user dials 972-518-5000, the call is routed to 10.1.1.0.
- If the user dials 972-751-7000, the call is routed to 10.2.2.0
- If the user dials 972-752-7000, the call is routed to 10.3.3.0

SECTION 5 STATION SETTINGS

The Station Settings table only applies to the IAD(8)-U() configured for COI/COID/DTI-ANI mode.

The screenshot shows a web browser window titled "NEC IAD Administration - Microsoft Internet Explorer" with the address bar showing "http://192.168.1.100/Neclad.htm". The page header includes the NEC logo, "Empowered by Innovation", "IAD Administration", and "ElectraEliteIPK". A navigation bar contains links for "Card", "Port", "Address", "Station", "Access Codes", "Tracing", "System", "Help", and "Logout". The main content area displays a table with the following data:

Port	Caller ID	Dialed Number
1	Port Zero	100
2	Port One	101
3	Port Two	102
4	Port Three	103
5	Port Four	104
6	Port Five	105
7	Port Six	106
8	Port Seven	107

Below the table is a "Submit" button.

Figure A-5 Port Parameters

Caller ID

This field provides the Caller Name for the called party in outgoing calls. For example, if Trunk 1 makes a successful outgoing call; the called party receives the caller name stored in this field.

Dialed Number

This field is used for both incoming and outgoing calls.

For Incoming Calls:

The Dialed Number field is used to match the received called party number. If the received called party number for an incoming call from another IAD(8)-U() ETU does not match this number, the call is rejected. If the numbers match, the call is presented on the applicable trunk (port). If the same number is assigned for multiple ports, then incoming calls will be presented sequentially from lowest port number to highest.

For Outgoing Calls:

This field is used for sending the calling party number in outgoing calls. For the IAD(8)-U() configured for COID/DTI-ANI mode.

SECTION 6 ACCESS CODES

This table is used to define access codes that can be dialed from a remote (calling) system. When the first digit of an incoming call matches any of the entries in this table, these digits are treated as access codes. Select Add or Delete to insert or remove an access code.

The screenshot shows a web browser window titled "NEC IAD Administration - Microsoft Internet Explorer". The address bar shows "http://192.168.1.100/NecIad.htm". The page header includes the NEC logo (Empowered by Innovation), "IAD Administration", and "ElectraEliteIPK". A navigation menu contains links for Card, Port, Address, Station, Access Codes, Tracing, System, Help, and Logout. Below the menu, it displays "5 Total Records" and a table of access codes.

Access Code	Add
44	Delete
502	Delete
512	Delete
66	Delete
8	Delete

Figure A-6 Access Code Parameters

The contents (entries) in this table must correspond with valid access codes programmed in Memory Blocks 1-1-46, 1-1-47, or 1-1-48 – Access Code (1-,2-, or 3-Digit) Assignment. Refer to the Electra Elite IPK Programming Manual.

SECTION 7 TRACING

This page is used for analyzing any communication errors, and is intended for use by any technical support personnel.

The screenshot shows a web browser window titled "NEC IAD Administration - Microsoft Internet Explorer". The address bar shows "http://192.168.1.100/NecIad.htm". The page header includes the NEC logo, "Empowered by Innovation", "IAD Administration", and "Electra Elite IPK". A navigation menu contains links for "Card", "Port", "Address", "Station", "Access Codes", "Tracing", "System", "Help", and "Logout". The main content area is titled "Trace File Actions" and contains two buttons: "GetFile" and "ClearFile". To the right, a list of tracing functions is displayed, each with an unchecked checkbox: Start Up, Config, Event, Port, Port Details, PAW Dump, PRW Dump, PAW Hex, PRW Hex, VOX, Media, SIP, SIP Message Dump, Config. Server Socket, Voice, and Http. A "Submit" button is located at the bottom of this list.

Figure A-7 Tracing Information

The tracing functions are not enabled at default. Consult your Technical Support prior to enabling these functions.

SECTION 8 SYSTEM

This page provides information about the firmware revision, card type and additional administrator functions.

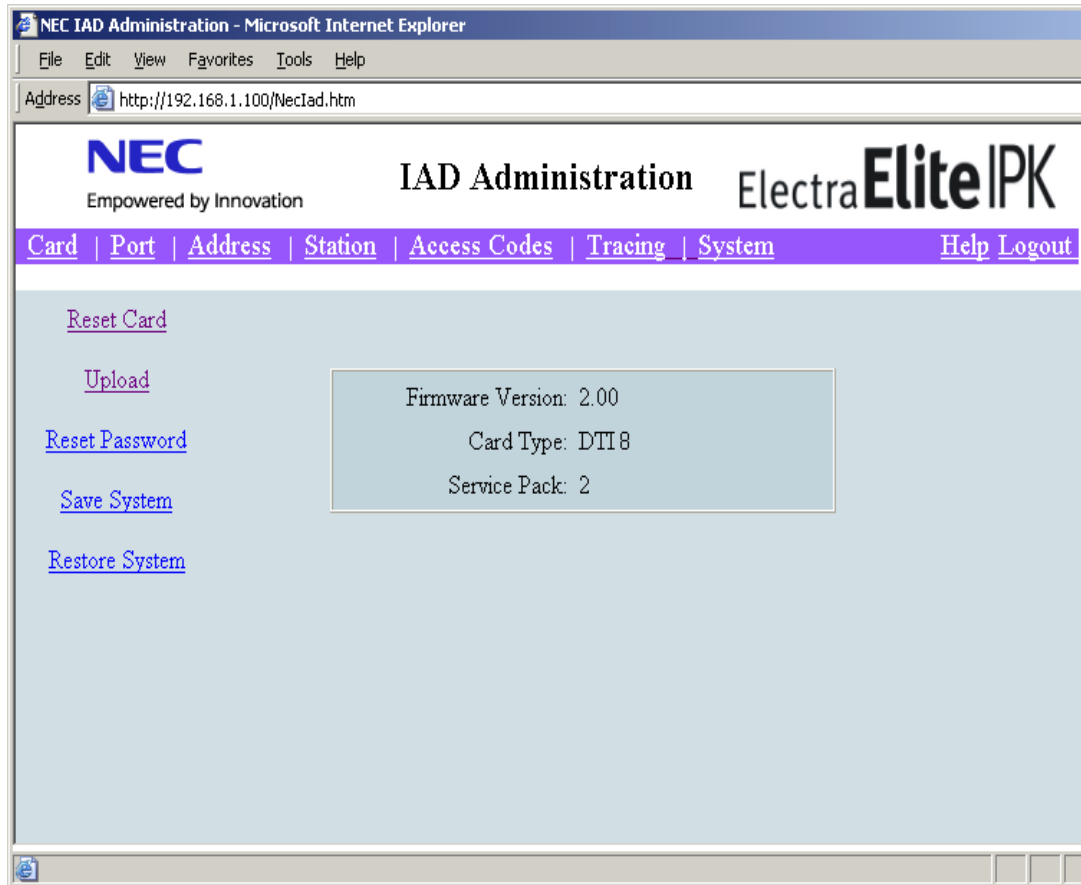


Figure A-8 System Parameters

The system page will provide access to five administrator functions.

- Reset Card
- Upload
- Reset Password
- Save System
- Restore System

SECTION 9 RESET CARD

A reset is necessary when changing the operating modes and network parameters (such as IP address, Subnet mask, gateway address, TOS field etc).

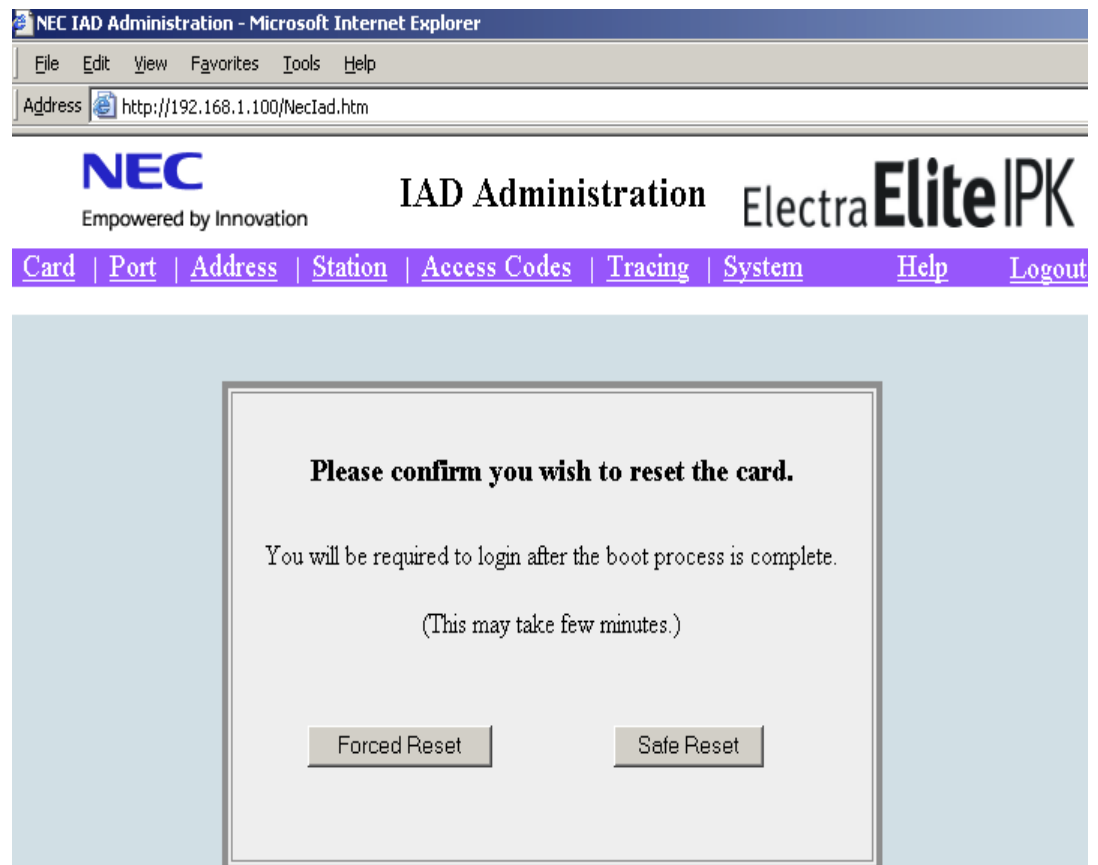


Figure A-9 Resetting the Card

- Safe reset - When safe reset is selected, the IAD(8)-U() will only execute the reset after all channels or ports are idle.
- Forced reset - If forced reset is selected, the IAD(8)-U() will reboot immediately pre-empting any and all channels or ports that are active.

SECTION 10 UPLOAD

The software package on the IAD(8)-U() ETU can be upgraded via the web browser. Use this link either to upgrade the SIP trunk package, or to load any other available package.

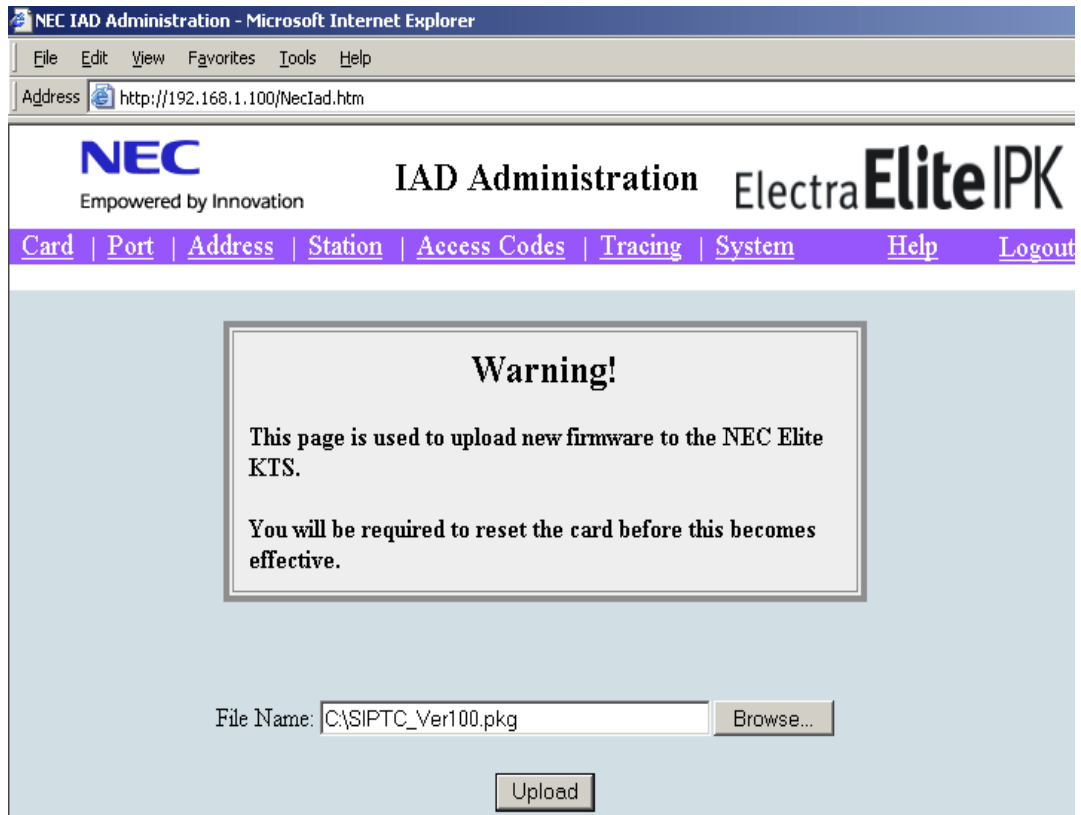


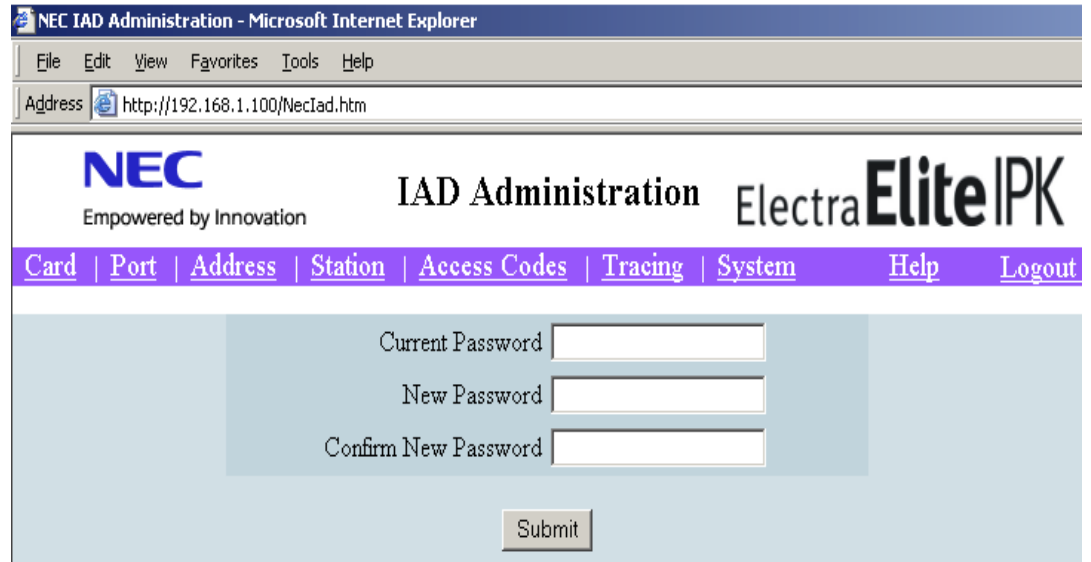
Figure A-10 Upload Parameters

When **Upload** is selected, you are prompted to enter the path name where the trunk card package is located. Press **Upload**. Once the upload is completed, the IAD(8)-U() ETU must be reset.

- ✎ This firmware is provided by NEC and must be stored on your local PC prior to firmware upload.

SECTION 11 RESET PASSWORD

Enables the "admin" user to change the current password. You cannot change the user name from "admin".



The screenshot shows a Microsoft Internet Explorer browser window titled "NEC IAD Administration - Microsoft Internet Explorer". The address bar displays "http://192.168.1.100/NecIad.htm". The page header includes the NEC logo with the tagline "Empowered by Innovation", the text "IAD Administration", and the "ElectraEliteIPK" logo. A navigation menu contains links for "Card", "Port", "Address", "Station", "Access Codes", "Tracing", "System", "Help", and "Logout". The main content area features a light blue background with three text input fields labeled "Current Password", "New Password", and "Confirm New Password". A "Submit" button is positioned below the fields.

Figure A-11 Reset Password Parameters

When changing the password a maximum of 12 alphanumeric characters may be used for the password. Select **Submit** to save the new password. Logout and log in again using the new password.

The IAD(8)- U() Configuration Utility may be logged in as follows:

Administrator


Login ID: "admin"

Password: "password"

SECTION 12 SAVE SYSTEM

This option is used to save the SIP trunk configuration file to a floppy disk or hard drive on the local programming PC.

Select the **NecIadConfiguration.iad** hyperlink.

 Do not change the file extension from .iad.

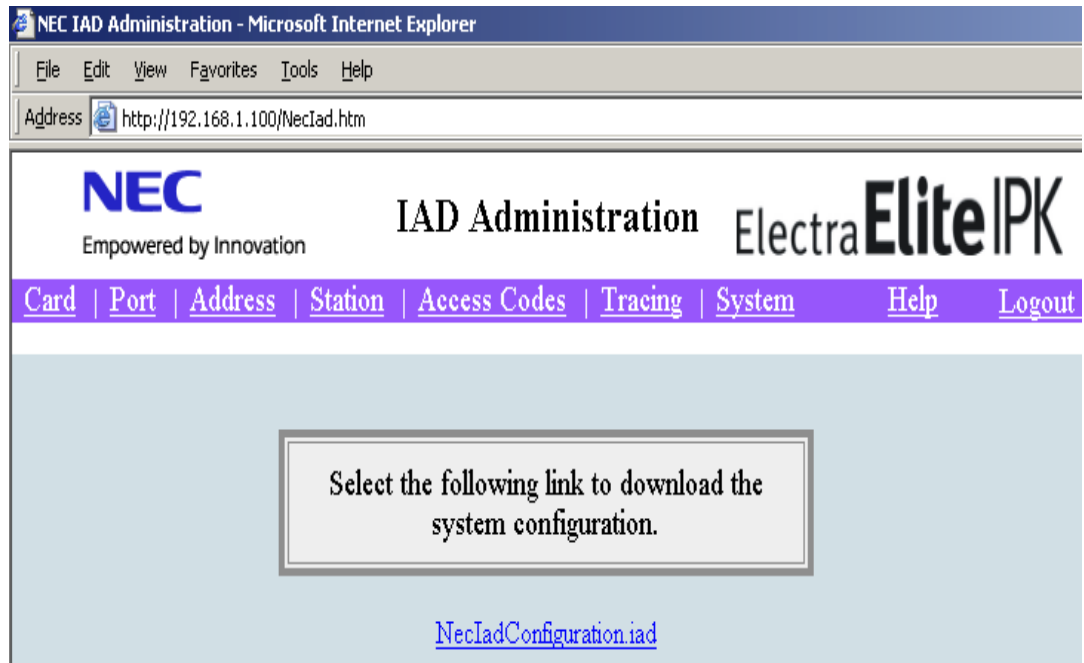


Figure A-12 Save System Parameters

SECTION 13 RESTORE SYSTEM:

This option enables previously saved SIP trunk configuration files (saved from Save System link) to be restored.

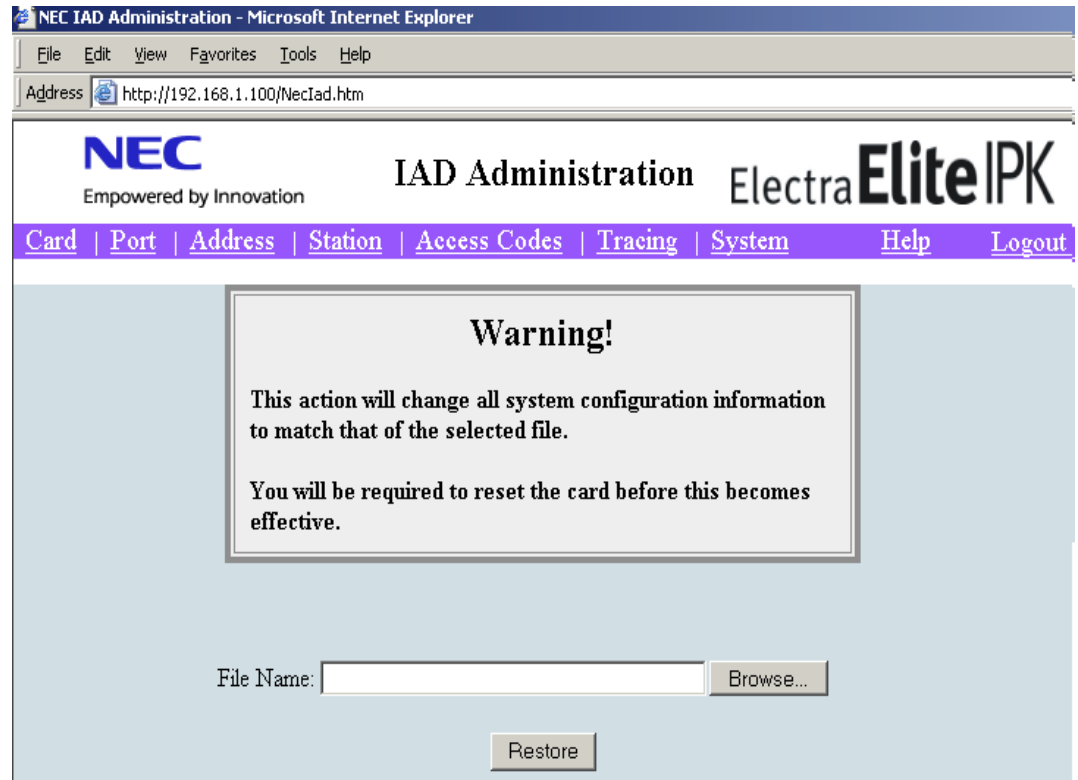



Figure A-13 Restore System Parameters

Supply the file name for the saved configuration file. Select **Restore**. The system requires a card reset after configuration has been restored.

 Do not change the file extension from **.iad**.

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APPENDIX B *Troubleshooting*

SECTION 1 INTRODUCTION

The IAD(8)-U() (SIP trunk) ETU reacts to the other parts of the Electra Elite IPK system exactly like its operating mode. For example, if the SIP Trunk ETU is configured in DID mode in the Electra Elite IPK system, it is treated as a DID(4)-U10 ETU. Troubleshooting the features relating to the mode of the ETU would follow the same methods used to troubleshoot the mode.

SECTION 2 COMMON QUESTIONS

This section answers some of the common questions encountered when using the IAD(8)-U() ETU.

Question:

The Electra Elite IPK System cannot connect to the SIP Trunk ETU at initial start up.

Answer:

Ping 192.168.1.100

If you get a reply, verify that the IP address provided in the Connect screen of the Configuration Utility exactly matches the IP address of the SIP Trunk ETU. In this case, it is 192.168.1.100.

If you do not get a reply to the ping, check your computer IP configuration by entering **winipcfg** in the Start - Run menu. Make sure that your PC and the IAD(8)-U() ETU are in the same subnet (the IP address of the PC should be 192.168.1.XXX).

Question:

The Electra Elite system does not recognize the IAD(8)-U() ETU and displays UNUSED for any attempt to seize the assigned trunk.

Answer:

Make sure the Electra Elite system is programmed for the same card type using Memory Block 7-1 (Card interface Slot Assignment) as the operating mode of the IAD(8)-U() ETU. For example, if the IAD(8)-U() ETU is in slot 3 of cabinet 1 and operating as a COID(8)-U10 ETU, the Electra Elite IPK system must be programmed, using a PC or handset, for a COID(8)-U10 ETU in slot 3 of cabinet 1.

Question:

What IP Ports are needed for SIP Trunk operation?

Answer:


For the SIP Trunk card and the SIP Protocol the following ports are necessary:

Application	Port Numbers	Comments
SIP Protocol	5060	UDP
SIP Trunk Card IAD(8)-U() ETU	49150	UDP

SECTION 3 RETURNING THE IAD(8)-U() ETU (SIP TRUNK) TO DEFAULT CONFIGURATION

To return the IAD(*)-U() ETU to the default configuration:

1. Remove the IAD(8)-U() ETU.
2. Set DIP switches S2(1) ~ S2(8) in the ON position (factory default).
3. Replace the IAD(8)-U() ETU in the KSU.
4. When the bootup process is completed, the IAD(8)-U() ETU is restored to the factory default package.
5. The IAD(8)-U() ETU Default IP Address is: 192.168.1.100. The subnet mask is 255.255.255.0.
6. Point the Internet Explorer (Version 6.0 or higher) on the PC to 192.168.1.100 by typing this address in the navigation bar.

 When you upload a package while in factory default mode, all configured data will be lost, and default settings apply.

APPENDIX C *Glossary*

The following terms are used within this document.

Term	Definition
Data Networks	The packet switched network that was originally designed for data traffic (non-speech).
DSP	Digital signal processor (a reduced instruction set processor designed to perform voice compression more efficiently than a general use processor like Pentium).
Dynamic Host	A protocol for automatic TCP/IP configuration that provides static and dynamic address allocation and management .
G.711	Voice compression standard (64 kbits/sec)
G.723	Voice compression standard (5.3, 6.3 kbits/sec)
G.729	Voice compression standard (8 kbits/sec)
Internet	The global digital network.
Intranet	A private digital network.
Jitter Buffers	Used by trunking gateways to reduce network delay effects and reorder packets
PSTN	Public switched telephone network (circuit switched that supports voice, fax, and modem).
QoS	Quality of Service (reliability of real-time transmission in presence of delays and dropped packets.)
Real-Time Transmission	Requirement for voice traffic.
Routers	Equipment on digital networks that route packets of data to destinations according to their addresses IP Address - the End User address on the internet (can be static or dynamically assigned by a Network Server.)
SIP	Session Initiation Protocol
TOS	Type of Service.

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APPENDIX D *Electra Elite IPK IAD(8)-U() ETU Installation*

SECTION 1 INTRODUCTION

The IAD (8)-U() ETU provides the hardware platform for providing Voice Over IP connectivity for the KTS. By default, this card is shipped from NEC with a "platform support" (factory default) firmware. A functional firmware is loaded as part of the installation to support the desired VoIP functionality (for example, SIP Trunk package).

In this document, loading of a SIP Trunk Card package on to the IAD(8)-U() is provided. The same procedure applies for any other application package.

For the latest functional firmware, you may order a new Electra Elite IPK: IP Solutions CD-Rom (NEC Part No. 750454) from NEC.

SECTION 2 INSTALLING IAD (8)-U() ETU PACKAGE

2.1 Description

The IAD (8)-U() ETU is an optional interface for the Electra Elite IPK KSU that is used as an integration device. The IAD (8)-U() ETU will support various IP applications (e.g., IP CCH ETU application, SIP Trunk card application, and Megaco Station application).

Refer to [Figure D-1 IAD \(8\)-U\(\) ETU](#).

2.2 INSTALLING THE ETU IN THE ELECTRA ELITE KSU

When the IAD(8)-U() ETU is used for the SIP Trunk card application, this ETU is assigned in the Electra Elite IPK system as an ETU. This ETU has eight ports, and installed in slots S1~S8 of the Electra Elite IPK KSU.

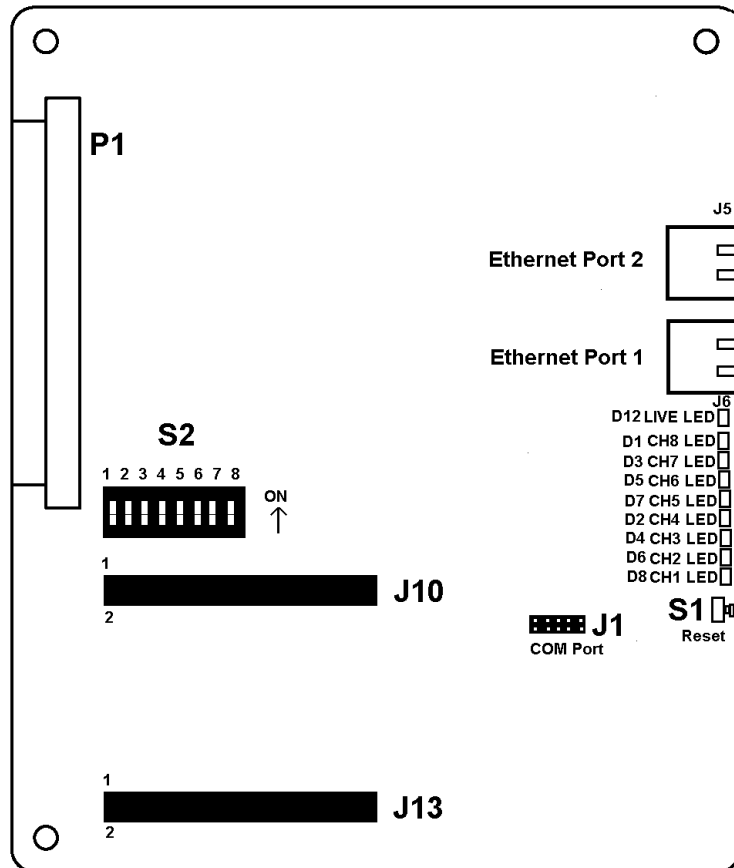


Figure D-1 IAD (8)-U() ETU

To install the ETU:

1. 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).
2. Once the LEDs CH 8(D1) and CH7(D3) are lit **SOLID** and the Status LED (D12) is flashing red, connect your cross over cable or hub to Ethernet connector (J6) on the IAD(8)-U() ETU. The IAD(8)-U() is ready to install your IP Application package.

3. The IAD (8)-U() Card 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.
4. Point the Internet Explorer (Version 6.0 or higher) on the PC to **192.168.1.100** by typing this address in the navigation bar.
 - ✎ The Internet Explorer must not use any Proxy settings.
5. Login using the following information:
Default Login ID = **admin** (lowercase)
Default Password = **password** (lowercase)

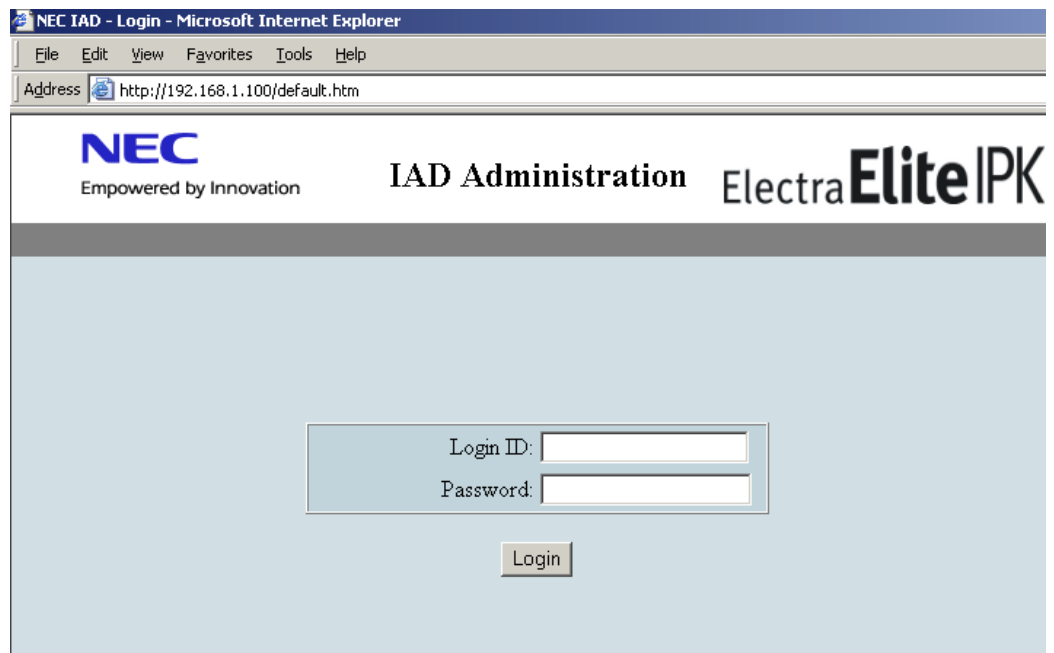



Figure D-2 Administration Screen

6. Upload the applicable IP Application package (e.g., trunk card package, SIP trunk card and station card package). Select **Upload**.
 -  This firmware is provided by NEC and must be stored on your local PC prior to firmware upload.

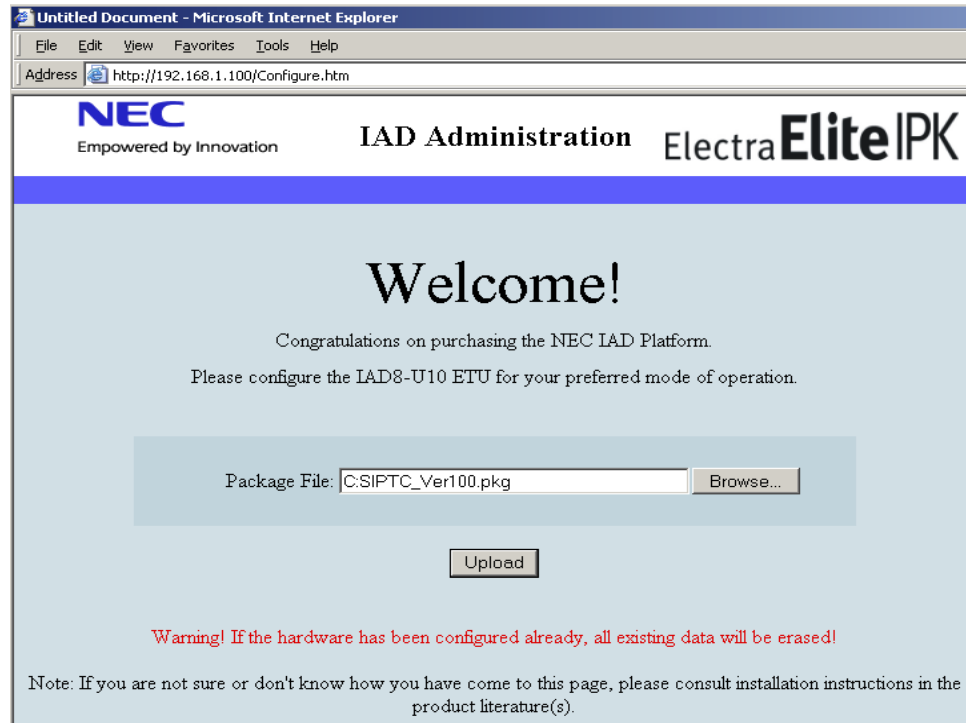


Figure D-3 Welcome Screen

7. Congratulations, you have successfully loaded your application package. Wait until the following screen is displayed.

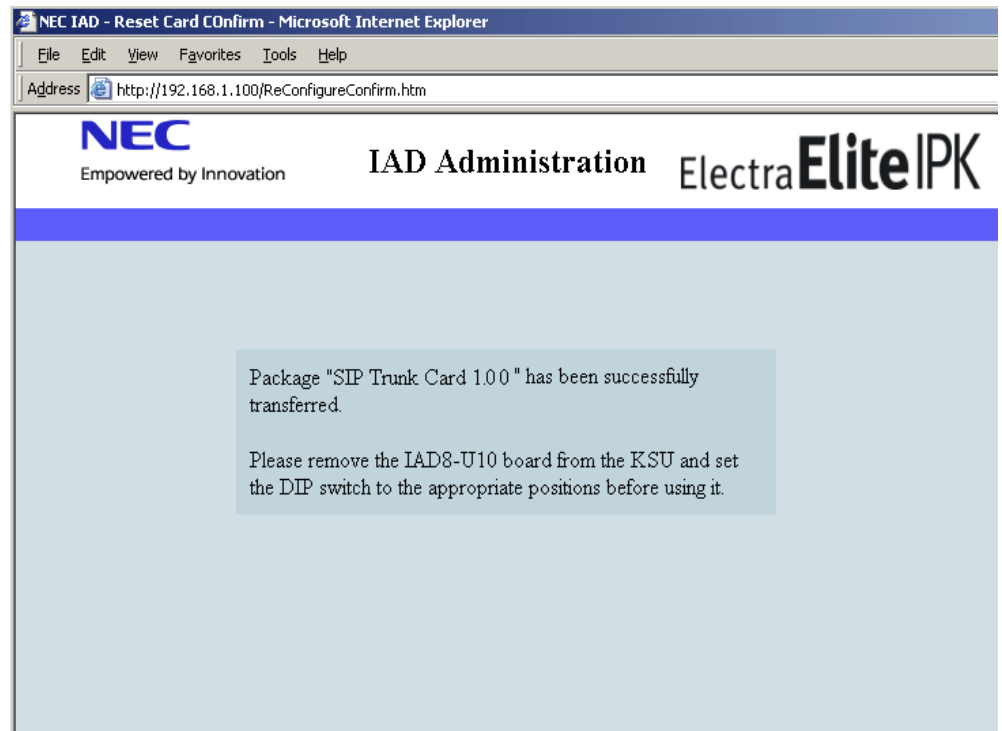


Figure D-4 ETU Successfully Loaded Message

8. You can now remove the IAD (8)-U() ETU and configure the Dip Switch Setting to the applicable Mode of operation (if so required by the package you loaded).
9. Each application package behaves differently when in functional mode. So, consult the documentation that is provided with the package prior to using it.

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NEC

Electra **Elite**[®] IPK

**SIP TRUNK
HARDWARE, INSTALLATION, AND
MAINTENANCE MANUAL**

