LINCS

Central Control

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Where to go for the information you seek.

Several books make up the 1174, 9300 and LINCS library, and include information to install, customize, operate, and maintain the 1174 and 9300 products. Following is a list and description of these manuals.

1174 Hardware Reference

The 1174 Hardware Description manual provides a description of the hardware found in several of the 1174 hardware platforms. These include the 1174-10R, 1174-10L, 1174-15X, 1174-20R, 1174-25X, 1174-60R, 1174-60C, 1174-65R, 1174-90R, and 1174-90T models. This manual includes installation planning considerations and front panel operations.

1174 Hardware Reference - 1174-65S/90S Communications Servers

The 1174 Hardware Description manual provides a description of the hardware found in the 1174-65S and 1174-90S hardware platforms. This manual includes installation planning considerations and front panel operations.

9300 Hardware Description

The 1174 Hardware Description manual provides a description of the hardware found in the 1174 hardware platforms. This manual includes installation planning consideration and front panel operations.

LINCS Product Description

The LINCS Product Description manual gives a brief description of the LINCS communications software capabilities. A reasonably complete list of the functions supported by LINCS is included.

LINCS Features

The LINCS Feature manual provides a much more detailed description of many of the LINCS features. Among those features described in detail are APPN Network Node, SNA PU Gateway support, IPX Routing, Host Connectivity, 3270 Server capabilities (IPX and TN3270), CUT Device features including Windowing, Keystroke Record/Playback, Entry Assist and Calculator, IP routing, IP Channel Bridge, ASCII Device and ASCII Host support, and NetView features.

LINCS Configuration

A Description of the LINCS Configuration process, as well as details of the configuration panels used to customize the LINCS software can be found in this manual.

LINCS Central Control

This manual contains information about the online Central Control panels. The Central Control mode provides a means to manage the LINCS software and the 1174 and 9300 hardware. A detailed description of their use is included in the manual.

LINCS Problem Determination

The LINCS Problem Determination manual aids the LINCS administrator by providing useful information about error codes and how to interpret them. Information is also included for running offline utilities.

Table of Contents

1. LINCS Central Control

LINCS Central Control provides access to various LINCS features and customization utilities. You can enter Central Control from any CUT type terminal or workstation that can access the LINCS platform, or from the Central Site Control Facility of NetView on the mainframe. When you enter Central Control, you will see the Main Menu, pictured below.

The LINCS Central Control Main Menu directs you to sub-menus where you can execute the desired utility. While executing LINCS Central Control, the bottom row is used to display PF key definitions.

Customization activities which will change some or all ports operating characteristics have protected fields, and some menus require a password to gain access.

The Field Service menu option is normally not accessible from Central Control. When the FE switch is on, you will see an additional menu item: 0, which accesses the Field Service menu.

```
Main Menu                                        LINCS C8.2 Central Control

 Item                              Description

   1                          Customization Data Menu
   2                          Supervisor Functions Menu
   3                          Media Management Menu
   4                          Vital Product Data Menu
   5                          Network Management Menu
   6                          Device Menu
   7                          Event Logs Menu
   8                          Communications Menu

Select:                                          Depress Enter
```

Accessing Central Control

To enter or exit LINCS Central Control on a 3270 terminal: simultaneously press the Alt and Test keys at a terminal. On an ASCII terminal, or a PC running an ASCII emulator: press <ALT> and <T> or <ESC> then <T>. The TEST message appears on the operator status row and the LINCS Central Control main menu is displayed. While a session on a device is in LINCS Central Control, that session is taken off-line. If the device has Multiple Logical Sessions (MLS), the other sessions on the device continue normal operation.

When any Central Control menu is displayed, enter the desired menu selection character (number or letter) at the Select Item: prompt, then press the Enter key. If a utility has input parameters (refer to individual utility descriptions), these are entered following the utility select character, using a comma to separate utility parameters. For example, entering Select Item: ‘1,u’ brings up the Customization Menu in update mode.

Some menu items provide further menu items. If the selections are known, direct pathing (also called fastpathing) may be used to bring you to the desired panel. Parameters may also be entered, for panels where a parameter is allowed. For example, entering Select Item: 6/1,MCC1.001 selects the Terminal Test for the first logical port on the first MCC board.

Password Operation

Some of the Central Control utilities are password protected, requiring the entry of the Supervisor Password that you enter during configuration.

If a utility is selected which requires the Supervisor Password, the password prompt 'Enter Password:' will be displayed just above the Select Item: prompt. Upon entering the correct password and pressing the <Enter> key, the selected utility will be executed.

If an incorrect password is entered, 'X-f' is displayed in the input inhibit area of the status row. The Reset key must be pressed and the password may then be reentered or the utility selection changed at the Select input prompt.

If no Supervisor Password was established during configuration, the password prompt will not be displayed and the selected utility will be executed.

Protected Updates

Some Central Control items allow an optional update, which is password protected. If the update is not requested, the utility will function in display only mode. If the update is requested, the Supervisor Password will be required. If the password is entered correctly, an update or save function will be allowed while executing the utility.

To specify that an update is desired, a 'u' or 'U' should be entered as the first parameter for the utility. For example, 4/2,U,MCC1.001 can be entered to update VPD for Port 1. Since the ',U' is specified as a parameter, the Supervisor Password must be entered prior to executing the utility. If the password is entered correctly, the update function will be allowed in the Port VPD utility. If the utility input is specified as 4/2,MCC1.001 the password prompt will not be displayed and updates will not be allowed while executing the utility.

Item selections supporting the password protected update have the characters ',u' following the utility select character on the menu. Also, the individual utility descriptions which follow indicate whether or not the password protected update is supported.

Customization Data Menu

The Customization Data Menu allows you to display or modify LINCS customization data i.e. configure LINCS. You will save the changes you make on disk, in files called Customization Data Objects.

Entering the optional update parameter ',u' and entering the correct Supervisor Password when selecting a customization data item allows you to update and save modified data. If the password is not entered, the panels may be displayed, but not updated and saved.

When saving Customization Data from utilities 1-4, the specified data object will be saved to the disk specified on the "Complete" panel for that utility. The data object will become operational after the next IML is done.

Customization Utilities 5-6 will modify the data object which was used for IML. Pressing PF10 while executing these utilities will save the data object to disk as well as apply the changes to the currently loaded data object.

If you enter illegal data during customization, you will be informed of the errors, and allowed to correct them.

Customization Data Menu

```
Customization Data Menu                          LINCS C8.2 Central Control

Item                        Description

 1,u                        Display/Update Configuration
 2,u                        Display/Update APPN COS
 3,u                        Display/Update Keyboard Definition Utility
 4,u                        Display/Update ASCII Definition Utility
 5,u                        Display/Update Translate Table Utility
 6,u                        Display/Update Windowing Setup
 7,u                        Display/Update Playback Sequences
 8,u                        Display/Update Central Site Customization
  9                         Feature Activation/Deactivation

   Select Item:                                  Depress Enter

PF: 1-Menu
```

Choosing items 1 through 5 brings you to the Customization Data Source panel. Other options will bring you directly to the panel for the item you chose.

Modifying Customization Data

While modifying any Customization data, you may not be allowed to leave a panel if invalid data has been entered. Invalid data is data which is in an unrecognizable format for the field type (for example, if numeric data is entered in an alphabetic field, or if numeric data is out of range). Fatal errors will be displayed on row 23 in the following format:

Error: error message.....

If inconsistent data is entered on a panel (for example, if 3270 host class 02 is assigned to a session on the Device Profile panel, but 3270 Host class 02 has not been defined), a warning message will be displayed, but you will be able to exit the panel in order to resolve the inconsistencies.

While a warning message is displayed, you can leave the panel to resolve any inconsistencies by pressing a PF key to go forwards, backwards, etc., to the desired panel. Optionally, you may change the existing panel to resolve the inconsistency. Even though the Customization Utilities allow you to page off a panel which has inconsistencies, data objects may not be saved to disk until all inconsistencies are resolved.

Customization Data Source

When you select a Customization Utility (items one through four, i.e. Configuration, KDU, ADU, or TTU) from the Customization Data Menu, this panel is displayed to allow one to select the Customization Data Source. The panel title (Configuration in this example) will be displayed correctly for the customization utility which was entered.

```
Configuration                                    LINCS C8.2 Central Control
Customization Data Source:  Default
PF: 1-Menu                                       10-Process
```

Toggle to select the customization data to be read into the working copy. The working copy is a separate copy of the customization data, which you can modify without affecting the currently loaded customization.

Options are:

- Default - Start the Configuration with default parameters. Selecting this option will default the entire working copy as if one had paged through all panels and pressed PF9-Default on each one.
- Drive A,B,C or D
- Currently Loaded Version - The currently loaded version will be copied to the working copy. No disk access is needed for this option.
- Working Copy - Display the data object which already exists in the working copy, if allowed.

The Working Copy option will only be allowed if the following conditions are true:

- Some other session is already viewing or updating the specified data object
- The customization utility was NOT entered in update mode

This option is made available so that if you have two sessions (or two devices next to each other), you may update a data object in one session, and use the other session to view the working copy for reference. For example, if you are assigning link profiles on the Gateway Circuits panel in one session, the other session can be used to view the link profiles which are currently defined.

2. APPN COS Menu

This utility displays and/or modifies the APPN Class of Service (COS) parameters. The COS parameters can be modified and saved to disk as an independent customization data object. Data objects can be distributed electronically using CSCM, or manually by copying them to a diskette.

```
APPN COS Menu                                LINCS C8.2 Central Control

Item                        Description

  1                         COS Definitions
  2                         Mode-COS Correlation

Select Item:                Depress Enter

PF: 1-Menu                  10-Done
```

APPN COS Definitions

The COS Definition panels allow the user to define Class of Service (COS) parameters. A default COS data object contains five predefined COSs.

You may alter the parameters in the predefined COSs, but if you do, you must make the corresponding COS changes in all APPN nodes in the Network. For nodes in the APPN network that are LINCS nodes, the COS data object may be copied (manually or electronically) from one node to the other. If a predefined COS is modified, the original values may be reestablishing by pressing PF9-Default on a given panel.

In addition to the predefined COSs, eleven additional COSs may be defined. To add a user-defined COS, press PF4-Add_COS while displaying any COS panel. A new COS will be added and defaulted to the values of the _#BATCH COS, which can be named and modified.

When you define a new COS, you will advance through three panels. First for node characteristics, then second and third panels for TG characteristics.

First APPN COS Panel

```
APPN COS 00                                        LINCS C8.2 Central Control

COS Name:                    #BATCH
Transmission Priority:       Low

Node          Node        Route Addition Resistance       Congestion
Row          Weight           Min    Max    Min               Max
 1            005             000    031    Low               Low
 2            010             000    063    Low               Low
 3            020             000    095    Low               Low
 4            040             000    127    Low               Low
 5            060             000    159    Low               Low
 6            080             000    191    Low               Low
 7            120             000    223    Low               High
 8            160             000    255    Low               High

PF: 1-Menu                   4-Add    7-Back 8-Forw  9-Default  10-Done
```

Each node row contains a set of minimum node characteristics, a set of maximum node characteristics, and a weight. To compute the weights for a node using this COS, the node's characteristics are checked against the characteristics defined in each node row. The node is then assigned the weight of the first node row which bounds all the node's characteristics within the limits specified. If the node's characteristics do not satisfy any of the listed node rows, the node is considered unsuitable for this COS, and is assigned an infinite weight. Note that the node rows must be specified in ascending order of weight, and the minimum value should be less than or equal to the maximum value.

The next panel is the second APPN COS panel.

COS Name

This field uniquely identifies the Class of Service. For the five predefined COSs, this field is protected. This is the only field which cannot be modified for a predefined COS.

The names you give to the eleven user-defined COSs can be up to eight alphanumeric characters. The first character must be alphabetic, with no blanks or spaces between characters. CPSVCMG and SNASVCMG are reserved.

Transmission Priority

This represents the priority of traffic passing through this node. It toggles to Network, High, Medium (default), Low.

Node Weight

This indicates how desirable the node is in session route calculations. Up to eight sets of weighted values may be assigned. The lower values are the most desirable, and should be specified first.

The range is 0 (default) to 255.

Route Addition Resistance

The Route Additional Resistance represents how desirable one NN is compared to another NN, for routing immediate sessions through them. The lower values are more desirable.

The range is 0 (default) to 255.

Congestion

This field toggles to Low or High.

- Low indicates that only low congestion nodes should be used.
- High indicates that both low and high congestion nodes can be used.

Second APPN COS Panel

```
APPN COS 00                                          LINCS C8.2 Central Control
COS Name:                      #Batch   (display only)
 TG      TG     Cost/Connect    Cost/byte    User-Def 1   User_Def 2    User-Def 3
 Row   Weight     Min   Max      Min   Max    Min   Max    Min   Max     Min   Max

  1      030      000   000      000   000    000   255    000   255     000   255
  2      060      000   000      000   000    000   255    000   255     000   255
  3      090      000   128      000   128    000   255    000   255     000   255
  4      120      000   000      000   000    000   255    000   255     000   255
  5      150      000   128      000   128    000   255    000   255     000   255
  6      180      000   196      000   196    000   255    000   255     000   255
  7      210      000   196      000   196    000   255    000   255     000   255
  8      240      000   255      000   255    000   255    000   255     000   255
PF: 1-Menu                     4-Add    7-Back 8-Forw 9-Default  10-Done
```

Each node row contains a set of minimum node characteristics, a set of maximum node characteristics, and a weight. To compute the weights for a node using this COS, the node's characteristics are checked against the characteristics defined in each node row. The node is then assigned the weight of the first node row which bounds all the node's characteristics within the limits specified. If the node's characteristics do not satisfy any of the listed node rows, the node is considered unsuitable for this COS, and is assigned an infinite weight. Note that the node rows must be specified in ascending order of weight, and the minimum value should be less than or equal to the maximum value.

The next panel is the third APPN COS panel.

Cost/Connect

Cost/connect time is the relative cost of being connected over the line. Nonswitched lines have the lowest cost, switched lines have the highest cost. The range is 0 (default) to 255.

Cost/Byte

Cost/byte is the relative cost per byte of sending and receiving data on the line. The valid range is 0 (default) to 255.

User-Defined

You can define three additional characteristics to describe the transmission groups to the network.

Third APPN COS Panel

```
APPN COS 00                                        LINCS C8.2 Central Control
COS Name:                    #Batch  (display only)
TG     Effective Capacity      Security           Propagation Delay
Row    Min       Max        Min        Max           Min       Max
__    _____________       ______________          _____________
1       56K     Maximum   Nonsecure  Maximum       Minimum   Maximum
2      19.2K    Maximum   Nonsecure  Maximum       Minimum   Maximum
3      19.2K    Maximum   Nonsecure  Maximum       Minimum   Maximum
4       9.6K    Maximum   Nonsecure  Maximum       Minimum   Maximum
5       9.6K    Maximum   Nonsecure  Maximum       Minimum   Maximum
6       9.6K    Maximum   Nonsecure  Maximum       Minimum   Maximum
7       4.8K    Maximum   Nonsecure  Maximum       Minimum   Maximum
8     Minimum   Maximum   Nonsecure  Maximum       Minimum   Maximum
PF: 1-Menu  3-Def_Dflt   4-Add      7-Back   8-Forw  9-Default  10-Done
```

PF1-Menu will return you to the APPN COS main menu.

Effective Capacity

This field defines the Link Speed (or data rate) for the line in bit per second. It toggles to: **MIN, 1.2K, 2.4K, 4.8K, 7.2K, 9.6K, 14.4K, 19.2K, 38,4K, 48K, 56K, 57.6K, 64K, 128K, 256K, 512K, 1M, 2M, 4M, 6M, 8M, 16M,** and **MAX.**

The default for Min column is MIN and the default for Max column is MAX.

Security

Security indicates the level of security protection available on a transmission group. There are seven levels of security associated with the various transmission media that provide uniformity across all networks. This field toggles to Nonsecure, Pubswtnet (public switched), Undrgrdcb (underground cable), Securecnd (secured conduit), Guardcnd (guarded conduit), Encrypted, Guardrad (guarded radiation) and Maximum.

The default for Min column is Nonsecure and the default for Max column is Maximum.

Propagation Delay

Propagation Delay indicates the time required for a signal to travel from one end of the transmission group to the other. This field toggles to MIN, LAN, TELEPHONE, PKTSWTNET (packet switched), SATELLITE, and MAX.

The default for Min column is MIN and the default for Max column is MAX.

Five Predefined APPN COSs

#BATCH

This COS name maps to a mode name of the same name. It is a general, batch-oriented class of service that uses low transmission priority. High bandwidth and low cost are considered more important than short delay.

#BATCHSC

Same as _#BATCH, except that a minimum security is required.

#INTER

This COS name maps to a mode name of the same name. It is a general, interactive-oriented class of service that uses high transmission priority. Short delay is considered to be more important than high bandwidth and low cost.

#INTERSC

Same as _#INTER, except that a minimum level of security is required.

#CONNECT

This class of service provides connectivity at medium transmission priority, for LU-LU sessions. _#CONNECT equates to a mode name of all blanks.

APPN Mode-COS Correlation

The mode name identifies a set of session parameters for an LU-LU session. It is used as an index into a “mode name to COS” table. The predefined mode names correspond to the COS names. When a mode name is specified, a COS name must also be specified and vice versa. All mode names must be unique to all other mode names, and they must be consistent throughout the network.

```
APPN Mode-COS Correlation                          LINCS C8.2 Central Control

            Mode Name       COS Name:
 01         #BATCH__        #BATCH__
 02         #BATCHSC        #BATCHSC
 03         #INTER__        #INTER__
 04         #INTERSC        #INTERSC
 05         #CONNECT
 06         ________        None
 .
 .
 16         ________        None

PF: 1-Menu                          7-Back 8-Forw  9-Default  10-Done
```

The first five Mode names are standard and are protected. You can enter up to eleven mode names, but **CPSVCMG** and **SNASVCMG** are reserved.

The COS field toggles thru all the predefined COSs, as well as user-defined COSs. The predefined COS names are **#BATCH, #BATCHSC, #INTER, #INTERSC,** and **#CONNECT**. The COSs for the first five modes are as shown in the panel.

PF1-Menu will return you to the APPN COS main menu.

3. Keyboard Definition Utility

The Keyboard Definition Utility (KDU) allows you to define the functions of the keyboard keys for coax display stations operating in CUT (Control Unit Terminal) mode. From the KDU Menu, you may choose to define or modify keyboards, or display the status of all supported keyboard types.

After you specify the type of keyboard and keypad you want to modify, a series of diagrams of the keyboard will then be displayed, which you can use as a base to tailor keys to your sites needs. See examples of keyboard diagrams.

Important Note:
You will always be offered the 'Default' KDU data object when entering the KDU. This means that if you accept the default, you will be making changes as if you have never modified the KDU. If you already have an existing KDU, you will need to toggle the Customization Data Source to indicate 'Drive C'. Otherwise you may overwrite your existing KDU with the changes that you are currently working on, thus losing the previously saved information.

ASCII Emulation on 3270 Displays

When you use a coax display station to access an ASCII session , the keyboard is emulating an ASCII keyboard. The KDU lets you modify your 88-key, 102-key, or 122-key keyboard layouts for this purpose. The modified layouts affect both ASCII and TELNET Host connections.

To modify an ASCII emulation keyboard, follow the same procedure that you do for the other keyboard modifications.

APL & Text Keyboards

For APL and Text keyboards, the definition process involves additional panels. These keyboards function in dual mode, which can be on or off. APL and Text are activated by an APL and Text On/Off switch, so two keyboard layouts must be defined: a keyboard layout for dual mode Off and a layout for dual mode On. For dual mode On, another series of panels will be displayed for you to define. The APL or Text symbol will be displayed on the status line.

How to Redefine Keys

The KDU defines keys through a free-format keyboard definition interface. To change a keyboard, type over the existing, displayed values of the keys. To delete a key function, type spaces over it.

To move from key to key on the panel, use the cursor movement keys. You can use the Tab, Backtab, Home, and Arrow keys.

Three rows define each key. The top row corresponds to the uppercase (shift) position on the keyboard; the middle row corresponds to the lowercase (nonshift) position; and the bottom row corresponds to the alternate (alt shift) position.

There are one to three characters on each key row. These characters define the function of the key. In general, one character (for example, A) identifies the function of a data key; three-character acronyms define 3270 functions (for example, ENT represents the Enter function).

KDU Main Panel

```
KDU Menu                                          LINCS C8.2 Central Control

  Item                Description
  1                   Keyboard Definition Utility
  2                   Display Keyboard Status

 Select Item:  _                    Depress Enter

PF:  1-Menu                                                  10-Done
```

After all desired keyboard modifications are made, press PF10-Done to advance the display to the KDU Complete panel. From this panel the modified keyboards may be saved to the desired System disk. The changes will be applied to the operational keyboard tables upon subsequently IMLing.

Define Keyboard

```
Define Keyboard                                   LINCS C8.2 Central Control

Keyboard Type:           88-key Typewriter
Keyboard Tables:         Primary
Action:                  Define

Press PF8-Forw to proceed with selected action.

PF:  1-Menu                                          8-Forw 10-Done
```

The option you choose for the Action field determines what the next panel in the forward series will be. You will either move to Define Keyboard/Base Definition or go directly to the Keyboard Diagrams .

When those are completed, you will advance to KDU Complete.

Keyboard Type

This toggle field allows one to select which type of keyboard to define. The field toggles through all keyboard types which are supported.

Supported keyboard types are:

88-key Typewriter	122-key APL
88-key Tripad (C3)	Roll-your-own A
88-key APL	Roll-your-own B
88-key TEXT	Roll-your-own C
88-key Data Entry	Roll-your-own D
88-key Keypunch	Roll-your-own APL
102-key IBM Enhanced	88-key DEC VT
122-key Typewriter	102-key DEC VT
122-key Data Entry	122-key DEV VT
88-key IBM 3101	88-key Data General
102-key IBM 3101	102-key Data General
122-key IBM 3101	122-key Data General

Keyboard Tables

This toggle field allows you to select which set of keyboard tables to apply keyboard definitions to. Toggle choices are Primary or Secondary, referring to the keyboard tables associated with the primary language or the keyboard tables associated with the secondary language.

KDU modifications for the primary language are automatically applied to the primary keyboard tables during the IML process, since a primary language always exists. The same is true for the secondary language keyboards if a secondary language has been configured. If a secondary language has not been configured, but a keyboard table for the secondary language has been defined, the keyboard table will not be used and an error message will be logged.

Action

This toggle field allows you to select either DEFINE or UNDEFINE. Pressing PF8-Forw proceeds with the selected action as follows.

- If DEFINE is chosen, pressing PF8-Forw advances the display to panels which allow you to Define the selected keyboard. If the selected keyboard is currently defined, the display will advance to the Define Keyboard/Base Definition panel. If the selected keyboard has already been modified, pressing PF8-Forw will advance directly to the first keyboard diagram for the chosen keyboard type.
- If UNDEFINE is chosen, pressing PF8-Forw will UNDEFINE the selected keyboard, erasing any previous modifications which have been made using the KDU. Upon IML, the specified keyboard will be defined based upon the values chosen on the Device Options/Keyboard panel.

Once the keyboard has been Undefined, you may choose to Define the keyboard by toggling the Action field to Define, return to the KDU menu by pressing PF1-Menu, or advance to the KDU Complete panel to save your changes by pressing PF10-Done.

Define Keyboard/Base Definition

This panel is displayed if you choose to Define a keyboard from Define Keyboard and the chosen keyboard is currently in a Undefine state. It is also displayed when you select Display Keyboard Status. The values selected on this panel determine the initial keyboard definition for the selected keyboard. Subsequent panels allow one to redefine the keyboard as desired.

Note that the values on this panel may vary from the corresponding values in Configuration. For example, if the primary configuration language is U.S. English, a different language may be chosen for the base definition of a keyboard on this panel. It is not required that a modified keyboard's base definition match the options configured on the Device Options/Keyboard panel.

```
Modify Keyboard/Base Definition                LINCS C8.2 Central Control

Keyboard Type:              122-key Typewriter
Keyboard Tables:            Primary

Base Keyboard Language:     (01) U.S. English
Keypad:                     National Language NUMERIC Keypad
Numeric Delimiter:          Period
Typewriter Selection:       Standard C3 Layout
Tripad Keyboard Selection:  Standard C3 Layout
APL Keyboard Selection:     Standard APL Layout

Press PF8-Forw to proceed with selected action

PF:  1-Menu                                    8-Forw  9-Default  10-Done
```

Pressing PF8-Forw initializes the selected keyboard with the chosen values and advances the display to the first keyboard diagram. Although some of these options only apply to specific keyboard types, the options will always be present on this panel. Inapplicable options will not be applied to the selected keyboard.

Base Keyboard Language

The KDU allows you to modify layouts for Primary and Secondary languages selected on the Device Options/Keyboard panel of Configuration. Toggle to select the keyboard layout (Primary or Secondary) that will be modified. The configured language appears on the keyboard layouts.

The selected languages apply to all keyboards. Changing a language on the Device Options/ Keyboard panel will cause all previous KDU modifications for that language to be lost.

Keypad

The Keypad update field enables you to selectively modify a keyboard's keypad to a new default value. You cannot use the Keypad update field to modify keyboards emulating ASCII.

You can select from four options here:

- DATA ENTRY - Choose this option if you want to select a Data Entry keypad.
- PROGRAM FUNCTION - Choose this option if you want to select a Program Function keypad.
- NATIONAL LANGUAGE (default)- Choose this option if you want to select a National Language keypad.

Numeric Delimiter

Toggle to select the numeric delimiter that can be used in Numeric Lock field. The choices are: PERIOD(default) or COMMA. The value selected is typically what you need to use to denote fractional money denominations for the language that you are communicating with.

Typewriter Selection

Toggle to select one of the following layouts:

- Standard C3 layout (default)
- C4 layout IBM RPQ-8K0932
- Model 808 IBM RPQ-8K0808

Tripad Keyboard Selection

Toggle to choose the 88-key layout for keyboards having the tripad ID switch setting:

- Standard C3 Layout (default)
- C3 w/NUM Lock
- C3 w/NUM Lock IBM RPQ 8K1255
- International C8 WITHOUT NUM Lock
- International C8 w/NUM Lock

88-Key APL Keyboard

Select either the standard APL layout or the special (C3) APL layout with or without numeric lock.

Toggle to choose:

- Standard APL Layout (default)
- C3-APL WITHOUT NUM Lock IBM RPQ-8K1158
- C3-APL w/NUM Lock IBM RPQ-8K1158

Display Keyboard Status

```
Display Keyboard Status                          LINCS C8.2 Central Control
                       PRI     SEC                            PRI     SEC
                       ---     ---                            ---     ---
88-key Typewriter      Undef   Undef   Roll-your-own C        Undef   Undef
102-key IBM Enhanced   Undef   Undef   Roll-your-own D        Undef   Undef
122-key Typewriter     Undef   Undef   Roll-your-own APL      Undef   Undef
88-key Data entry      Undef   Undef   88-key DEC VT          Undef   Undef
122-key Data entry     Undef   Undef   102-key DEC VT         Undef   Undef
88-key APL             Undef   Undef   122-key DEC VT         Undef   Undef
122-key APL            Undef   Undef   88-key IBM 3101        Undef   Undef
88-key Keypunch        Undef   Undef   102-key IBM 3101       Undef   Undef
88-key Tripad (C3)     Undef   Undef   122-key IBM 3101       Undef   Undef
88-key TEXT            Undef   Undef   88-key Data General    Undef   Undef
Roll-your-own A        Undef   Undef   102-key Data General   Undef   Undef
Roll-your-own B        Undef   Undef   122-key Data General   Undef   Undef
PF:  1-Menu                                              10-Done
```

KDU Complete

When PF_10-Done is pressed from any KDU panel, the KDU Complete panel is displayed. Press the PF10-Save to write the updates to the system disk.

```
KDU Complete                                  LINCS C8.2 Central Control

System Disk Drive:              Drive C
Data Object Name:               ________

PF: 1-Menu                                                  10-Save
```

PF1 will return you to the Customization main menu.

System Disk Drive

This is a toggle fields which indicates which disk to write to when PF10-Save is pressed.

Data Object Name

This field defines a name that uniquely identifies the KDU data object for transmission by the Central Site Change Management Utility. The specified name will become the 7th token in the data objects canonical name. If no name is specified, the 7th token of the canonical name will be the release level of the System Microcode which is being used to define the data object.

The name may contain up to eight alphanumeric characters (except for the first character which must be alphabetic) with no embedded blanks. Note that the names ALL, WC, and LOCALCHG are reserved and cannot be used.

Once you have saved the new configuration, you will be presented with the option to reboot the platform.

```
IML Option                                    LINCS C8.2 Central Control
IML Option:                        None

PF: 1-Menu                                                   10-Process
```

IML Options

Changes made in the KDU do not take effect until the platform has been rebooted. The IML options that can be selected are:

- None - You will need to IML manually at a later time of your choosing.
- IML Now - Perform the reboot now. This will disrupt any normal activity that may be going on.
- IML Later - Perform the reboot automatically at a time and date of your choosing.

KEY ACRONYMS

AID Keys Shift Keys

Key Acronym	Key Description		Key Acronym	Key Description
ENT	Enter		UPS	Up Shift
CLR	Clear		DWN	Down Shift (for Data Entry Keyboards)
RST	Reset		ALT	Alt Shift
SYR	System Request		SHL	Shift Lock
ATN	Attention		SHT	Shift Toggle
CRS	Cursor Select		CAP	Caps Lock

Color Keys* Program Symbol Keys*

Key Acronym	Key Description		Key Acronym	Key Description
RED	Red		PSA	Program Symbol Set A
GRN	Green		PSB	Program Symbol Set B
BLU	Blue		PSC	Program Symbol Set C
WHI	White		PSD	Program Symbol Set D
PNK	Pink		PSE	Program Symbol Set E
YEL	Yellow		PSF	Program Symbol Set F
TUR	Turquoise		DPS	Default Program Symbol Set
DCO	Default Color			

* Requires a PSHICO keyboard

Clicker/Cursor Keys Dual Language Keys

Key Acronym	Key Description		Key Acronym	Key Description
CLI	Clicker Toggle (on/off)		PLK	Primary Key
ACR	Alternate Cursor		SLK	Secondary Key
CBL	Cursor Blink (on/off)		TLK	Language Toggle Key

Insert/Delete Keys Record/Playback

Key Acronym	Key Description		Key Acronym	Key Description
ERI	Erase Input		REC	Record
ERE	Erase to EOF		PLA	Playback
INS	Insert		PAU	Pause
DEL	Delete			

Dual Mode Keys and PF and PA Keys*

Key Acronym	Key Description		Key Acronym	Key Description
APL	Toggle APL Mode		PF1 to P24	PF Keys
TXT	Toggle Test Mode		PA1 to PA3	PA Keys

Note: Because the Keyboard Definition Utility fields contain 3 characters maximum, PF10 - PF24 must be designated as P10 - P24.

Highlight Keys* Print Keys

Key Acronym	Key Description		Key Acronym	Key Description
REV	Reverse Video		PRI	Print
BLK	Blink Video		IDE	Printer Identification
UND	Underline Video		DVC	Device Cancel
DHI	Default Highlight		TEP	Toggle Echo Print

* Requires a PSHICO keyboard

Session Swap Keys, Cursor Move Keys, Windowing Keys, Accent Keys, and Dead Keys

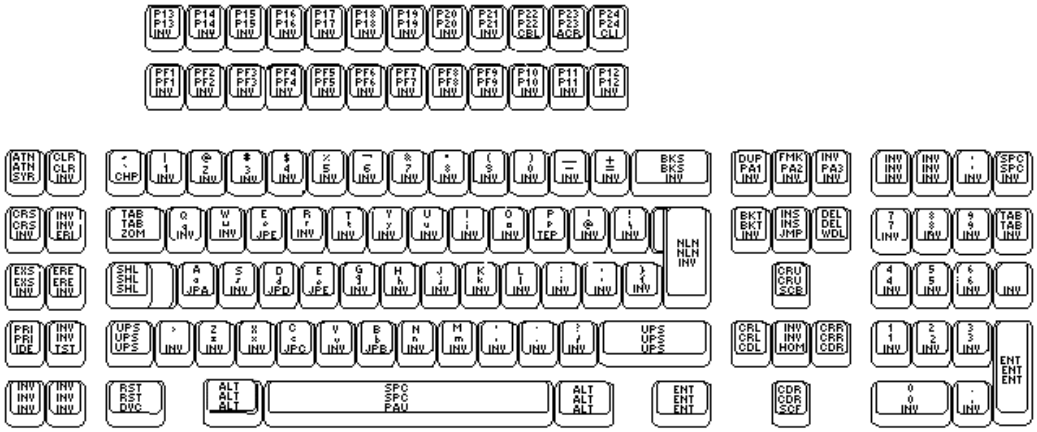
Key Acronym	Key Description		Key Acronym	Key Description		Key Acronym	Key Description
CRU	Cursor Up		JMP	Jump to Next Session		CFX	Circumflex
CDR	Cursor Down		JPA	Jump to Session A		GRA	Grave
CRL	Cursor Left		JPB	Jump to Session B		TRM	Tremula
CRR	Cursor Right		JPC	Jump to Session C		ACA	Acute
CDL	Cursor Double Left		JPD	Jump to Session D		CED	Cedilla
CDR	Cursor Double Right		JPE	Jump to Session E		TIL	Tilde
BKS	Backspace		JPF	Jump to Session F		DEG	Degree
TAB	Tab		JPG	Jump to Session G		ICR	Inverted Circumflex
NLN	New Line		JPH	Jump to Session H		SCI*	Semicircle
BKT	Backtab		JPI	Jump to Session I		DOT*	Dot
HOM	Home		JPJ	Jump to Session J		DAC*	Double Acute
SCF	Scroll Forward		CHP	Change Profile		SCB	Scroll Back
ZOM	Zoom Window (on/off)						

* A Yugoslavia or ROECE character generator is required to properly display the symbol

ASCII Emulation Other

Key Acronym	Key Description		Key Acronym	Key Description
XOF	FLOWOFF		SEL	Select
XON	FLOWON		FND	Find
A_1	Auxiliary pad 1		SCR	Scroll (PF1)
A_2	Auxiliary pad 2		SET	Setup (PF3)
A_3	Auxiliary pad 3		BRK	Break
A_4	Auxiliary pad 4		TCP	Toggle ASCII Concurrent Print (ACP)
A_5	Auxiliary pad 5		TFX	Toggle File Transfer (on/off)
A_6	Auxiliary pad 6		TBB	Toggle Background Bell
A_7	Auxiliary pad 7		SPC	Space
A_8	Auxiliary pad 8		DUP	Dupe
A_9	Auxiliary pad 9		FMK	Field Mark
A_0	Auxiliary pad 0		TST	Test Mode
A_.	Auxiliary pad period		EXS	Extended Select
A_-	Auxiliary pad hyphen		INV	Invalid
A_,	Auxiliary pad comma		NSC	Null/Space Conversion
COM	Compose		CUT	Cut operation for cut and paste
NXT	Next screen		SND	Send operation for cut and paste
PRV	Previous screen			

Sample Keyboard



Hex Code Table (CECP)

You can also define special character keys by typing the two digit hex value for the desired key. The following table can be used to determine the two digit hex value.

Most Significant Digit

	0	1	2	3	4	5	6	7	8	9	A	B
0		space	0	&			À		a	q	A	Q
1	+	=	1	-	è	ë	È	Ë	b	r	B	R
2		'	2	.	ì	ï	Ì	Ï	c	s	C	S
3	-	"	3	,	ò	ö	Ò	Ö	d	t	D	T
4		/	4	:	ù	ü	Ù	Ü	e	u	E	U
5	¾	\	5	+	ã	â	Ã	Â	f	v	F	V
6	®	|	6	¬	õ	ê	Õ	Ê	g	w	G	W
7	©	|	7	¯	ÿ	î		Î	h	x	H	X
8	>	?	8	º	b	ô	Þ	Û	I	y	I	Y
9	<	!	9		d	û	Ð	Û	j	z	J	Z
A	[	$			«	á	½	Á	k	æ	K	Æ
B	]		§	~	¹	é	¿	É	l	ø	L	
C	)		#	¨	»	í	¡	Í	m	å	M	Å
D	(		@	`	¶	ó	a	Ó	n	ç	N	Ç
E	}		%	é	ý	ú	Ý	Ú	o	²	O	;
F	{		-	¸		ñ	o	Ñ	p	³	P	*

Example: If you want the « character, type 4A on the KDU screen at the desired location. Note that the « character will be displayed only if the device that you are configuring with supports CECP.

The following restrictions apply to the keyboard definition:

Certain keys are always required to support basic keyboard functions. The mandatory keys are shown below:

- Test
- Reset
- Device Cancel
- Alt
- Enter
- Down Shift (required on Data Entry only)
- Shift

4. ASCII Definition Utility

The ASCII Definition Utility (ADU) allows you to customize existing ASCII operating parameters, define new ASCII display types, configure items such as printer parameters and translate tables, allowing you to tailor the ASCII datastream to your needs. All modifications made through the ASCII Definition Utility are kept in a single file. Therefore you can not make modifications on one platform, and add them to changes made on a different platform, other than by making the changes manually.

After all desired modifications are made, press PF10-Done to advance the display to the ADU Complete panel. From this panel the ADU data may be saved to the desired System disk. All changes to translate tables, outgoing sequences and incoming sequences will be applied immediately. Other changes will be made operational upon the next IML.

Note that option 3, Define Translate Tables, is not available through Central Site Control Facility.

```
ASCII Definition Utility                          LINCS C8.2 Central Control

  Item                        Description
  1                           Define Display
  2                           Modify Printer Parameters
  3                           Define Translate Tables
  4                           Define Display Emulation Selection

 Select Item: _               Depress Enter

PF:  1-Menu
```

Define Display

Default Display device drivers may not be changed directly. Up to 7 User Defined Displays (UDD) may be defined by the LINCS administrator. These may be copies of existing default definitions, modified as needed, or may be defined as a completely new device type from scratch.

If your User Defined Display is new (or just erased by choosing DEFINE), you will advance to the Base Definition panel, and then scroll directly through the panels of tailorable parameters for an ASCII display. When completed, you will have the option to save your changes with PF10, or return to the ADU main menu.

In the series of panels associated with a device definition, if PF9-Default is pressed, only the immediate panel's values are cleared, and the toggle fields return to the initial state. Note that for Inbound Key Sequences, the default returns to the initial panel's values, not controller assigned. If you wish to default values for all display parameters, back up to this panel, toggle the Action field to Undefine, and press PF8 to default all values for the display.

```
Define Display                                    LINCS C8.2 Central Control

Display Type:                User Defined 1
Action:                      Define

Press PF8-Forw to proceed with the selected action.
PF:  1-Menu                                       8-Forw 10-Done
```

Display Type

This toggle field allows one to choose the type of display to define. Options are:

User Defined 1 through User Defined 7.

Action

Toggle to select DEFINE or UNDEFINE

- If DEFINE is chosen, pressing PF8-Forw will advance the display to panels which allow you to modify the selected display type. If the selected display is currently undefined, the display will advance to the Modify Display/Base Definition. If the selected display has already been defined, pressing PF8-Forw will advance directly to the Status Line and Initialization panel for the chosen User Defined Display (UDD).
- If UNDEFINE is chosen, pressing PF8-Forw will default the selected User Defined Display, erasing any previous modifications which have been made using the ADU.

Once the display has been undefined, you may choose to define the display by toggling the Action field to Define, return to the ADU menu by pressing PF1-Menu, or advance to the ADU Complete panel to save your changes by pressing PF10-Done.

Modify Display/Base Definition

This panel is displayed when defining a User Defined Display if the chosen display is currently in an undefined state (blank values). This panel determines the initial values for the selected User Defined Display.

```
Modify Display/Base Definition                    LINCS C8.2 Central Control

Display Type:              User Defined 1
Base Display:              DEC VT52

PF:  1-Menu                                      8-Forw  9-Default  10-Done
```

The next panels in the forward series allow you to tailor the ASCII values to your site's needs, starting with Status Line & Initialization.

Base Display

The parameters for the BASE DISPLAY type will be used to initialize the fields for this User Defined Display. The toggle field options are:

ADDS Viewpoint A2	IBM 3161, 3162, and 3163	Visara VT3270/2
ADDS Viewpoint 78	IBM 3164	Visara VT3270/3
DEC VT52	IBM FTTERM Color	Visara VT3270/4
DEC VT1XX	IBM FTTERM Monochrome	Visara VT3270/5
DEC VT2XX 7 bit	Lear Seigler ADM 3A	Wyse 50
DEC VT2XX 8 bit	Lear Seigler ADM 5	Wyse 60
DEC VT320	Lear Seigler ADM 11	NONE
Esprit Executive 10/78	Lear Seigler ADM 12	
Hazeltine 1500	Lear Seigler ADM 1178	
Hewlett-Packard 2621B	TeleVideo 912	
IBM 3101	Televideo 950	
IBM 3151	Televideo 970	

NONE will not initialize any parameters for this User Defined Display.

Status Line & Initialization

```
Modify Display/User Defined 1                    LINCS C8.2 Central Control
  Status Line & Initialization
User Defined Display Name:          DEC VT1xx
Clear Screen Function:              Clears the Status Line
Status Line:                        Toggle
Status Line Location:               Last Data Line
Write on Column 80 of Status Line:  Allowed
Status Line Characters:             ASCII
Status Line Lead-In Sequence:       _______________
Status Line Lead-Out Sequence:      _______________
Write on Column 80 of Last Line:    Allowed
Character Set:   NRC, 7 BIT         Device Screen Size:    24 X 80 (Mod 2)
Break Function:   None              Display EAB/Color: EAB
Initialization:   1B3C1B3D1B5B3F316C1B5B3F336C1B5B3F356C1B5B3F366C1B
                  5B3F37681B5B3F38681B5B6D1B23351B5B326C1B5B346C1B5B
                  32306C1B5B3E366C1B5B3E31346C1B5B303B333B34761B2930
                  0F1B5B324A00000000000000000000000000000000000000000

PF:  1-Menu                          7-Back  8-Forw    9-Default  10-Done
```

PF7 returns to the previous panel (Modify Display Base).

PF8 displays the next panel in this series, which is Cursor Positioning.

User Defined Display Name

This option lets you enter a name for this User Defined Display. Change this field by entering any alphanumeric string up to 22 characters. The name you enter will appear on subsequent ADU panels. If you do not enter a name, default names (User Defined Display 1, 2, 3, 4, 5, 6, 7) appear on the ADU panels.

Clear Screen Function

Options are:

- Clears the Status Line
- Does not Clear the Status Line

Status Line

Many ASCII/Telnet emulations are 24 line emulations, as compared to a 25 line 3270 emulation (24 lines of data plus 1 line of status). The Status Line option indicates how the 25th row will be handled. When the 25th row is displayed, the 24th row is not, and vice versa.

Options are:

- Toggle
- Always on
- Always off

Status Line Location

During 3270 emulation, LINCS will display a status line on last line of the display, depending on how the status line option is set. The status line displays 3270 session information.

Options are:

- Last Data Line
- Specified by Sequence

Write on Column 80

When you type a character on column 80, some ASCII displays will wrap that character to the next line. This option tells LINCS whether or not this will happen, so the data can be correctly displayed.

Options are:

- Allowed
- Not Allowed

Status Line Characters

Options are:

- ASCII
- BCD ASCII
- HEX PAIRS

Status Line Lead-In Sequence

Enter up to 14 alphanumeric characters.

Status Line Lead-Out Sequence

Enter up to 14 alphanumeric characters.

Write on Column 80 of the last line

When you type a character on column 80 of the bottom line, some ASCII displays will wrap that character to the next line, causing the screen to scroll. This option tells LINCS whether or not this will happen, so the data can be correctly displayed.

Options are:

- Allowed
- Not Allowed

Character Set

Options are:

- NRC, 7 Bit
- MCS, 8 Bit

Break Function

This options determines what LINCS will do when the user presses the Break key.

Options are:

- None
- Device Power Off
- Disconnect Session

Device Screen Size

Options are:

- X 80 (Mod 2)
- X 80 (Mod 3)
- X 80 (Mod 4)
- X 132 (Mod 5)

Display EAB/Color on Modify Display panel

Options are:

- No EAB
- EAB (7 color)

Initialization

This field allows you to enter a string of control sequences which will be sent to the UDD at POR and when the display swaps sessions. This string is used to make sure that the display is in the appropriate mode for use with LINCS.

Cursor Positioning

```
Modify Display/User Defined 1                    LINCS C8.2 Central Control
Cursor Positioning

 Lead-In Sequence:          1B5B000000
 Data Format:               ASCII
 Separator:                 3B00
 Data Order:                Row,Col
 Home Position:             1,1
 Lead-Out Sequence:         4800

 PF: 1-Menu                 7-Back  8-Forw     9-Default  10-Done
```

PF7 returns to the Status Line and Initialization panel. PF8 displays the next panel in this series, Outbound Control Sequences.

You should see your display's Programmer's Reference Manual to modify these values. The default values are shown in the example.

Outbound Control Sequences

```
Modify Display/User Defined 1                     LINCS C8.2 Central Control
Outbound Control Sequences:  1174 to Display

Clear Screen:            1B5B324A1B5B48   Graphic char:    71
Normal Attribute:        1B5B6D00000000   Graphic char: |  78
Reverse Video:           1B5B376D000000   Graphic char: llc  6D
Blinking:                1B5B356D000000   Graphic char: luc  6C
Underlining:             1B5B346D000000   Graphic char: ruc  6B
Intensifying:            1B5B316D000000   Graphic char: rlc  6A
Numeric Keypad:          1B3E0000000000   Red:               ____________
Application Keypad:      1B3D0000000000   White:             ____________
Status Line Attributes:                   Blue:              ____________
Graphic Set ON:          0E000000000000   Green:             ____________
Graphic Set OFF:         0F000000000000   Yellow:            ____________
Cursor ON:               1B5B3076000000   Pink:              ____________
Cursor OFF:              1B5B3176000000   Turquoise:         ____________
Start Printer:           1B5B3569000000   Stop Printer:    1B5B3469000000
Clear to End of Line     1B5B324B000000

PF: 1-Menu                          7-Back  8-Forw  9-Default  10-Done
```

If a function is left with a blank control sequence, that function will be inactive. Only the fields that apply to the device being defined need be entered. The six graphic characters on this panel will be the only graphic characters supported by the UDDs.

PF7 returns to the Modify Display Cursor Positioning panel. PF8 displays the next panels in this series, the Inbound Key Sequences panels.

Graphic Characters

The mnemonics for graphics characters shown mean:

- right lower corner
- right upper corner
- left lower corner
- left upper corner

Inbound Key Sequences

The following keys are required to have control sequences assigned to them:

- Reset
- Device Cancel
- Test
- System Request
- Enter

Each of the following inbound key sequence panels has a primary and an alternate sequence field for each key. Remember that only one sequence of the above list is mandatory. The alternate list is provided in case you anticipate that the primary key sequence may not easily be accessible at some time.

Each of the six inbound key sequence panels must have its sequences follow the rules listed below.

- The first byte of an inbound sequence has to be in the range: 00x - FF
- One inbound sequence cannot be a subset of another inbound sequence.
- A null or space entry terminates a sequence (they are not sent).

Inbound Key Sequences #1

This panel contains inbound control sequences which are sent from the display to LINCS.

```
 Modify Display/User Defined 1                LINCS C8.2 Central Control

 Inbound Key Sequences:  Display to 1174

Primary Sequence                  Alternate Sequence
Attn:          01000000000000     Attn:          00000000000000
Clear:         03000000000000     Clear:         00000000000000
Dup:           04000000000000     Dup:           00000000000000
Erase EOF:     05000000000000     Erase EOF:     00000000000000
FM:            06000000000000     FM:            00000000000000
Back Tab:      08000000000000     Back Tab:      1B090000000000
Tab:           09000000000000     Tab:           00000000000000
Newline:       0A000000000000     Newline:       1A000000000000
Cursor Up:     0B000000000000     Cursor Up:     1B5B4100000000
Cursor Down:   1B5B4200000000     Cursor Down:   00000000000000
Cursor Right:  0C000000000000     Cursor Right:  1B5B4300000000
Cursor Left:   1B5B4400000000     Cursor Left:   00000000000000

 PF: 1-Menu                       7-Back  8-Forw  9-Default  10-Done
```

PF7 returns to the previous panel. PF8 displays the next panel #2 of 9.

Inbound Key Sequences #2

```
Modify Display/User Defined 1                LINCS C8.2 Central Control

Inbound Key Sequences:  Display to 1174

Primary Sequence                        Alternate Sequence

Enter:                0D000000000000    Enter:               1B4F4D00000000
Reset:                12000000000000    Reset:               00000000000000
Double Cursor Left:   16000000000000    Double Cursor Left:  00000000000000
Double Cursor Right:  15000000000000    Double Cursor Right: 00000000000000
Refresh Screen:       17000000000000    Refresh Screen:      1B520000000000
Scroll Back:          19000000000000    Scroll Back:         1C000000000000
Scroll Forward:       0E000000000000    Scroll Forward:      1D000000000000
Delete:               7F000000000000    Delete:              00000000000000
Insert:               1B7F0000000000    Insert:              00000000000000
Home:                 1B4800000000000   Home:                1B6800000000000
Erase Input:          1B4900000000000   Erase Input:         1B6900000000000
Cursor Select:        1B4B0000000000    Cursor Select:       1B6B0000000000
Back Space:           00000000000000    Back Space:          00000000000000

PF: 1-Menu                          7-Back  8-Forw  9-Default  10-Done
```

PF7 returns to the previous panel. PF8 displays the next panel, #3 of 9.

Inbound Key Sequences #3

```
Modify Display/User Defined 1                 LINCS C8.2 Central Control

Inbound Key Sequences:  Display to 1174

Primary Sequence                        Alternate Sequence

Status Line Toggle: 1B3F0000000000    Status Line Toggle:    00000000000000
System Request:     1B5300000000000   System Request:        1B7300000000000
Printer Ident:      1B4400000000000   Printer Ident:         1B6400000000000
Change Profile:     00000000000000    Change Profile:        00000000000000
Extend Select:      02000000000000    Extend Select:         1B4200000000000
Device Cancel:      18000000000000    Device Cancel:         00000000000000
Test Mode:          1B5400000000000   Test Mode:             1B7400000000000
Print:              10000000000000    Print:                 00000000000000
Zoom:               1B5A0000000000    Zoom:                  1B7A0000000000
Dial Screen:        00000000000000    Dial Screen:           00000000000000
File Transfer On:   00000000000000    File Transfer On:      00000000000000
File Transfer Off:  00000000000000    File Transfer Off:     00000000000000
Alternate Escape:   00000000000000    Alternate Escape:      00000000000000

PF: 1-Menu                        7-Back 8-Forw 9-Default 10-Done
```

PF7 returns to the previous panel. PF8 displays the next panel in this series, #4 of 9.

Inbound Key Sequences #4

```
Modify Display/User Defined 1                  LINCS C8.2 Central Control
Inbound Key Sequences:  Display to 1174
Primary Sequence                        Alternate Sequence
Swap:                 07000000000000    Swap:                 00000000000000
Swap A:               00000000000000    Swap A:               00000000000000
Swap B:               00000000000000    Swap B:               00000000000000
Swap C:               00000000000000    Swap C:               00000000000000
Swap D:               00000000000000    Swap D:               00000000000000
Swap E:               00000000000000    Swap E:               00000000000000
Swap F:               00000000000000    Swap F:               00000000000000
Swap G:               00000000000000    Swap G:               00000000000000
Swap H:               00000000000000    Swap H:               00000000000000
Swap I:               00000000000000    Swap I:               00000000000000
Swap J:               00000000000000    Swap J:               00000000000000
Primary Key:          1B040000000000    Primary Key:          00000000000000
Secondary Key:        1B050000000000    Secondary Key:        00000000000000
Language Toggle Key:  1B060000000000    Language Toggle Key:  00000000000000
PF: 1-Menu                               7-Back  8-Forw  9-Default  10-Done
```

PF7 returns to the third Modify Display Inbound Key Sequences panel.

PF8 displays the next panel in this series, #5 of 9.

Inbound Key Sequences #5

```
Modify Display/User Defined 1                  LINCS C8.2 Central Control
Inbound Key Sequences:  Display to 1174
Primary Sequence                    Alternate Sequence
Toggle Reverse:  00000000000000     Toggle Reverse:   00000000000000
Cut:             00000000000000     Cut:              00000000000000
Send:            00000000000000     Send:             00000000000000
Record:          00000000000000     Record:           00000000000000
Play:            00000000000000     Play:             00000000000000
Pause:           00000000000000     Pause:            00000000000000
PF: 1-Menu                          7-Back 8-Forw 9-Default 10-Done
```

PF7 returns to the previous panel.

PF8 displays the next panel in this series, #6 of 9.

Inbound Key Sequences #6

```
Modify Display/User Defined 1                    LINCS C8.2 Central Control
Inbound PA/PF Key Sequences: Display to 1174
Primary Sequence                  Alternate Sequence
 PA1:          1B2C0000000000     PA1:         1B4F6C00000000
 PA2:          1B2E0000000000     PA2:         1B4F6D00000000
 PA3:          1B2F0000000000     PA3:         1B4F5300000000
 PF1:          1B3100000000000    PF1:         1B4F7100000000
 PF2:          1B3200000000000    PF2:         1B4F7200000000
 PF3:          1B3300000000000    PF3:         1B4F7300000000
 PF4:          1B3400000000000    PF4:         1B4F7400000000
 PF5:          1B3500000000000    PF5:         1B4F7500000000
 PF6:          1B3600000000000    PF6:         1B4F7600000000
 PF7:          1B3700000000000    PF7:         1B4F7700000000
 PF8:          1B3800000000000    PF8:         1B4F7800000000
 PF9:          1B3900000000000    PF9:         1B4F7900000000
 PF10:         1B3000000000000    PF10:        1B4F5000000000
 PF11:         1B2D0000000000     PF11:        1B4F5100000000

PF: 1-Menu                        7-Back  8-Forw  9-Default  10-Done
```

PF7 returns to the previous panel.

PF8 displays the next panel in this series, #7 of 9.

Inbound Key Sequences #7

```
 Modify Display/User Defined 1                   LINCS C8.2 Central Control
 Inbound PF Key Sequences: Display to 1174
 Primary Sequence                       Alternate Sequence
 PF12:     1B3D0000000000               PF12:     1B4F5200000000
 PF13:     1B2100000000000              PF13:     00000000000000
 PF14:     1B4000000000000              PF14:     00000000000000
 PF15:     1B2300000000000              PF15:     00000000000000
 PF16:     1B2400000000000              PF16:     00000000000000
 PF17:     1B2500000000000              PF17:     00000000000000
 PF18:     1B5E0000000000               PF18:     00000000000000
 PF19:     1B2600000000000              PF19:     00000000000000
 PF20:     1B2A0000000000               PF20:     00000000000000
 PF21:     1B2800000000000              PF21:     00000000000000
 PF22:     1B2900000000000              PF22:     00000000000000
 PF23:     1B5F0000000000               PF23:     00000000000000
 PF24:     1B2B0000000000               PF24:     00000000000000

 PF: 1-Menu   7-Back                              9-Clr  10-Done
```

PF7 returns to the previous Key Sequences panel. PF8 brings you to Inbound RPB Key Sequences panel #8 or 9.

Inbound Key Sequences #8

```
Modify Display/User Defined 1                    LINCS C8.2 Central Control
 Inbound PF Key Sequences:        Display to 1174
 Primary Sequence                 Alternate Sequence
 RPB1:        00000000000000      RPB1:        00000000000000
 RPB2:        00000000000000      RPB2:        00000000000000
 RPB3:        00000000000000      RPB3:        00000000000000
 RPB4:        00000000000000      RPB4:        00000000000000
 RPB5:        00000000000000      RPB5:        00000000000000
 RPB6:        00000000000000      RPB6:        00000000000000
 RPB7:        00000000000000      RPB7:        00000000000000
 RPB8:        00000000000000      RPB8:        00000000000000
 RPB9:        00000000000000      RPB9:        00000000000000
 RPB10:       00000000000000      RPB10:       00000000000000
 RPB11:       00000000000000      RPB11:       00000000000000
 RPB12:       00000000000000      RPB12:       00000000000000
 PF: 1-Menu                       7-Back  8-Forw  9-Default  10-Done
```

PF7 returns to the previous Modify Display Inbound Key Sequences panel. PF8 displays the next panel in this series, #9 of 9.

Inbound Sequences #9

```
Modify Display/User Defined 1                    LINCS C8.2 Central Control
 Inbound PF Key Sequences:   Display to 1174
 Primary Sequence                 Alternate Sequence
 RPB13:       ________________    RPB13:       ________________
 RPB14:       ________________    RPB14:       ________________
 RPB15:       ________________    RPB15:       ________________
 RPB16:       ________________    RPB16:       ________________
 RPB17:       ________________    RPB17:       ________________
 RPB18:       ________________    RPB18:       ________________
 RPB19:       ________________    RPB19:       ________________
 RPB20:       ________________    RPB20:       ________________
 RPB21:       ________________    RPB21:       ________________
 RPB22:       ________________    RPB22:       ________________
 RPB23:       ________________    RPB23:       ________________
 RPB24:       ________________    RPB24:       ________________
 PF: 1-Menu                       7-Back  8-Forw  9-Default  10-Done
```

PF7 returns to the previous Modify Display Inbound Key Sequences panel. PF8 returns you to the ADU main menu.

Modify Printer Parameters

This panel is used for the customization of printer control parameters. The ALTERNATE TRANSPORT ORDER (also called Secondary Transparent Order) is used for sending transparent data (escape sequences) to the printer, in a format that is commonly used by protocol converters currently on the market.

```
Modify Printer Parameters                        LINCS C8.2 Central Control

Control Sequences:   Controller to Printer

Alternate Transparent Order Sequence

Start:        _____________
Stop:         _____________

PF:  1-Menu                                                  10-Done
```

There is no default key for this panel. When all parameters have been modified, press PF10 to save all changes. PF1 or PF10 will return you to the ADU main panel.

Alternate Transport Order

The data entered is interpreted as an EBCDIC character received from the 3270 host. The characters selected for Alternate Transparent Order are dedicated for use as an order, and cannot be printed at any time. If either the start or stop byte is entered, then the other byte must also be entered or LINCS will display an error message.

The hex range for the start and stop bytes is: 4A to 4F, 5A to 5F, 6A to 6F, 7A to 7F

The table below compares the Alternate Transport order to SNA character string (SCS):

XX can be the same as YY. The data between XX and YY is converted from EBCDIC to ASCII. Each EBCDIC character represents half of the ASCII character that is sent to the ASCII printer. The following example illustrates the conversion:

SCS Order (LU1 Only)	Meaning	Alternate Transport Order (LU1 and LU3)	Meaning
35	Hexadecimal value that indicates the start of the transparent data.	xx*	Hexadecimal character defined in ADU that indicates the start of the transparent data.
count	Defined the count of data bytes following the order. Data that follows the count byte is passed directly to the printer.	yy*	Hexadecimal character defined in ADU that indicates the end of transparent data.

Secondary Transparent Order Translation

XX = 7C hex (EBCDIC @)

YY = 7C hex (EBCDIC @)

You create a printable datastream that looks like this:

@1B5B41424344@

The 1174 receives an EBCDIC RU datastream that looks like this:

7CF1C2F5C2F4F1F4F2F4F3F4F47C

The datastream is converted to the following ASCII datastream and sent to the ASCII printer:

1B5B41424344

Define Translate Tables

This table is used for those devices that transmit and receive 8-bit data characters. This is referred to as the Multinational Character (MCS) set.

```
Define Translate Tables                          LINCS C8.2 Central Control

Translate Table Type:          Display
Translate Tables:              Primary
Action:                        Define

PF:  1-Menu                                  8-Forw   10-Done
```

Note: TTU must be run before defining Translate Tables. TTU follows ADU on the Customization main menu.

The next panel is an example of the Modify Translate Table/Base Definition panel, which is seen when modifying translate tables that have been previously defined.

Translate Table Type

This toggle field allows you to select the type of translate tables that you wish to modify. Following are the choices:

- Display
- Printer
- Host Display
- Host Printer

Translate Tables

This toggle field allows one to select which set of translate tables to apply the changes to. Toggle choices are Primary or Secondary, referring to the translate tables associated with the primary language or the translate tables associated with the secondary language.

Action

This toggle field allows one to select either DEFINE or UNDEFINE. Pressing PF8-Forw proceeds with the selected action as follows.

- If DEFINE is chosen, pressing PF8-Forw will advance the display to panels which allow you to define the selected translate tables. If the selected translate table(s) is currently undefined, the display will advance to the Modify Translate Tables/Base Definition panel. If the selected translate table(s) has already been defined, pressing PF8-Forw will advance directly to the first Translate Table panel for the chosen keyboard type.
- If UNDEFINED is chosen, pressing PF8-Forw will default the selected translate table, erasing any previous modifications which have been made using the ADU. Upon IML, the specified translate table assume default values based upon the Configuration language. To see some sample tables, see the Translate Table examples below the Modify Translate Tables/Base Definition panel.

Modify TTU/Base Definition

This panel is displayed when modifying translate tables which are currently in a default state. The values selected on this panel determine the initial values for the selected translate tables. Subsequent panels allow one to redefine the translate tables as desired.

```
Modify Translate Tables/Base Definition        LINCS C8.2 Central Control

Translate Table Type:            Display
Translate Tables:                Primary
Base Translate Tables:           (01) U.S. English

PF:  1-Menu                                  8-Forw  9-Default  10-Done
```

The following examples assume Translate Table Type of Display and Translate Tables of Primary have been entered in the above panel:

- 8-Bit Display - EBCDIC To ASCII Translate Table
- 8-Bit Display - ASCII To EBCDIC Translate Table
- 7-Bit Display - EBCDIC To ASCII Translate Table
- 7-Bit Display - ASCII To EBCDIC Translate Table
- 8-Bit Printer - EBCDIC to ASCII Translate Table
- 7-Bit Printer - EBCDIC to ASCII Translate Table
- 8-Bit ASCII Host to Coax Display - ASCII to REGEN Translate Table
- 7-Bit ASCII Host to Coax Display - ASCII to REGEN Translate Table
- 8-Bit ASCII Host to Coax Printer - ASCII to EBCDIC Translate Table
- 7-Bit ASCII Host to Coax Printer - ASCII to EBCDIC Translate Table

When all modifications are complete, PF10-Done will bring you to the ADU Complete panel. Or, PF1-Menu will return you to the ADU main panel.

Base Translate Tables (ADU)

Choose from:

- U.S. English
- . . . . . .
- Old Portuguese
- TTU User Defined 1 - only displayed if TTU User Defined 1 is defined
- TTU User Defined 2 - only displayed if TTU User Defined 2 is defined

Note that the values on this panel may vary from the corresponding values in Configuration. For example, if the primary configuration language is U.S. English, a different language may be chosen for the base definition of the translate tables on this panel.

Pressing PF8-Forw will initialize the selected set of translate tables with the chosen values and advance the display to the first translate table diagram.

8 bit Display - EBCDIC to ASCII

Modify Primary Translate Tables LINCS C8.2 Central Control

8 Bit Display
EBCDIC to ASCII Translate Table

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	00	40	F0	7C	D7	79	97	00	00	00	00	9E	00	57	00
1	00	00	5A	F1	C1	D8	81	98	00	00	B3	00	CB	DC	8F	9D
2	00	00	7F	F2	C2	D9	82	99	00	00	4A	00	BC	AA	8A	62
3	00	00	7B	F3	C3	E2	83	A2	00	00	43	00	AC	DA	64	9B
4	00	00	5B	F4	C4	E3	84	A3	00	00	00	00	B7	BF	75	8D
5	00	00	6C	F5	C5	E4	85	A4	00	00	44	00	FC	AD	EB	65
6	00	00	50	F6	C6	E5	86	A5	00	00	00	00	FA	BA	E1	78
7	00	00	7D	F7	C7	E6	87	A6	00	00	48	00	B6	00	EC	00
8	00	00	4D	F8	C8	E7	88	A7	00	00	46	00	9F	61	58	EA
9	00	00	5D	F9	C9	E8	89	A8	00	00	00	00	CC	AB	90	63
A	00	00	5C	7A	D1	E9	91	A9	00	00	00	00	BD	DB	8B	9C
B	00	00	4E	5E	D2	41	92	C0	00	00	00	00	B8	CA	76	8E
C	00	00	6B	4C	D3	E0	93	4F	00	00	00	00	A0	BB	59	80
D	00	00	60	7E	D4	42	94	D0	00	00	00	00	CD	AE	9A	66
E	00	00	4B	6E	D5	53	95	A1	00	00	00	00	BE	00	8C	00
F	00	00	61	6F	D6	6D	96	00	00	00	00	00	B9	00	77	00

PF:1-Menu 7-Back 8-Forw 10-Done

8 bit Display - ASCII to EBCDIC

Modify Primary Translate Tables LINCS C8.2 Central Control

8 Bit Display
EBCDIC ASCII To Translate Table

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	00	40	F0	7C	D7	79	97	00	00	00	00	9E	00	57	00
1	00	00	5A	F1	C1	D8	81	98	00	00	B3	00	CB	DC	8F	9D
2	00	00	7F	F2	C2	D9	82	99	00	00	4A	00	BC	AA	8A	62
3	00	00	7B	F3	C3	E2	83	A2	00	00	43	00	AC	DA	64	9B
4	00	00	5B	F4	C4	E3	84	A3	00	00	00	00	B7	BF	75	8D
5	00	00	6C	F5	C5	E4	85	A4	00	00	44	00	FC	AD	EB	65
6	00	00	50	F6	C6	E5	86	A5	00	00	00	00	FA	BA	E1	78
7	00	00	7D	F7	C7	E6	87	A6	00	00	48	00	B6	00	EC	00
8	00	00	4D	F8	C8	E7	88	A7	00	00	46	00	9F	61	58	EA
9	00	00	5D	F9	C9	E8	89	A8	00	00	00	00	CC	AB	90	63
A	00	00	5C	7A	D1	E9	91	A9	00	00	00	00	BD	DB	8B	9C
B	00	00	4E	5E	D2	41	92	C0	00	00	00	00	B8	CA	76	8E
C	00	00	6B	4C	D3	E0	93	4F	00	00	00	00	A0	BB	59	80
D	00	00	60	7E	D4	42	94	D0	00	00	00	00	CD	AE	9A	66
E	00	00	4B	6E	D5	53	95	A1	00	00	00	00	BE	00	8C	00
F	00	00	61	6F	D6	6D	96	00	00	00	00	00	B9	00	77	00

PF:1-Menu 7-Back 8-Forw 10-Done

7 bit Display - EBCDIC to ASCII

Modify Primary Translate Tables LINCS C8.2 Central Control

7 Bit Display
EBCDIC To ASCII Translate Table

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	20	20	20	20	20	26	2D	2D	20	2D	2D	2D	7B	7D	5C	30
1	20	20	20	20	5B	2D	2F	2D	61	6A	7E	2D	41	4A	2D	31
2	20	20	20	20	5D	2D	2D	2D	62	6B	73	2D	42	4B	53	32
3	20	20	20	20	2D	5E	2D	2D	63	6C	74	2D	43	4C	54	33
4	20	20	20	20	2D	2D	2D	2D	64	6D	75	2D	44	4D	55	34
5	20	20	20	20	2D	27	2D	20	65	6E	76	2D	45	4E	56	35
6	20	20	20	20	2D	2D	2D	20	66	6F	77	2D	46	4F	57	36
7	20	20	20	20	2D	2D	2D	20	67	70	78	2D	47	50	58	37
8	20	20	20	20	2D	2D	2D	20	68	71	79	2D	48	51	59	38
9	20	20	20	20	2D	2D	2D	60	69	72	7A	2D	49	52	5A	39
A	20	20	20	20	5B	21	5D	3A	20	2D	2D	2D	2D	2D	2D	2D
B	20	20	20	20	2E	24	2C	23	5B	2D	2D	2D	2D	2D	2D	2D
C	20	20	20	20	3C	2A	25	40	5D	2D	2D	2D	2D	2D	2D	2D
D	20	20	20	20	28	29	5F	27	5E	2D	2D	2D	2D	20	20	2D
E	20	20	20	20	2B	3B	3E	3D	2D	2D	2D	2D	20	20	20	2D
F	20	20	20	20	7C	5E	3F	22	2D	2D	2D	2D	20	20	20	2D

PF:1-Menu 7-Back 8-Forw 10-Done

7 bit Display - ASCII to EBCDIC

Modify Primary Translate Tables LINCS C8.2 Central Control

7 Bit Display
ASCII To EBCDIC Translate Table

	0	1	2	3	4	5	6	7
0	00	00	40	F0	7C	D7	79	97
1	00	00	5A	F1	C1	D8	81	98
2	00	00	7F	F2	C2	D9	82	99
3	00	00	7B	F3	C3	E2	83	A2
4	00	00	5B	F4	C4	E3	84	A3
5	00	00	6C	F5	C5	E4	85	A4
6	00	00	50	F6	C6	E5	86	A5
7	00	00	7D	F7	C7	E6	87	A6
8	00	00	4D	F8	C8	E7	88	A7
9	00	00	5D	F9	C9	E8	89	A8
A	00	00	5C	7A	D1	E9	91	A9
B	00	00	4E	5E	D2	41	92	C0
C	00	00	6B	4C	D3	E0	93	4F
D	00	00	60	7E	D4	42	94	D0
E	00	00	4B	6E	D5	53	95	A1
F	00	00	61	6F	D6	6D	96	00

PF:1-Menu 7-Back 10-Done

8 Bit Printer - EBCDIC to ASCII Translate Table

Modify Primary Translate Tables LINCS C8.2 Central Control

8 Bit Printer
EBCDIC To ASCII Translate Table

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	20	20	20	20	20	26	2D	2D	FC	E9	CC	45	7B	7D	5C	30
1	20	20	20	20	5B	2D	2F	2D	61	6A	7E	45	41	4A	E6	31
2	20	20	20	20	5D	2D	2D	2D	62	6B	73	49	42	4B	53	32
3	20	20	20	20	2D	5E	2D	2D	63	6C	74	4F	43	4C	54	33
4	20	20	20	20	2D	2D	2D	2D	64	6D	75	55	44	4D	55	34
5	20	20	20	20	2D	2D	2D	20	65	6E	76	59	45	4E	56	35
6	20	20	20	20	2D	2D	2D	20	66	6F	77	43	46	4F	57	36
7	20	20	20	20	2D	2D	2D	20	67	70	78	C4	47	50	58	37
8	20	20	20	20	2D	2D	2D	20	68	71	79	BD	48	51	59	38
9	20	20	20	20	2D	2D	2D	60	69	72	7A	CF	49	52	5A	39
A	20	20	20	20	5B	21	5D	3A	E2	ED	D2	D6	DB	D3	F8	C6
B	20	20	20	20	2E	24	2C	23	EA	F3	D9	DC	C1	DA	E5	D8
C	20	20	20	20	3C	2A	25	40	EE	FA	C3	C2	C9	D1	E7	C5
D	20	20	20	20	28	29	5F	27	F4	F1	D5	CA	CD	20	20	C7
E	20	20	20	20	2B	3B	3E	3D	FB	C0	59	CE	20	20	20	20
F	20	20	20	20	7C	5E	3F	22	E1	A4	AE	D7	20	20	20	2D

PF:1-Menu 2-Default 8-FWD 10-Save

7 Bit Printer - EBCDIC to ASCII Translate Table

Modify Primary Translate Tables LINCS C8.2 Central Control

7 Bit Printer
EBCDIC To ASCII Translate Table

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	20	20	20	20	20	26	2D	2D	20	2D	2D	2D	7B	7D	5C	30
1	20	20	20	20	5B	2D	2F	2D	61	6A	7E	2D	41	4A	2D	31
2	20	20	20	20	5D	2D	2D	2D	62	6B	73	2D	42	4B	53	32
3	20	20	20	20	2D	5E	2D	2D	63	6C	74	2D	43	4C	54	33
4	20	20	20	20	2D	2D	2D	2D	64	6D	75	2D	44	4D	55	34
5	20	20	20	20	2D	27	2D	40	65	6E	76	2D	45	4E	56	35
6	20	20	20	20	2D	2D	2D	20	66	6F	77	2D	46	4F	57	36
7	20	20	20	20	2D	2D	2D	20	67	70	78	2D	47	50	58	37
8	20	20	20	20	2D	2D	2D	20	68	71	79	2D	48	51	59	38
9	20	20	20	20	2D	2D	2D	60	69	72	7A	2D	49	52	5A	39
A	20	20	20	20	5B	21	5D	3A	20	2D	2D	2D	2D	2D	2D	2D
B	20	20	20	20	2E	24	2C	23	5B	2D	2D	2D	2D	2D	2D	2D
C	20	20	20	20	3C	2A	25	40	5D	2D	2D	2D	2D	2D	2D	2D
D	20	20	20	20	28	29	5F	27	5E	2D	2D	2D	2D	20	20	2D
E	20	20	20	20	2B	3B	3E	3D	2D	2D	2D	2D	20	20	20	20
F	20	20	20	20	7C	5E	3F	22	2D	2D	2D	2D	20	20	20	2D

PF:1-Menu 2-Default 8-FWD 10-Save

8 Bit ASCII Host to Coax Display - ASCII to REGEN

```
Modify Primary Translate Tables                    LINCS C8.2 Central Control

                    8 Bit ASCII Host to Coax Display
              ASCII to REGEN Primary Language Translate Table

          0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
        0 00 00 10 20 | 2D AF 3D 8F | 00 00 00 38 | 60 00 40 00
        1 00 00 19 21 | A0 B0 80 90 | 00 00 19 35 | 7A 7F 5A 5F
        2 00 00 13 22 | A1 B1 81 91 | 00 00 1B 22 | 75 63 55 43
        3 00 00 2C 23 | A2 B2 82 92 | 00 00 1C 23 | 65 7D 45 5D
        4 00 00 1A 24 | A3 B3 83 93 | 00 00 00 00 | 70 78 50 58
        5 00 00 2E 25 | A4 B4 84 94 | 00 00 1D 94 | BC 66 9C 46
        6 00 00 30 26 | A5 B5 85 95 | 00 00 00 1E | BA 73 9A 53
        7 00 00 12 27 | A6 B6 86 96 | 00 00 2B 32 | BD AE 9D 8E
        8 00 00 0D 28 | A7 B7 87 97 | 00 00 1F 00 | 61 BB 41 9B
        9 00 00 0C 29 | A8 B8 88 98 | 00 00 2D 12 | 7B 64 5B 44
        A 00 00 BF 34 | A9 B9 89 99 | 00 00 80 8E | 76 7E 56 5E
        B 00 00 35 BE | AA 0A 8A 0F | 00 00 09 08 | 71 79 51 59
        C 00 00 33 09 | AB 15 8B 16 | 00 00 00 24 | 62 74 42 54
        D 00 00 31 11 | AC 0B 8C 0E | 00 00 00 22 | 7C 67 5C 47
        E 00 00 32 08 | AD 3A 8D 3B | 00 00 00 00 | 77 00 57 00
        F 00 00 14 18 | AE 2F 8E 00 | 00 00 00 18 | 72 2A 52 00
PF:1-Menu     2-Default                              7-Back   10-Save
```

7 Bit ASCII Host to Coax Display - ASCII to REGEN

```
 Modify Primary Translate Tables                    LINCS C8.2 Central Control

                    7 Bit ASCII Host to Coax Display
              ASCII to REGEN Primary Language Translate Table

                 0  1  2  3  |  4  5  6  7
              0  00 00 10 20 |  2D AF 3D 8F
              1  00 00 19 21 |  A0 B0 80 90
              2  00 00 13 22 |  A1 B1 81 91
              3  00 00 2C 23 |  A2 B2 82 92
              4  00 00 1A 24 |  A3 B3 83 93
              5  00 00 2E 25 |  A4 B4 84 94
              6  00 00 30 26 |  A5 B5 85 95
              7  00 00 12 27 |  A6 B6 86 96
              8  00 00 0D 28 |  A7 B7 87 97
              9  00 00 0C 29 |  A8 B8 88 98
              A  00 00 BF 34 |  A9 B9 89 99
              B  00 00 35 BE |  AA 0A 8A 0F
              C  00 00 33 09 |  AB 15 8B 16
              D  00 00 31 11 |  AC 0B 8C 0E
              E  00 00 32 08 |  AD 3A 8D 3B
              F  00 00 14 18 |  AE 2F 8E 00
PF:1-Menu                  2-Default              7-Back 10-Save
```

8 Bit ASCII Host to Coax Printer - ASCII to EBCDIC

Modify Primary Translate Tables LINCS C8.2 Central Control

8 Bit ASCII Host to Coax Printer

ASCII to EBCDIC Primary Language Translate Table

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	00	40	F0	7C	D7	79	97	00	00	00	00	9E	00	57	00
1	00	00	5A	F1	C1	D8	81	98	00	00	B3	00	CB	DC	8F	9D
2	00	00	7F	F2	C2	D9	82	99	00	00	4A	00	BC	AA	8A	62
3	00	00	7B	F3	C3	E2	83	A2	00	00	43	00	AC	DA	64	9B
4	00	00	5B	F4	C4	E3	84	A3	00	00	00	00	B7	BF	75	8D
5	00	00	6C	F5	C5	E4	85	A4	00	00	44	00	FC	AD	EB	65
6	00	00	50	F6	C6	E5	86	A5	00	00	00	00	FA	BA	E1	78
7	00	00	7D	F7	C7	E6	87	A6	00	00	48	00	B6	00	EC	00
8	00	00	4D	F8	C8	E7	88	A7	00	00	46	00	9F	61	58	EA
9	00	00	5D	F9	C9	E8	89	A8	00	00	00	00	CC	AB	90	63
A	00	00	5C	7A	D1	E9	91	A9	00	00	00	00	BD	DB	8B	9C
B	00	00	4E	5E	D2	41	92	C0	00	00	00	00	B8	CA	76	8E
C	00	00	6B	4C	D3	E0	93	4F	00	00	00	00	A0	BB	59	80
D	00	00	60	7E	D4	42	94	D0	00	00	00	00	CD	AE	9A	66
E	00	00	4B	6E	D5	53	95	A1	00	00	00	00	BE	00	8C	00
F	00	00	61	6F	D6	6D	96	00	00	00	00	00	B9	00	77	00

PF:1-MENU 2-DEFAULT 7-BACK 10-SAVE

7 Bit ASCII Host to Coax

Modify Primary Translate Tables LINCS C8.2 Central Control

7 Bit ASCII Host to Coax Printer

ASCII to EBCDIC Primary Language Translate Table

	0	1	2	3	4	5	6	7
0	00	00	40	F0	7C	D7	79	97
1	00	00	5A	F1	C1	D8	81	98
2	00	00	7F	F2	C2	D9	82	99
3	00	00	7B	F3	C3	E2	83	A2
4	00	00	5B	F4	C4	E3	84	A3
5	00	00	6C	F5	C5	E4	85	A4
6	00	00	50	F6	C6	E5	86	A5
7	00	00	7D	F7	C7	E6	87	A6
8	00	00	4D	F8	C8	E7	88	A7
9	00	00	5D	F9	C9	E8	89	A8
A	00	00	5C	7A	D1	E9	91	A9
B	00	00	4E	5E	D2	41	92	C0
C	00	00	6B	4C	D3	E0	93	4F
D	00	00	60	7E	D4	42	94	D0
E	00	00	4B	6E	D5	53	95	A1
F	00	00	61	6F	D6	6D	96	00

PF:1-MENU 2-DEFAULT 8-FWD 10-SAVE

Define Display Emulation Selection

The Display Emulation Selection Panel is displayed when an ASCII Device powers on if the device is configured as Prompt for Display Emulation. This panel allows one to define which ASCII display types will be displayed on the Display Emulation Selection Panel.

A one character data entry field precedes each ASCII display type. By placing an asterisk in this field, the display type will appear on the Display Emulation Selection panel which is displayed when an ASCII device is powered on.

By default, all predefined displays will appear on the Display Emulation Selection panel.

```
Define Display Emulation Selection            LINCS C8.2 Central Control
 _ 1.DEC VT1xx               * 16.IBM 3161,3162,3163      * 31.WYSE 50
_ 2. User Defined Display 2  * 17. IBM 3164               * 32.IBM 3151
_ 3. User Defined Display 3  * 18. ADDS Viewpoint A2      * 33.VT3270/2
_ 4. User Defined Display 4  * 19. ADDS Viewpoint 78      * 34.VT3270/3
_ 5. User Defined Display 5  * 20. Esprit Executive 10/78 * 35.VT3270/4
_ 6. User Defined Display 6  * 21. Hazeltine 1500         * 36.VT3270/5
_ 7. User Defined Display 7  * 22. Hewlett-Packard 2621B
* 8. DEC VT52                * 23. Lear Siegler ADM 11
* 9. DEC VT1xx                * 24. Lear Siegler ADM 12
* 10.DEC VT2xx, 7 bit         * 25. Lear Siegler ADM 3A, ADM 5
* 11.DEC VT2xx, 8 bit         * 26. Lear Siegler ADM 1178
* 12.DEC VT320, 8 bit         * 27. TeleVideo 912
* 13.FTTERM Color             * 28. TeleVideo 950
* 14.FTTERM Mono              * 29. TeleVideo 970
* 15.IBM 3101                 * 30. WYSE 60

* = display will appear on Display Emulation Selection panel
PF:  1-Menu                                   9-Default       10-Done
```

The next panel brings us to the ADU Complete panel.

ADU Complete

When PF10-Done is pressed from any ADU panel, the ADU Complete panel is displayed as follows.

```
ADU Complete                                  LINCS C8.2 Central Control

System Disk Drive:              C
Specify IML Options:            No

Data Object Name:               ________

PF: 1-Menu                                    7-Back   10-Save
```

Pressing PF10 will save the ADU updates to the chosen system disk.
After saving, you will return to the Customization main menu.

Data Object Name

This field allows you to define a name that uniquely identifies the ADU data object for transmission by the Central Site Change Management Utility. The specified name will become the 7th token in the data objects canonical name. If no name is specified, the 7th token of the canonical name will be the release level of the System Microcode which is being used to define the data object.

The name may contain up to eight alphanumeric characters (except for the first character which must be alphabetic) with no embedded blanks. Note that the names ALL, WC, and LOCALCHG are reserved and cannot be used.

5. Translate Table Utility (TTU)

The TTU Utility is used to modify EBCDIC-to-REGEN tables which are needed to translate 3270 host data for presentation to attached devices. Up to two sets of the translate tables may be created, referred to as User-Defined 1 and User-Defined 2. The corresponding REGEN-to-EBCIDIC tables will automatically be created.

After all desired translate table changes are made, press PF10-Done to advance the display to the TTU Complete panel. From this panel, the modified tables may be saved to the desired System disk. The saved tables may be associated with either the Primary or Secondary language on the Language Options panel in Configuration.

Note that it is possible to create TTUs without using them online. If a TTU data object exists on the disk used for IML, but the Translate Tables field(s) on the Language Options panel is set to Default, then the TTU data object will not be applied to the translate tables, and an error will be logged. IML will proceed using the default translate tables.

Note: the Language Options panel is after the General Options panel on the Configuration main menu.

```
Translate Table Utility                          LINCS C8.2 Central Control

  Item                      Description

  1                         Define Translate Table
  2                         Display Translate Table Status
 Select Item:  _            Depress Enter

PF:  1-Menu                                                      10-Done
```

Define Translate Table (TTU)

```
Define Translate Tables                          LINCS C8.2 Central Control

 Translate Tables:          User Defined 1
 Action:                    Define

 Press PF8-Forw to proceed with the selected action.

PF:  1-Menu                 8-Forw   10-Done
```

This panel allows you to select which set of Translate Tables (User-Defined 1 or User-Defined 2) will be defined. The ACTION chosen will determine which panel PF8-Forw will take you to next.

Action

This toggle field allows one to select either DEFINE or UNDEFINE. Pressing PF8-Forw proceeds with the selected action as follows.

- If DEFINE is chosen, pressing PF8-Forw will advance the display to panels which allow you to define the selected translate tables. If the selected translate table(s) is currently undefined, the display will advance to the Modify Translate Tables/Base Definition panel. If the selected translate table(s) has already been defined, pressing PF8-Forw will advance directly to the first Translate Table panel for the chosen keyboard type.

- If UNDEFINED is chosen, pressing PF8-Forw will default the selected translate table, erasing any previous modifications which have been made using the ADU. Upon IML, the specified translate table assume default values based upon the Configuration language. To see some sample tables, go to the Translate Table Diagrams.

Translate Tables (TTU)

This toggle field allows you to select which set of Translate Tables you wish to define. Choices are User-Defined 1 and User-Defined 2. The tables are associated which either the primary or secondary language translate tables on the Language Options panel.

Modify TTU/Base Definition

This panel is displayed when modifying translate tables which are currently in a undefined state. The values selected on this panel determine the initial values for the selected translate tables. Subsequent panels allow one to redefine the translate tables as desired.

```
 Modify Translate Tables/Base Definition        LINCS C8.2 Central Control

Translate Tables:           User Defined 1
Base Translate Tables:      (01) U.S. English

PF:  1-Menu                                    8-Forw  9-Default  10-Done
```

Translate Table Diagrams (TTU)

The following topics show examples of the translate table diagrams which are displayed when the DEFINE option is chosen on the Define Translate Tables panel. For each user-defined set of tables, you can customize up to three EBCDIC-to-REGEN tables:

- Standard
- APL - used when the APL character set is used
- CECP - used when CECP is active on a display

Below are examples of the three screens in series. You can view the one(s) you are interested in, although during configuration you would PF8 forward through all three.

The next panel in the forward series is Display Translate Table Status, from the Translate Table Utility menu.

EBCDIC to REGEN Standard

```
Modify Translate Tables/User Defined 1          LINCS C8.2 Central Control
                          EBCDIC TO REGEN STANDARD
                    4   5   6   7       8   9   A   B       C   D   E   F
                0  10  30  31  4B      0F  0E  15  20
                1  0A  38  14  4C      A0  A9  9A  21
                2  0B  39  43  4D      A1  AA  B2  22
                3  1C  3A  44  4E      A2  AB  B3  23
                4  1D  3C  45  4F      A3  AC  B4  24
                5  1E  3E  46  50      A4  AD  B5  25
                6  1F  3F  47  51      A5  AE  B6  26
                7  2A  40  48  52      A6  AF  B7  27
                8  2B  41  49  53      A7  B0  B8  28
                9  37  42  4A  3D      A8  B1  B9  29
                A  1B  19  17  34      79  7D  9B  BA
                B  32  1A  33  2C      7A  7E  9C  BB
                C  09  BF  2E  2D      7B  7F  9D  BC
                D  0D  0C  2F  12      7C  FF  FF  BD
                E  35  BE  08  11      FF  FF  FF  FF
                F  16  36  18  13      FF  FF  FF  31
PF:1-Menu                                       7-Back  8-Forw  10-Done
```

PF7 returns to the Define Translate Tables panel. PF8 displays the APL translate table. PF1-Menu will return you to the Translate Tables menu.

EBCDIC to REGEN APL

```
Modify Translate Tables/User Defined 1          LINCS C8.2 Central Control
                          EBCDIC TO REGEN APL
                    4   5   6   7       8   9   A   B       C   D   E   F
                0  31  31  31  20      70  60  28  90
                1  61  71  31  AC      6D  7D  6A  91
                2  62  72  82  A3      6E  6C  7A  92
                3  63  73  83  22      7F  6F  8A  93
                4  64  74  84  23      8B  9B  31  94
                5  65  75  85  24      8C  9C  31  95
                6  66  76  86  25      8D  8E  31  96
                7  67  77  87  26      B8  9D  31  97
                8  68  78  88  AD      A1  BC  31  98
                9  69  79  89  31      31  31  31  99
                A  31  31  31  31      AA  B2  BE  31
                B  31  31  31  31      AB  B3  BF  A6
                C  31  31  31  31      2C  B6  2A  80
                D  31  31  31  31      AE  B7  A4  A7
                E  31  31  31  31      2E  BA  A5  A9
                F  31  31  31  31      AF  BB  A8  3C
PF:1-Menu                                       7-Back  8-Forw  10-Done
```

PF7 displays the EBCDIC TO REGEN STANDARD Translate Tables panel. PF8 displays the EBCDIC TO REGEN CECP Translate Tables panel. PF1-Menu will return you to the Translate Tables menu.

EBCDIC to REGEN CECP

```
Modify Translate Tables/User Defined 1          LINCS C8.2 Central Control
                        EBCDIC TO REGEN CECP
                    4  5  6  7     8  9  A  B     C  D  E  F
                0  10 30 31 9B    0F 0E 15 20
                1  02 5B 14 7B    A0 A9 01 21
                2  55 56 75 76    A1 AA B2 22
                3  50 51 70 71    A2 AB B3 23
                4  40 41 60 61    A3 AC B4 24
                5  5A 5C 7A 7C    A4 AD B5 25
                6  45 57 65 77    A5 AE B6 26
                7  9C 52 BC 72    A6 AF B7 27
                8  9D 42 BD 62    A7 B0 B8 28
                9  5F 2A 7F 3D    A8 B1 B9 29
                A  1B 19 17 34    03 4B 9E 9F
                B  32 1A 33 2C    58 59 78 79
                C  09 BF 2E 2D    53 54 73 74
                D  0D 0C 2F 12    43 44 63 64
                E  35 BE 08 11    5D 5E 7D 7E
                F  16 36 18 13    46 47 66 3C
PF: 1-Menu                                    7-Back   10-Done
```

PF7 displays the EBCDIC TO REGEN APL panel. PF1 or PF8 returns you to the Translate Tables Menu.

Display Translate Table Status

This panel displays the current status of the Translate Tables as being either modified or defaulted.

```
Display Translate Table Status                  LINCS C8.2 Central Control

  Translate Table          Status
  User Defined 1           Defined
  User Defined 2           Undefine

PF:  1-Menu                                                    10-Done
```

PF1 or PF10 will return you to the Translate Tables main menu.

TTU Complete

When PF10-Done is pressed from any TTU panel, the TTU Complete panel is displayed. Pressing PF10-Save will process your entries, then return you to the Customization menu.

```
TTU Complete                                    LINCS C8.2 Central Control

 System Disk Drive:        C
 Specify IML Options:      No
 Data Object Name:         ________

PF: 1-Menu                                     7-Back 10-Save
```

Data Object Name (TTU)

This field defines a name that uniquely identifies the TTU data object for transmission by the Central Site Change Management Utility. The specified name will become the 7th token in the data objects canonical name. If no name is specified, the 7th token of the canonical name

will be the release level of the System Microcode which is being used to define the data object.

The name may contain up to eight alphanumeric characters (except for the first character which must be alphabetic) with no embedded blanks. Note that the names ALL, WC, and LOCALCHG are reserved and cannot be used.

6. Windowing Setup

Window Setup allows the end user to copy, remove, or name window profiles, name the sessions, and update the Windowing ID. By specifying the update option (,u) and the supervisory password, anyone can update the system profiles, update the Windowing ID, and execute the Copy All function.

Up to three User Window profiles can only be created using Workstation Control (WSC). Once created, you can copy your User Profiles to the System Profiles. End users can use the system profiles, or create their own. Window profiles can have five or less windowing sessions defined.

For more information, see the Window Setup Example, or Windowing Requirements.

Windowing Setup Example

This is an example of a Window Setup panel for port TRC1.000.

```
Windowing Setup                                    LINCS C8.2 Central Control
Port Number:     FET1.002
         User    Profile    Profile
Action   Profile Name       Session     Mod Size   Session    Session Name
  -       1      ________   ..........   Undef       A       ________
  -       2      ________   ..........   Undef       B       ________
  -       3      ________   ..........   Undef       C       ________
                                                     D       ________
                                                     E       ________
       System                                        F       ________
      Profile                                        G       ________
 -       1      ________   ..........   Undef       H       ________
 -       2      ________   ..........   Undef       I       ________
 -       3      ________   ..........   Undef       J       ________

  Action
S = Select Source
D = Select Destination
R = Select Profile to Remove          Windowing ID:__________

PF: 1-Main       4-Copy_All 7-Back  PF8-Forw  PF9-Refresh  PF10-Save
```

Port Number

The port number indicates which port's windowing setup is currently displayed. End users can only update their own windowing setup, but then can display any other setup by paging forward through other ports, or entering an optional port ID from the menu prompt.

Naming Sessions & User Profiles

Session names and user profile names can be assigned only for the current port. To update, use the Tab key to move the desired name fields, enter the desired name, and then press the PF10 key.

Names can be up to eight characters (including spaces) in length.

Profile Session & Mod Size

The Profile Session list and Mod Size field show what sessions will use that particular window profile, and what Mod Size the display is expected to be. If the display does not support any

of the sessions in the windowing profile, or the Mod Size does not match, then another profile should be chosen or created.

Defining System Profiles

System profiles may be defined (by copying an existing profile) only if the update parameter was entered. Follow these steps:

- Select the desired source profile. Use the Tab key to move the cursor to the action column of the desired profile. Enter S to select the source profile. The source profile may be a system or a user profile.
- Select the desired destination system profile. Use the Tab key to move the cursor to the action column preceding the user profile to define. Enter D to select the destination profile.
- Press the PF10 key to process the panel.

Defining User Profiles

User Profiles may be defined only for the current port.

- Select the desired source profile. Use the Tab key to move the cursor to the action column of the desired profile. Enter S to select the source profile. The source profile may be a system or a user profile. If the selected source is a system profile, the mod size and the configured sessions of the port are checked to make sure that the selected system profile can be supported.
- Select the desired destination user profile. Use the Tab key to move the cursor to the action column preceding the user profile to define. Enter D to select the destination profile.
- Press the PF10 key to process the panel.

If the copy is successful, the new user profile is displayed. If the copy fails, a message explaining the error is displayed.

Removing User Profiles

Only user profiles on the current port may be removed. Use the Tab key to move to the action column preceding the desired user profile. Enter R to select the profile for removal, then press the PF10 key to process the panel.

Removing System Profiles

System profiles may be removed only if the update parameter was entered. Use the Tab key to move to the action column preceding the desired profile. Enter R to select the profile for removal, then press the PF10 key to process the panel.

Defining the Windowing ID

A Windowing ID may be defined to uniquely identify a particular windowing data object for CSCM functions. Use the Tab key to move the cursor to the Windowing ID field. Enter a name and then press the PF10 key to process the panel.

Valid names can contain up to eight alphanumeric characters. The first character must be an alphabetic character. No embedded blanks are allowed.

Copy All

This function is only available if the update parameter was entered. Copy All copies the system profiles to the corresponding user profiles for all configured ports, updating only the disk file. LINCS can then be IMLed to make the user profiles active, or you can do a restore profile in Workstation Control (WSC).

Before copying each system profile, the mod size and the configured sessions on the system profile are validated for each port to make sure that this profile can be supported on the specified port.

The Copy All function cannot be executed from a Central Site Control Facility device.

Windowing Requirements

You must use the update option to modify windowing system profiles.

You must enable Windowing on the Device Profile/Display menu (in Configuration), to be able to access Windowing.

Windowing uses some Presentation Space Memory. See Feature Memory on the Configuration main menu to make sure you have enough memory.

Windowing requires a Feature Activation Disk. See Feature Activation/Deactivation on the Customization Data main menu.

Windowing is not supported on DFT terminals.

Playback Sequences

A local playback sequence is a recorded keyboard sequence defined by a user for local use. A global playback sequence is a recorded sequence defined for all users. Local sequences defined have priority over global sequences with the same key definitions.

This panel displays the playback sequences defined to each PFkey for the specified port ID. The port ID defaults to your port, unless you specify a port ID as a parameter to enter this panel, or press PF7 or PF8 to scroll backward or forward to other portIDs.

Note that any local sequences recorded using the Record/Playback feature must use this utility to save the sequences to disk, or the sequences will be lost when the LINCS node is IMLed.

Local Playback Sequences

```
Playback Sequences                              LINCS C8.2 Central Control
Port Number: TRC1.001       Sequence Capacity Remaining: 87 %
CMD            Playback Name       length      CMD    Playback Namelength
G   PF1   .    LOGOFF.........     44PF13       .     ............... 0
L   PF2   .    CICS.CONNECT....    64PF14       .     ............... 0
    PF3   .    ................    0 PF15       .     ............... 0
GL  PF4   .    MY.CONNECT......    32PF16       .     ............... 0
    . . . . . . . . .
    PF12  .    ................    0 PF24       .     ............... 0
Commands       D = Delete Local Sequence
               C = Copy Local to Global Sequence
PF1-Menu       3-Disp_Globals      7-Back  8-Forw  9-Restore  10-Save
```

L denotes a Local Sequence, and G denotes a Global Sequence. If both local and global sequences are defined for a PF key, the local sequence takes precedence. You can only modify the local sequences for the port that the device is attached to.

Local Playback Sequences Commands

On this panel, you can:

- Delete the Local PF key sequences - Enter D in the command column of the PF keys to delete. Press PF10 to save the changes.
- Modify the Playback Name for PF key sequences - Type the new name in the playback name field for the desired PF keys. Press PF10 to save the changes.
- Copy local sequences to global sequences - If you specified the update parameter to enter this panel, then you can copy the local sequences to global sequences. Enter C in the command column of the local PF key sequence(s) to copy, then press PF10 to process and save the global sequence modifications to disk.

Restore Local Playback Sequences

PF9-Restore is only displayed for the current port. It restores the Local playback sequences for the current port from the system disk. The device must be configured to record in order for this key to operate.

Save Local Playback Sequences

PF10-Save processes the panel and saves all the currently defined local playback sequences to the system disk. It is only displayed if the device profile used is configured to record (the RPB Record Function has been enabled on the Device Profile/Display panel available from the Configuration Main menu), and only for the current port.

Global Sequences Example

```
Global Playback Sequences                          LINCS C8.2 Central Control

          CMD     Playback Name   length       CMD     Playback Name length
G   PF1    .      LOGOFF.........   44    PF13   .       ..............  0
    PF2    .      ...............   64    PF14   .       ..............  0
    PF3    .      ...............    0    PF15   .       ..............  0
G   PF4    .      MY.CONNECT......  32    PF16   .       ..............  0
    . . . . . . . .
    PF12   .      ...............    0    PF24   .       ..............  0

Commands          D = Delete Global SequenceRPB Sequences ID: _________

PF1-Menu3-Return 9-Restore  10-Save
```

If you press PF3-Disp_Globals from the local Playback Sequences panel, you will see this panel with all global sequences. Access to the global sequences is configured by enabling the Global Sequence Access field on the Device Profile/Display panel (available from the Configuration Main menu).

PF3-Return will return you to the Local Playback Sequences panel.

Global Playback Sequence Commands

On this panel, you can:

- Delete the Global PF Key Sequences - Enter D in the command column of the Global PF key sequences to delete. Press PF10 to save the changes.
- Modify the Playback Name for Global PF Key Sequences - Type the new name in the playback name field for the desired PF keys. Press PF10 to save the changes.
- Modify the RPB Playback Sequences ID - Type a new name that defines this global RPB data object for CSCM. The name can be up to eight alphanumeric characters, starting with an alphabetic character, with no embedded blanks. Press PF10 to save the changes.

Restore Global Playback Sequences

PF9-Restore restores the Global Playback Sequences from the system disk. It is only available if the update parameter was specified when entering this utility.

Save Global Playback Sequences

PF10-Save saves all panel changes to the system disk. It is only available if the update parameter was specified when entering this utility.

Central Site Customization

In order to use Central Site Customization, you must enable Central Site Customization on the General Options panel, during configuration. Also, Central Site Customization is always available if you IML the default configuration.

Entering the optional update parameter (,u) and the supervisor password prior to displaying the Customization Data Menu allows you to configure, save and delete library members when executing Central Site Customization. If the password is not entered, the members may be displayed but not saved.

```
Central Site Customization                      LINCS C8.2 Central Control

Library Disk Drive:         Drive C
Default Version Numbers:    Enable

PF: 1-Menu                                                  10-Process
```

Choose the disk drive that has the Central Site Library Directory (CSLD), and press PF10 to read that drive. If the chosen disk drive was a floppy, you will advance to the Floppy Library Disk Options panel before advancing to the CLSD panel. If the chosen drive was a hard disk, you will go directly to the CSLD panel.

Library Disk Drive

This is a toggle field which allows you to chose the drive from which the Central Site Library Directory (CSLD) will be read.

If the drive chosen is a hard drive (i.e. C or D) then the Central Site Library Directory (CSLD) from the chosen drive will be read in and displayed. If a Library subdirectory does not already exist, one will automatically be created prior to displaying the CSLD panel.

If the drive chosen is a floppy drive (i.e., A or B), the Floppy Library Disk Options panel will be displayed upon pressing PF10-Process.

Default Version Numbers

Options are:

- ENABLE (default)- Version numbers will automatically be assigned to library members as they are saved.
- DISABLE - you will be prompted for a version number each time a library member is saved.

Floppy Library Disk Options

This panel allows you to chose whether or not you wish to read in an existing library directory, or create a new library directory. It also allows you to name or rename a library disk for tracking purposes.

Note: If you enter a Library Name, your diskette will be relabeled, whether you choose READ or CREATE as the Action.

```
CSC - Library Floppy Drive                    LINCS C8.2 Central Control

Library Disk Drive:          Drive A
Diskette Type:               Library
Library Name:                ________
Action:                      Read

PF: 1-Menu                                    9-Refresh     10-Process
```

PF10-Process will bring you to the CSLD panel.

Library Disk Drive (Floppy)

This is a protected field which displays the Library Disk Drive for informational purposes.

Diskette Type

This is a protected field which displays the type of disk which is currently inserted in the Library Disk Drive.

Library Name

This is an eight character field which allows you to name your Library disk. If a Library disk is already inserted in the Library Disk Drive, this field will display the name of the Library disk. If desired, you may overwrite this field to rename your Library Disk. If you are creating a new Library disk, the name entered in this field will become the name of the newly created Library Disk.

Action

This is a toggle field which allows you to chose the following options.

- Read - If the Library Disk Drive contains a Library disk, the CSLD will be read from the disk and the Central Site Library Directory panel will be displayed. If the drive does not contain a Library disk, you will be prompted to insert a Library disk.
- Create - If the Library Disk Drive contains a valid disk, you will be prompted to press PF10-Process a second time to initiate the action. This is to protect you from destroying a valid disk. When you press PF10-Process the second time, a Library disk will be created on the floppy in the selected Library Disk Drive, and the Central Site Library Directory panel will be displayed.

Central Site Library Directory

The Central Site Library Directory (CSLD) displays the library members contained on the Central Site Library disk that was specified on the previous menu.

```
Central Site Library Directory                    LINCS C8.2 Central Control

Option:  Retrieve Library Member      Library Disk Name: C:LIB00001
Member Name:  ________                Disk Space Used:   21%

MEMBER NAME  VERSION    DATE     TIME   RELLVL   INTLVL  NETWORK_ID    LUNAME

_ MEMNAM01   VER0001  01/20/93  12:01   C1.0     2031   NETID001      LUNAME01

_ MEMNAM02   VER0001  01/20/93  12:01   C1.0     2031   NETID001      LUNAME02

  .  .  .  .

_ MEMNAM15   VER0002  01/22/93  12:01   C1.0     2032   NETID001      LUNAME15

PF: 1-Menu     3-Sort_Date  4-Sort_Name  5-Sort_Lvl  7-Back  8-Forw  10-Process
```

First select the library members you wish to modify, then toggle the option field to choose the action you wish perform on those library members. PF1 will return you to the Customization Menu.

Disk Space Used

If the library is on the floppy, it represents the percent of disk space used to store library members. For a hard drive, it shows the total disk space used.

Version Number

Used to track the latest changes and updates to a library member. The version number is also part of the canonical name and is assigned when the Save Library Member function is invoked.

Date and Time

This is when the library member was created or last updated.

Release Level and Integration Level

The Release Level is the functional release level of LINCS.

The Integration Level is the maintenance level of the current release.

Network ID

Identifies the network that the library member customization data is intended for. This is part of the canonical name and is defined during configuration.

Logical Unit Name (LUNAME)

This name identifies a LINCS node that is using CSCM. The LUNAME is part of the canonical name and is defined during CSCM configuration.

Member Name

The name consists of up to eight alphanumeric characters with no imbedded spaces and must begin with an alpha character. It is recommended that the user assign the same name to the library member being saved as assigned to the CSCM LUNAME configuration parameter. This will aid the user in keeping track of which library member's configuration exists at the various network sites.

Central Site Library Version Number

Library member version numbers are used by CSCM when distributing the customization parameters electronically. Version numbers are also used for record-keeping purposes and to identify a changed version of customization parameters. It is recommended that the date be used as a version number to track the latest changes made to a library member. Central Site Customization does not allow multiple copies of library members with the same name; however, NetView DM will allow multiple copies with the same name to be stored in the Resource Repository. This way, older versions of library members may be maintained at the host and the latest version of a particular library member can be maintained in the CSLD.

The version number consists of up to six alphanumeric characters with no imbedded spaces. If User-Assigned Version Numbers was not selected, ascending numbers will be used beginning with 000001.

Option on Central Site Library Directory

Toggle to select the desired option:

- Retrieve Default Configuration
- Retrieve Library Member
- Create System Disk
- Configure Working Copy
- Save Library Member
- Delete Library Member
- Retrieve System Disk Configuration
- Search for Member
- Browse Member
- Copy Library Member

Selecting Library Members

You may modify existing library members on the Central Site Library Directory panel by marking the member with an x or entering a name at the member name prompt. The x is replaced with an * after an entry has been processed.

Members may be processed individually or in multiples. If ALL is entered at the member name prompt when a multimember function is selected, the selected option is applied to all library members. The user will receive an error message if the keyword ALL is entered for a single-member function. The Library Function Table illustrates which CSLD functions are single-member or multimember functions.

LIBRARY FUNCTION	Single	Multi
Retrieve Default Configuration	X	
Retrieve System Disk Configuration	X	
Retrieve Library Member	X	
Save Library Member	X	
Browse Member	X	
Create System Disk		X
Delete Library Member		X
Configure Working Copy	X	
Copy Library Member		X
Search for Member	X	

Retrieve Default Configuration

If the Retrieve Default Configuration option is selected, default configuration values are stored in the Working Copy. It sometimes may be easier to copy and modify default configuration values, rather than changing the contents of a previously created library member or the current Working Copy.

Panel Processing: PF10-Process loads default configuration values into the Working Copy.

Retrieve Library Member

This function allows the user to select and load a library member into the Working Copy for modification. If the selected source is a lower microcode level than the System microcode, an automatic Microcode Upgrade is done to the Working Copy.

PF10-Process loads selected library member into the Working Copy.

Retrieve System Disk Configuration

This panel is displayed when the user presses PF10 to process the Retrieve System Disk Configuration option.

```
 CSLD/Retrieve System Disk Configuration        LINCS C8.2 Central Control
 Customization Data Source: Drive C
PF: 1-Menu                  3-Return                   10-Process
```

Customization Data Source

The Customization Data Source field is a toggle field used to select the Configuration Data Object to be read into the working copy. Once the desired value has been set, press PF10 to retrieve the Configuration Data. To return to the CSLD panel, press PF3.

Configure Working Copy

This function allows the user to customize the working copy fora particular library member. The configuration screens will appear the same as when using the Configuration Utility.

When configuration is complete, and the entries have been validated, the PF3-Return key will redisplay the Central Site Library Directory panel. From here, you may save the working copy to a Library Member.

Save Library Member

This function allows the user to save the configuration parameters residing in the Working Copy to a library member. If the member is configured to support CSCM, a unique canonical name is assigned to the library member being saved by the CSC utility. For more information on canonical names, please refer to the topic titled Data Object Canonical Names.

This toggle option is available only if the Customization Data utility was entered in update mode (,u and the supervisor password were entered). You will be prompted for a version number, if the Default Version Number option was set to DISABLE upon entering the Central Site Customization utility. The Version Number prompt will appear to the right of the Member Name field on the CSLD panel.

When saving a library member, you either assign a library member name at the member name prompt on the CSLD panel or mark an existing library member to overwrite. You may also be prompted for a version number.

Delete Library Member

The Delete Library Member function allows the user to delete any unneeded library members from a Library disk. Multiple members may be selected and deleted.

Panel Processing: PF10 verifies the user input and initiates the Delete function.

This toggle selection will not be displayed, or accessible, if the utility was not entered in update mode.

Browse Member

The Browse Member utility allows one to display the configuration data for a library member. The member data is read into the working copy and automatically upgraded if necessary. Note that the upgrade affects only the working copy. The library disk remains intact.

Search for Member

This option searches for the member name (or portion there of) entered at the member name prompt. If found, the directory is redisplayed with the member as the first on the screen. For example, if the user enters “MEM0”, the first member found beginning with “MEM0” will be displayed.

Create System Disk

This panel is displayed when the user presses PF10 to process the Create System Disk option. The PF3-Return key allows the user to return to the CSLD panel.

The Create System Disk option allows you to copy a Library member, or the System Microcode and a Library member, to a destination System disk. Using System Disks, you can generate diskettes for manual distribution to Network Sites, if you do not wish to use Netview/DM for electronic transmission.

```
CSLD/Create System Disk                          LINCS C8.2 Central Control

Member Name:                          MEMNAM01
Release Level:                        C1.0
System Disk (Destination) Drive:      B
Data Objects to Copy:                 Member Only

PF: 1-Menu                  3-Return                    10-Process
```

Member Name

This is a protected field that displays the Library member which will be copied to the selected disk.

System Disk (Destination) Drive

This field toggles through the available disk drives. Choose the drive you want the Library member to be copied to.

Data Objects to Copy

Options are:

- MEMBER ONLY copies the configuration member (selected on the CSLD panel) to the disk in the destination drive. The destination drive must contain a previously created System disk.
- SYSTEM MICROCODE AND MEMBER copies the System Microcode and the configuration member (selected on the CSLD panel) to the disk in the destination drive. The System Microcode which will be copied is the System Microcode on the hard drive used to IML (i.e., the currently running microcode).

Copy Library Member

This function allows you to merge additional Library members onto an existing Library disk.

```
CSLD/Copy Library Member                        LINCS C8.2 Central Control

Member Name:                MEMNAM01
Source Disk Drive           Drive C
Destination Disk Drive:     Drive A

PF: 1-Menu                  3-Return            10-Process
```

Once the source and destination disk drives have been selected, press PF10 to perform the merge (copy). If the Library member already exists on the disk, an error message will appear:

Member Name Already Exists — Press PF10 to Overwrite

Press PF10 to overwrite the Library member already on the destination disk, or PF3-Return to terminate the copy.

Feature Activation/Deactivation

The Feature Activation/Deactivation panel displays all features which are currently activated. You can activate or deactivate a feature from this panel with PF10.

```
Feature Activation/Deactivation                 LINCS C8.2 Central Control
 Features currently activated on this unit... SN 23095593:

   IPX SNA/TN3270 Clients           016 Extended ESCON CUs

 To activate or deactivate features, insert Feature disk and press PF10

PF: 1-Menu                                                 10-Process
```

FAD Update

The panel shows the type of Feature Disk which is installed and allows the PF4 and PF5 options which will activate or deactivate the feature.

```
Feature Activation/Deactivation                LINCS C8.2 Central Control
The following features are currently enabled:

 IPX SNA/TN3270 Clients             016 Extended ESCON CUs

Feature Disk installed:  004 Extended ESCON CUs

PF: 1-Menu                  4-Activate  5-Deactivate
```

Once the PF4 or PF5 option is chosen to activate or deactivate a feature, the panel will be updated to reflect the currently activated features.

When you are done, or if you chose not to activate or deactivate a feature, you may press PF1 to return to the Customization Data menu.

FAD Options

Below is a list of the FADs which require activation using a Feature Activation Disk. If these features are configured, but not activated, then an IML error will occur. You must either reconfigure and disable the feature in error, or activate the feature using a Feature Activation Disk (FAD). FADs indicated with an asterisk are no longer required (LINCS 7.1 and higher). Information on the older FADs has been included in case you are running an older version of the LINCS software. LINCS supports the features previously requiring the indicated FADs, as part of the base software.

Windowing *	IPX SNA Server	SDLC/DAP *
Extended Non-SNA LU Support *	Incoming LANSYS *	Multiple synchronous lines *
Outgoing LAT Connections *	Generation C Support *	Extended Attached Device Support *
Outgoing TELNET Connections *	Incoming LAT *	Incoming TELNET *
TCP/IP SNA Encapsulation *	SNA Concentrator *	Access Server *
APPN Network Node *	TN3270 Server	Frame Relay *
X25 Gateway *	Extended ESCON CUs	Incoming/Outgoing Telnet
TN3270/IPX SNA Clients		

Windowing *

This FAD is required if any Device Profile has the windowing feature enabled.

Multiple synchronous lines *

This FAD is required if a connector other than the first connector is configured on an SCC and/or HSC board. Only the 1st connector (e.g., HSC1.0 or SCC1.0) is allowed without the FAD. One FAD will enable the extra connectors on all configured SCC and HSC boards.

SDLC/DAP *

This FAD is required if any Gateway Circuit has a Downstream Connection configured for SDLC/DAP.

Extended Non-SNA LU Support *

This FAD is required if more than 32 LUs are configured on any Channel/Non-SNA Host Circuit. It enables an additional 32 LUs to be defined on any Non-SNA Host Circuit. Up to three Extended Non-SNA FADs may be used to allow up to 128 Non-SNA LUs for each Non-SNA Host Circuit. If multiple channel interfaces are installed in a single LINCS node, this FAD will enable the feature on both channel interfaces.

Incoming LANSYS *

This FAD is required if any Incoming LANSYS connections are configured on any LAN Line. Five different FADs are sold:

8, 16, 32, 64 and 128 connections

They may be used in any combination to support up to 256 LANSYS connections.

Outgoing TELNET Connections (Now part of 'Incoming/Outgoing Telnet')

This FAD is required if more than 2 Outgoing TELNET Connections (from LINCS to a TELNET Host) , or any LAN Print Server Connections (TCP and LPD) are configured, but has been superseded by the Incoming/Outgoing Telnet FAD. Four different FADs are sold:

16, 32, 64, and 128 connections

They may be used in any combination to support up to 256 outgoing TELNET Connections.

Outgoing LAT Connections *

This FAD is required if any Outgoing LAT Connections are configured, and at least one Device Profile allows access to LAT Hosts. Two FADs are sold to allow devices access to Outgoing LAT Connections:

- Port LAT Terminal Server allows up to 16 ports
- Extended LAT Terminal Server combined with the 16 Port FAD, enables LAT Terminal Server sessions on up to 256 ports

Generation C Support FAD *

The Generation C FAD is required to IML with LINCS Generation C software. To configure and enable the FAD, IML with default data objects (by pressing Config when the controller is at state 500).

Extended Device Support *

This FAD is only required for 1174 models, and allows the number of attached devices to exceed 64.

TCP/IP SNA Encapsulation Support FAD *

This feature is required to communicate via SNA over TCP/IP.

Incoming LAT *

This FAD is required if any LAT displays are configured on a Network Device Definition panel.

Incoming TELNET (Now part of 'Incoming/Outgoing Telnet')

This FAD is required if any TELNET devices are configured on a Network Device Definition panel, but has been superseded by the Incoming/Outgoing Telnet FAD. These devices include:

- TELNET display
- TCP printer
- LPD

IPX SNA Server (Now part of 'TN3270/IPX SNA Clients')

This FAD is required if more than 16 IPX SNA Server LUs are configured, but has been superseded by the TN3270/IPX SNA Clients FAD. Four different FADs are sold:

16, 64, 128 and 256 LU support

These FADs may be used in any combination to allow SAA clients to connect to up to 4048 LUs.

SNA Concentrator FAD *

This FAD is required on the 9300 model if SNA Concentrator is enabled on the Product Definition Panel.

Access Server FAD *

This FAD is required on the 9300 model if Access Server is enabled on the Product Definition Panel.

APPN Network Node FAD *

This FAD is required if APPN is configured.

TN3270 Server (Now part of 'TN3270/IPX SNA Clients')

This FAD is required if more than 16 TN3270 clients are configured, but has been superseded by the TN3270/IPX SNA Clients FAD. Any combination of these FADs may be activated up to a maximum of 1024 TN3270 Users. The currently available FADs are:

- 16 Connections
- 64 Connections
- 128 Connections
- 256 Connections

Frame Relay FAD *

This FAD enables Frame Relay on all HSC lines.

X.25 Gateway *

The gateway support for X.25 will allow hosts on the upstream side to access devices on the downstream side via LLC, TCP/IP, Token Ring, etc. Also gateway support for X.25 on the downstream side will allow those devices tied on the X.25 network to access hosts on the upstream side via LLC, TCP/IP, Token Ring, etc.

Extended ESCON CUs

This FAD permits additional CUs to be configured beyond what is supported by the basic LINCS software. It is required if you wish to run more than 4 CUs on the SCON-22L, more than one CU per eSCON card on the 1174-25S, and is also used with the SCON-25L when more than one ESCON card is installed. This FAD comes in 3 different increments, and may be added cumulatively to allow the maximum number of CUs supported by the specific models. The currently available FADs are:

- 1 Extended CU
- 4 Extended CUs
- 16 Extended CUs

Incoming/Outgoing Telnet

This FAD allows support for more than 32 Incoming or Outgoing Telnet connections. Installing this FAD permits up to the maximum Telnet connections supported by the specific model. Note that additional Ethernet (or Token Ring) cards may have to be added to support the maximum number of sessions allowed on a particular model.

TN3270/IPX SNA Clients

This FAD is required if more than 32 IPX SNA or TN3270 clients are configured. When installed, this FAD will allow as many clients as the platform supports to be configured.

7. Supervisor Functions Menu

```
Supervisor Functions Menu                          LINCS C5.0 Central Control

  Item                      Description
  1                         Set System Clock
  2                         IML

  Select Item:              Depress Enter

PF: 1-Menu
```

All of the tests require the Supervisor password, if one is configured on the General Options panel of Configuration. PF1-Menu will return you to the Central Control main menu.

Set System Clock

On this panel, you can to enter the date and time for the system clock in LINCS. It is important that the system clock be set accurately since the date and time are recorded when files are written and stored in event logs when major events occur. To make changes, enter the desired time in hours (HH), minutes (MM), seconds (SS), month (MM), day (DD), and year (YY), and then press the PF10 key.

```
Set System Clock                                   LINCS C5.0 Central Control
  Time:  HH MM SS           Date: MM DD YY
         07 55 09                 02 02 92
System Clock Has Been Set

PF: 1-Menu                  10-Process
```

IML

The IML panel allows one to IML LINCS without manually pressing the IML key on the operator panel. This panel by default performs a quick IML, when you only need to apply minor configuration changes.

A quick IML reloads only the customization data objects, unlike a full IML, which reloads all the LINCS software. A quick IML will not occur if you modified your hardware requirements, or if the configuration changes you made require additional software to be loaded onto a board. If a quick IML cannot be performed, LINCS performs a normal IML.

```
IML                                                LINCS C5.0 Central Control

IML Options:                    IML Now
System Disk Drive:              Drive C Data Object State:
Production Default Customization Data:  Disable

PF: 1-Menu                                                  10-Process
```

IML Options

This is a toggle field which allows one to specify:

IML Now causes LINCS to IML as soon as the PF10 key is pressed.

IML Later causes the IML Time panel to be displayed upon pressing PF10.

IML Cancel cancels the time previously set by the IML Later function.

Force a DUMP and IML causes LINCS to do a Dump and upon completion of the Dump, conduct an IML. Once the IML has completed, the Dump may be retrieved via FTP or by using Media Management to copy the Dump onto a floppy disk.

System Disk Drive

This is a toggle field which indicates the hard disk from which to IML. It toggles through hard disks which are present.

Data Object State

This field indicates which data objects to use for IML. The following are the valid data object states:

Production

Trial

Backlevel

Trial and Backlevel data objects can only be created with Central Site Change Management and distributed to the LINCS platform via NetView Distribution Manager.

Default Customization Data

When enabled, LINCS will boot up using the default configuration. This is the equivalent of pressing the “Config” button at state 500 of the IML.

IML Later

When the IML time panel appears, the current time (based on the System clock) is displayed. You may change the time to specify the time at which IML should occur.

```
IML Time                                        LINCS C5.0 Central Control

Time:        HH   MM   SS             Date:   MM  DD  YY
             17   00   00                     03   01 99

PF: 1-Menu    9-Default  10-Process
```

The following PF keys are valid on the IML Time panel.

PF1-Menu - Return to the previous menu; don’t IML.

PF9-Default - Default to the current time.

PF10-Process - If the IML time is not modified by the user, pressing PF10 will cause LINCS to IML immediately. If the time is changed, IML will occur at the specified date and time. Thirty minutes prior to IMLing, broadcast messages will be sent to all attached devices indicating the time at which IML will occur. This message will be broadcast at 5 minute intervals prior to the IML, and then 1 minute before.

8. Media Management Menu

```
Media Management Menu                              LINCS C8.2 Central Control

  Item                        Description

  1,u                         Display/Update Disk Information
  2                           Copy Disk
  3                           Copy Data Objects
  4                           Copy File
  5                           Refresh LU nickname file
  6                           Create Blank System Disks
  7                           Backup
  8                           Restore
  9                           Copy Production to Trial
  10                          Copy Trial to Production


  Select Item:                Depress Enter

PF: 1-Menu
```

The Media Management Menu contains utilities which allow one to copy disks, copy files, and delete files or entire subdirectories on the hard disk or floppy diskettes.

PF1-Menu will return you to the Central Control main menu.

Display/Update Disk Information

```
Disk Information                                   LINCS C8.2 Central Control

Disk Type:                  System
Source Disk Drive:          Drive C
Action:                     Display Data Objects

DISK DRIVE USAGE (Kbytes)

System:                     0000040960
Central Site Library:       0000004240
LPD Printers:               0000000000
LPD Print Servers:          0000000000
Available:                  0000005840
Total Capacity:             0000051040

PF: 1-Menu                                         9-Refresh      10-Process
```

Action

Action toggles between Display Data Objects and Delete Disk. PF10 initiates the action.

- Delete Disk will only be available if the optional update parameter (,u) was entered when selecting this panel. If the Source is a hard disk, then the subdirectory specified in the Disk Type field will be deleted from the hard drive. If the Source is a floppy disk, then the floppy disk will be reformatted.
- Display Data Objects will bring you to the Disk Catalog panel for the specified Disk Type.

Disk Type

Selects the disk type.

- For a hard disk, you toggle to select the subdirectory you want.
- For a diskette, the type of directory on the diskette will be shown.

Source Disk Drive

Selects which disk drive is to be viewed. Drive C is the default drive for LINCS, but you can also view floppy drives for data objects. Note that you will not get a list of files on the drive, but only data objects.

Disk Drive Usage

The Disk Drive Usage portion of the panel displays how the Hard Drive is currently allocated. This information is in the form of a snapshot at the time the hard drive is displayed. LINCS does not allow you to reallocate memory usage on this panel, but merely provides you the current allocation. The PF9 key is used to refresh the Disk Drive Usage statistics.

System

The value displayed for System indicates how much of the hard drive is allocated for use by the LINCS operating system. This value is normally set for 40960 Kbytes, although it would be smaller if the installed hard drive has a smaller capacity than 40 MB. The LINCS operating system will normally acquire the entire hard drive if the drive is less than 40 MB. A special RPQ (Maximize User Disk Space) is available to limit the operating system to 15 MB. This can be enabled on the RPQ configuration menu. You must access the RPQ menu through the Configuration Menu (Panel_List).

Central Site Library

The value displayed for the Central Site Library is determined by the number of (configuration) data objects stored there. Additional space is allocated every time a new library member is saved as long as the space is available.

LPD Printers

LPD Printers storage space is allocated every time a print job is spooled onto the hard drive, destined for a LAN-attached LPD printer. LINCS must keep this print job in a file and advise the LPD print server the size of the job prior to getting permission to send it. Once the print job has been successfully sent to the print server, the print file is purged and the storage space is given back to Available storage area. Because of the transitional nature of this storage, you will not normally see storage space allocated to LPD Printers except when a print job is actually queued. The refresh key PF9 allows you to manually refresh the current allocation figures. Use of the hard drive for spooling LPD print jobs is determined by two configuration items. The first that must be enabled is on the TCP/IP Options panel and is the LPD Server/Printers Drive option. This item allows the hard drive to be used for LPD print job storage. The second configuration item that must be configured is on the Network Device Definitions panel, where you must configure the LPD Feature Memory to use the disk.

LPD Print Server

The storage space used for the LPD Print server is allocated whenever a print job is received via the LPD Print Server feature for one of the LINCS printers. LINCS allocates the storage

space when it is determined that the requested space is available during the initial exchanges with the LPR client. The space remains allocated until the print job has completed or until it is deleted. The refresh key PF9 allows you to manually refresh the current allocation figures. The use of the hard drive for LPD spooling must be configured. This is enabled by the LPD Server/Printers Drive option on the TCP/IP Options panel of configuration.

Available Storage Space

The available storage space is determined by subtracting the currently allocated storage space from the total storage space. If upon viewing this panel, it is apparent that the available storage space runs to a very low value either from use of the Central Site Library or by spooling LPD print jobs, you may need to get a new larger hard drive, or a second hard drive (for models that support two hard drives). See the Total Capacity heading following this one.

Total Capacity

The total capacity of the hard drive is determined by two things. The first thing that determines the total capacity figure is the size of the hard drive itself. Through the life of the LINCS operating system, the capacity of hard drives has grown tremendously. Early drives shipped on LINCS platforms where as small 50 MB in size. New drives may be in the range of several hundred MB or larger. The second determination of total capacity is by what capacity it has been formatted for. Equipment originally shipped with Gen B installed on it, may have been formatted for 20 MB, even though the hard drive is capable of being formatted for even more space. If by viewing this panel, you see that the total capacity of the hard drive is 20 MB, you may wish to contact a Visara service representative to determine whether the hard drive can be reformatted for a higher capacity. If you choose to reformat the hard drive yourself, you may use the utilities within LINCS Offline Utilities to accomplish this goal. Just make sure that you have a set of LINCS code on floppy with your configuration for reloading after the reformat.

Disk Catalog

Selecting Display Data Objects as the Option on the Disk Information panel displays the following panel:

```
Disk Catalog/C:System                                  LINCS C8.2 Central Control
C State Rel   IL   Date      Time  Canonical Name (note, @ = 1174.NA)
_ Prod  C1.0  3050 01/20/94  15:00 MCUST.@.NETID001.LUNAME01.CFG.MEMBER01.000001
_ Prod  C1.0  3050 01/01/94  12:00 MCODE.@.FUNCTEC.B0200.SYSTEM
_ Sent  C1.0  3050 xxxxxxxx  xxxxx MCODE.@.FUNCTEC.C0100.SYSTEM
_ Trial C1.0  3050 xxxxxxxx  xxxxx MCUST.@.NETID001.LUNAME01.CFG.MEMBER01.000002
_ Prod  C1.0  3050 xxxxxxxx  xxxxx MCUST.@.NA.NA.ADU.B0200
_ Prod  C1.0  3050 xxxxxxxx  xxxxx MCUST.@.NA.NA.KDU.B0200
_ Prod  C1.0  3050 xxxxxxxx  xxxxx MCUST.@.NA.NA.TTU.B0200
_ Prod  C1.0  3050 xxxxxxxx  xxxxx MCUST.@.010495.1423.DMP.C0200.3032
Commands:   D=DELETE
PF: 1-Menu     3-Return              7-Back     8-Forw        10-Process
```

PF1-Menu will return you to the Media Management Menu

PF3-Return will return you to the Disk Information panel.

Commands for Disk Catalog

A data object may be deleted by entering a D or d in the command "C" column and pressing the PF10 key, only if the update option (,u) and the supervisor password were entered prior to entering the utility. If they were not entered, then the PF10 key will not be displayed. Any data object except the production System Microcode data object may be deleted.

Data Object State

A data object can be in one of four possible states:

- Production (either removably or nonremovably)
- Sent
- On-Trial
- Back-Level

Sent, On-Trial and Back-Level are created using Central Site Change Management (CSCM) in conjunction with IBM's Netview/DM.

Integration Level

Number assigned to interim software levels between releases. The release date and time is shown in the next two columns.

Date and Time

The date and time fields indicate when the data object was created on the LINCS hard drive or floppy.

Data Object Canonical Names

Each data object is uniquely identified by a structured name known as the data object's canonical name. The name is represented this way to work with NetView DM, which can distribute the data objects over the network.

A canonical name consists of several tokens (or fields) separated by a period, as defined by the SNA/FS architecture. The content of a token varies depending on the data object.

The type of data object is recognizable by the fifth shown token (the sixth actual token), as, DSL, ADU, KDU, etc.

The note after the Canonical Name says @=1174.NA. The actual model number will match the model of your LINCS node. The model number is for identification only; it does not tie it to the model it was generated on. If the Data Object is transferred to another LINCS node that is a different model, the model number in the Canonical Name will be updated when it is received by the LINCS node.

Copy Disk

```
Copy Disk                                    LINCS C8.2 Central Control

Disk Type:                  System
Source Disk Drive:          A
Destination Disk Drive:     C

PF: 1-Menu                                   10-Process
```

This utility is used to make a complete copy of the disk type (subdirectory on the hard drive) that is specified. This can be used to make a backup copy of your System directory including the configuration file. When using this utility, LINCS will format and label the

disks as necessary. To use Copy Disk, the LINCS node must have at least two disk drives. If you are copying from hard disk, you must specify which subdirectory (Disk Type) to be copied, since the hard disk cannot be copied all at once.

Copy Data Objects

```
Copy Data Objects                                  LINCS C8.2 Central Control

Disk Type:                    System
Source Disk Drive:            A
Destination Disk Drive:       C

PF: 1-Menu                                         10-Process
```

After selecting a disk type and disk drives, and pressing PF10, the catalog for the Source disk will be displayed.

Disk Type

This is a toggle field which allows one to select the type of disk that data will be copied from. LINCS currently supports disk types of:

- System
- Central Site Library
- Backup
- Trial (Merge)
- Record/Playback
- Dumpdisk (Dumpdks1-Dumpdsk9)
- DSL

Source Disk Drive

Toggle to choose the disk drive from which data objects will be copied.

Destination Disk Drive

This is a toggle field which allows one to chose the disk drive to which data objects will be copied.

Disk Catalog

This panel is shown when you press PF10-Process from the Copy Data Objects panel.

```
Disk Catalog/A:System                              LINCS C8.2 Central Control

C  State Rel   IL   Date       Time   Canonical Name (note, @ = 1174.NA)

_  Prod  C1.0  3050 01/20/94   15:00  MCUST.@.NETID001.LUNAME01.CFG.MEMBER01.000001
_  Prod  C1.0  3050 01/01/94   12:00  MCODE.@.FUNCTEC.B0200.SYSTEM
_  Sent  C1.0  3050 xxxxxxxx   xxxxx  MCODE.@.FUNCTEC.C0100.SYSTEM
_  Trial C1.0  3050 xxxxxxxx   xxxxx  MCUST.@.NETID001.LUNAME01.CFG.MEMBER01.000002
_  Prod  C1.0  3050 xxxxxxxx   xxxxx  MCUST.@.NA.NA.ADU.B0200
_  Prod  C1.0  3050 xxxxxxxx   xxxxx  MCUST.@.NA.NA.KDU.B0200
_  Prod  C1.0  3050 xxxxxxxx   xxxxx  MCUST.@.NA.NA.TTU.B0200
Commands:            C=Copy Data Object to:  Drive C

PF: 1-Menu     3-Return              7-Back     8-Forw        10-Process
```

To copy a data object to the Destination disk, enter C or c prior to the data object entry and

press PF10. Multiple data objects may be copied by entering as many C ‘s as desired. Note that the data objects will always be in the Production state once they are copied to the Destination disk.

PF1-Menu will return you to the Media Management Menu
PF3-Return returns you to the Display/Update Disk Information panel.

Copy File

This utility allows you to copy individual files from one disk to another. It is primarily used for applying patches to the System Microcode. This utility should NOT be used to copy data objects. LINCS does not have a means to display a directory of files. You must know the names of the files that you need to copy prior to the copy. You can view a directory of files on a PC, since the files are of DOS format. You can not copy files from a FAD disk, since these files are not of DOS format.

```
Copy File                                    LINCS C8.2 Central Control

Source Disk Drive:          Drive A
Destination Disk Drive:     Drive C
Filename:                   ___________
PF: 1-Menu                  10-Process
```

Source Disk Drive

Toggle to choose the disk drive from which the file will be copied.

Destination Disk Drive

Toggle to choose the disk drive to which the file will be copied.

Filename

Enter a full filename (for example, ACC$DATA.SYS) to be copied in the filename field. PF10 starts the copy.

Refresh LU Nickname File

The Nickname file is a file used by the TN3270 Server and IPX SNA Server features to provide an Alias table for mapping requested resources (nicknames) to LINCS resources. The name of this file is ‘nickname.sys’. This file can be used to map specific LUs or 3270 Host Classes to a nickname. It can also be used to provide User ID/Password support for the platform. The Nickname file is loaded automatically at IML time if one is present on either the hard drive or in the floppy drive. At IML time the Nickname file is loaded into memory. Memory space is allocated to the file by LINCS by first determining the size of the file, and allocating 125% of that size, rounded up to the nearest 1KB.

The action invoked by this utility is to refresh the currently loaded Nickname file currently loaded in memory, with a new version of the Nickname file. If the currently loaded Nickname file is stored on the hard drive, it should be replaced with the new file, using the File Copy utility or with FTP prior to doing the refresh. If the currently loaded Nickname file was loaded from a floppy at IML time, you may refresh from a floppy, or copy the file using the File Copy utility over to the hard drive then perform the refresh. The file size of the new Nickname file should not exceed the size of the old Nickname file by more than 25% rounded up to the nearest 1KB. LINCS will not allocate additional

memory space beyond what was allocated at IML time, so a file that has increased in size by too much, can not be accommodated. When this is the case, you will need to re-IML the LINCS platform to accept the new Nickname file.

When the Refresh LU Nickname File utility is invoked, LINCS searches for a valid nickname file using drive order: C, D, A, B. Therefore if you wish to refresh nicknames loaded from the hard drive (Drive C) then you must replace the existing nickname file on the hard drive with the new file then refresh.

You may only refresh a Nickname file if one were loaded at IML time.

If there is not a valid Nickname file on the hard drive or in the floppy drive when the refresh utility is invoked, the currently loaded Nickname file will be lost. A message to that effect will be posted at the time that the refresh is attempted. If the new Nickname file is too large, this information will also be posted at the attempted refresh time.

Note that there is no LINCS utility for removing a Nickname file from the hard drive. If you need to remove an existing Nickname file from the hard drive, the only means to do that is to delete it using FTP.

Create Blank System Disks

This utility is provided to allow you to format and label diskettes using the LINCS floppy drive. Floppy disks used by LINCS are DOS compatible and can normally be created on a PC if necessary. However, if the head alignment used by floppy drive on the PC is too much different than that on the LINCS platform, it may be impossible for LINCS to read the contents of the floppy. By using this utility, you can lay down the format of the floppy using the same floppy drive that has to read the contents. Once the format has been created on the floppy, most PCs can write the necessary files to the floppy. The following panel appears when you run this utility:

```
Create Blank System Disks                          LINCS C8.2 Central Control

Disk Type:                    System
 Destination Disk Drive:       A


PF: 1-Menu                   10-Process
```

The Disk Type can be set to ‘System’, ‘System 2’, ‘System 3’, or ‘System 4’. In addition to formatting the disk, the correct volume label is added to the disk. The following volume labels are used by LINCS for the system disks:

- System 1: @@@D@@@@174
- System 2: @@@H@@@@174
- System 3: @@A@@@@@174
- System 4: @@B@@@@@174

The Destination Disk Drive can be set to either Floppy Drive A or Floppy Drive B (on systems that have a Floppy Drive B).

Once the Disk Type and Destination Disk Drive have been set, press the PF10 key to initiate creation of the disk. You will be asked to confirm by pressing the PF10 key again. When the operation has completed you will be informed that the task is Done.

Backup

The Backup utility creates an exact copy of the contents of the System directory in the Backup directory. The Backup directory is created the first time that a Backup is performed, either through the Central Control utilities, or through FTP, or if you attempt to connect to the Backup directory through FTP. Since the LINCS operating system and configuration files are contained in the System directory, creating a backup will duplicate the LINCS operating system and configuration. When invoking the Backup utility the following panel will appear:

```
Backup                                          LINCS C8.2 Central Control




PF: 1-Menu                                                      10-Process
```

Pressing the <PF10> key will cause a message to appear requesting confirmation. When pressed again, the utility will commence. A message indicating the number of files remaining to be copied will appear.

You may boot on the contents of the Backup directory by selecting ‘Backlevel’ as the Data Object State in IML utility 2/2 or by performing an IML from the front panel, and pressing the <3> key at IML State 500.

Restore

The Restore utility creates an exact copy of the contents of the Backup directory into the System directory. The contents of the System directory will be overwritten by the contents of the Backup directory. . When invoking the Backup utility the following panel will appear:

```
Restore                                         LINCS C8.2 Central Control




PF: 1-Menu                                                      10-Process
```

Pressing the <PF10> key will cause a message to appear requesting confirmation. When pressed again, the utility will commence. A message indicating the number of files remaining to be copied will appear.

Copy Production to Trial

This utility creates an exact copy of the contents of the System into the Trial (Merge) directory. The Trial (Merge) directory is created the first time that this utility is run or when the directory is accessed with FTP. Since the LINCS operating system and configuration files are contained in the System directory, copying the contents to the Trial (Merge) directory will duplicate the LINCS operating system and configuration. When invoking this utility the following panel will appear:

```
Copy Production to Trial                          LINCS C8.2 Central Control




PF: 1-Menu                                                        10-Process
```

Pressing the <PF10> key will cause a message to appear requesting confirmation. When pressed again, the utility will commence. A message indicating the number of files remaining to be copied will appear.

You may boot on the contents of the Trial directory by selecting 'Trial' as the Data Object State in IML utility 2/2 or by performing an IML from the front panel, and pressing the <1> key at IML State 500.

Copy Trial to Production

This utility creates an exact copy of the contents of the Trial (Merge) directory into the System directory. The contents of the System directory will be overwritten by the contents of the Trial directory. When selecting this utility the following panel will appear:

```
Copy Trial to Production                          LINCS C8.2 Central Control




PF: 1-Menu                                                        10-Process
```

Pressing the <PF10> key will cause a message to appear requesting confirmation. When pressed again, the utility will commence. A message indicating the number of files remaining to be copied will appear.

9. Vital Product Data

Vital Product Data (VPD) is product identification information for LINCS and its attached devices. This information can be saved on a System disk while executing LINCS Vital Product Data and Port Vital Product Data tests.

The Vital Product data on disk may be distributed to network sites using the CSCM feature. A VPD ID may be defined to uniquely identify a particular VPD data object for CSCM functions. Refer to the 1174 Central Site Operations Operator's Manual for further information.

Extended Vital Product Data is user defined for a particular device. This information is saved in the device, not on disk, and so cannot be distribute with CSCM.

Vital Product Data Menu

```
Vital Product Data Menu                          LINCS C8.2 Central Control

  Item                    Description

  1,u                     Display/Update LINCS VPD
  2,u                     Display/Update Port VPD
  3                       Extended VPD

  Select Item:            Depress Enter

PF1-Menu
```

In order to update LINCS VPD or Port VPD, the optional update parameter (,u) must be entered as the first parameter to the utility. If the update is requested, the user is prompted for the password. If the password is entered correctly, the PF10-Save function will be allowed while executing the tests.

LINCS VPD

The LINCS VPD utility lists information about the LINCS node including the microcode maintenance level, the unique machine identifier, and PROM level (PROMs are located on the SCP or Mother board).

```
LINCS VPD                                        LINCS C8.2 Central Control

Backlevel

Model Number:             1174-25S
Release Level:            C8.2
Maintenance Level:        3483
Prom Level:               2.0
Serial Number:            23095593
Node Name:
Unique Machine Identifier:
IML Drive/Type:           C/Back
Last IML:                 05/24 12:10
Location:                 ____________________________________________
VPD Id:                   ___________

PF1-Menu                                      PF9-Refresh   PF10-Save
```

Product Assistance Data

The product assistance data assigned during configuration is displayed at the beginning of the panel. This field may contain information such as the name and telephone number of the service representative.

Model Number

This gives the specific hardware platform model that LINCS is running on.

Release Level and Maintenance Level

The release level of the LINCS software is given, which is meaningful as to the general feature set supported by the LINCS operating system. Of more importance for reporting problems, is the maintenance level (otherwise defined as the integration level). This provides a meaningful description of the precise code level running on the platform.

Prom Level

The Prom (programmable read only memory) level reflects the microcode level used to initialize and boot up LINCS.

Serial Number

The hardware Serial Number as entered onto the LINCS platform is displayed here, and should match the least 8 significant digits of the serial tag.

Unique Machine Identifier

This information reflects what has been configured previously, and is information that is passed to network management programs such as IBM's NetView.

IML Drive/Type

This field identifies which drive LINCS has booted from (must be one of the hard drives) and which type of code LINCS is currently executing. The three types of code loads that can be used are Production, Backup, and Trial. Backup and Trial code can only be downloaded into the LINCS platform by distributing microcode via IBM's NetView DM product.

Last IML

This field identifies the last time that an IML of LINCS occurred. This information is normally kept in the event logs, but due to the limited size of the event logs, may have been overwritten there.

Location

The Location field may be updated with this utility if the update parameter (,u) was specified.

The Location field can contain up to 50 characters, and may be used for information about the LINCS node's physical location. The valid characters are: A-Z, a-z, 0-9, =, +, -, >, <, (,), _(underscore), %, . (period), , (comma), : (colon), ; (semicolon), ?, /, *, &, "(double quote), and ' (single quote).

Press the PF10 key to save all changes to the System disk.

VPD ID

This field may be updated to uniquely define the VPD data object for CSCM functions.

Valid names can contain up to eight alphanumeric characters. The first character must be alphabetic. No embedded blanks are allowed.

Press the PF10 key to save all changes to the System disk.

Port VPD

```
Port VPD                                          LINCS C8.2 Central Control

Port Number: MCC1.001

                            Device-defined      User-defined
Device Type                 3472                ____
Model Number                020                 ___
Plant of Manufacture        MT                  __
Serial Number               0005810             _______
Release Level               40F
Engineering Change Data     1472PC

* indicates that data was not provided by device

Location:                   ________________________________________
VPD Id:                     _________

PF: 1-Menu      PF7-Back    PF8-Forw      PF9-Refresh       PF10-Save
```

Device-defined vital product data which is not supplied by a terminal is indicated with an asterisk (*). The PF7 and PF8 keys scroll through the display panels for each LINCS port.

Altered data is saved only if the PF10 key is pressed. This save function updates the Port Vital Product Data for the port currently displayed and writes this data to the System disk.

Device Defined Port VPD

Some devices report their vital product data to LINCS at power-on. This data is considered device defined, since it is saved in the display station and provided to LINCS upon request. Not all display stations support VPD. The information provided to LINCS is defined by the manufacturer of the equipment and will vary from one vendor to another.

User Defined Port VPD

User defined VPD enables devices that do not support the VPD feature to provide vital product data to the host. This data is supplied by the user and saved on LINCS System disk, by using Update Port/Vital Product Data.

User defined VPD is assigned to a specific port. Because the data is not stored in the device, if the device is moved, the user defined data does not move with it. If another device is connected to that port, it will inherit the user defined data for the previous device.

Port Number

This is the port number as described in Identifying Boards and Port Numbers. For example, MCC1.000 for the first port on the first MCC board.

The port is selected by typing the utility selection followed by an optional update parameter and/or an optional port number. If no port number is entered, the panel displayed will be for the current port.

Device Type

Four-character field used to indicate device type. No embedded blanks are allowed.

Model Number

Three-character field used to indicate the device's model number. No embedded blanks are allowed.

Plant of Manufacture

Two-character alphanumeric field to indicate the plant of manufacture.

Serial Number

Seven-character alphanumeric field used to indicate the serial number of the device. No embedded blanks are allowed.

Release Level and Engineering Change Data

This information varies from one vendor to another. The release level typically reflects a major release level number as determined by the vendor. The Engineering Change Data typically reflects an EC level of the hardware or in the case of Visara, the prom part number for the code.

VPD Id

Valid names can contain up to eight alphanumeric characters. The first character must be alphabetic. No embedded blanks are allowed.

Location

The Location field may be updated with this utility if the update parameter (,u) was specified.

The Location field can contain up to 50 characters, and may be used for information about the LINCS node's physical location. The valid characters are: A-Z, a-z, 0-9, =, +, - , >, <, (,), _(underscore), %, . (period), , (comma), :, ;, ?, /, *, &, "(double quote), and ' (single quote).

Press the PF10 key to save all changes to the System disk.

Extended VPD

Extended Vital Product Data is information consisting of label and data fields. This information can be about any subject, such as building location and department number. The label fields are entered and saved during LINCS configuration. The user can enter Extended VPD only for the display station being used.

Some display stations enable users to update Extended VPD in Setup mode on their display station. LINCS allows you to display and update Extended VPD information for displays that do not allow you to update the information on the terminal itself.

LINCS requests the Extended VPD from each display station when the display station powers on. Changes made on this panel are sent back to the terminal for storage on the terminal itself.

```
Extended VPD                                    LINCS C8.2 Central Control

Port Number:                TRC1.000

1.  NAME                    JIM SMITH
2.  PHONE NUMBER            * 222-4567
3.  DEPARTMENT              ACCOUNTING
4.  BUILDING                * 21
5.  CITY                    ____________________________________

 * indicates that data may be invalid

PF1-Main     PF3-Prev    PF7-Back      PF8-Forw   PF9-Refresh   PF10-Save
```

The PF7 and PF8 keys scroll through the display panels of devices attached to the LINCS node which support the Extended VPD feature. The Extended Vital Product Data can be updated only for the device on the port executing the utility. Updated data is saved when the PF10 key is pressed. If you specify a port when you enter this panel, you can view the Extended VPD for that port.

This utility cannot be displayed, unless XFPD labels are configured, and the device on the specified port supports the Extended VPD feature.

Examples of devices that do support Extended VPD are Visara 1483, IBM 3472 and MTX 1472, as well as any PC running LANSYS.

Extended VPD invalid labels

The Extended VPD labels entered during configuration appear on the utility panels as prompts for each data field. If there is a mismatch of labels between the device and those configured in LINCS, the Extended VPD labels identified by LINCS are displayed with an asterisk (*) indicating the following fields may be invalid. Be sure to review the data identified and update the data if invalid.

10. Network Management Menu

```
Network Management Menu                          LINCS C8.2 Central Control

  Item                      Description

  1,u                       Display/Update RTM Logs
  2                         Operator Initiated Alert
  3,u                       Display/Update Local Formats
  4                         SMS Server Data

  Select Item:              Depress Enter

PF: 1-Menu
```

This panel provides access to several LINCS features that concern system operations.

Display/Update RTM Logs

```
Display/Update RTM logs                          LINCS C8.2 Central Control
                                  HOST A
LU    DEF  CTR#1  BDY#1   CTR#2   BDY#2   CTR#3   BDY#3   CTR#4   BDY#4    OV
002    1     9     0.5     10      1.0     215     5.0     20     1:00.0    6
003p   1     0     0.5      0      1.0      0      5.0      0     1:00.0    0
004?   1    640    0.5      0      1.0      0      5.0      0     1:00.0   13
005   *2    214    0.5     510     1.0     56      5.0      0     1:00.0    2
006i  1*     29     1.0     11      2.0      3      5.0      4     1:00.0    1
007_   1     0     0.5      0      1.0      0      5.0      0     1:00.0    0
008   *3*    1     1.0     51      2.0      4      3.0      0     4:00.0   44
009    1    251    0.5     980     1.0     232     5 0      0     1:00.0    1
010_   1     0     1.0      0      2.0      0      5.0      0      10.0     0
  .   .   .   .   .   .   .   .   .
017_   1     0     1.0      0      2.0      0      5.0      0      10.0     0
PF: 1-Menu    4-Clr_Ctrs                          7-Back 8-Forw
```

This utility displays RTM logs for a particular host circuit. The host letter may be entered as a parameter to the utility (such as 7,00 to display logs for Host 00). If no host is entered as a parameter, the logs displayed are for the 3270 host that controls the current foreground session.

The PF4-Clr_Ctrs key will not appear unless the selected host has been configured for RTM with no host support. That option is specified on the Host Profile section of Configuration, for hosts that support RTM.

LU field and suffixes

The logical unit (LU) whose response time is being monitored. The following descriptive suffixes may follow the LU number:

- p - Device is a printer (no counts are recorded)
- i - Distributed function terminal
- (underscore) - Device never powered on
- ? - RTM disabled by the host for this device

DEF

The DEF field displays the Response time definition for that LU. Options are:

- Time to first character on screen
- Time to keyboard usable by operator
- Time to change direction/end bracket
- Parameter set by the host

A * preceding the DEF entry indicates that the definition has been changed by the host.

A * following the DEF entry indicates that the boundary values have been changed by the host.

CTR#1

First RTM counter (response time is equal to or greater than 0 and equal to or less than boundary #1 value)

BDY#1

First RTM boundary in minutes and seconds

CTR#2

Second RTM counter (response time is greater than boundary #1 value and equal to or less than boundary #2 value)

BDY#2

Second RTM boundary

CTR#3

Third RTM counter (response time is greater than boundary #2 value and equal to or less than boundary #3 value)

BDY#3

Third RTM boundary

CTR#4

Fourth RTM counter (response time is greater than boundary #3 value and equal to or less than boundary #4 value)

BDY#4

Fourth RTM boundary

OV

Overflow (responses exceeding the value of boundary #4)

Operator Initiated Alert

```
Operator Initiated ALERT                        LINCS C8.2 Central Control
                           Host A
XX
-------------------------------------
---------------------
---------------
Q1                         Q2                 Q3
PF1: 1-Menu                10-Process
```

This panel allows you to send a message to the host. A host letter may be input as a parameter to the utility (for example, 2,00 for Host 00). If the host parameter is omitted, no message will be sent. If the session is not currently attached to a host, for example, if the utility is being run from an ASCII host session, the host input will default to Host A. The formats displayed will be for the host that the session is attached to.

ALERT Input Areas

There are three areas for ALERT input:

- The first input area (XX) requires entry of two digits, from 01 to 20. These digits are a user action code that corresponds to user defined panels at the host CPU. You can obtain these user action codes from the system programmer for the host. Once you enter the user action code, the subsequent alert message is mapped into the specified panel at the host CPU.
- The second input area is a field of up to 120 characters in which you can enter the alert message to be transmitted to the host CPU. In this field, you can only use characters from the base character set. You cannot use APL characters or those with extended attributes.
- The third input area has three 8-character qualifier fields (Q1, Q2, and Q3). The qualifiers could consist of a telephone number, port number, problem code, or other customer determined item.

To transmit an alert message inbound, enter the appropriate messages and user action code and press the PF10 key. A message will be displayed to indicate whether or not the Alert was transmitted inbound successfully.

Local Formats - Display/Update

Use this utility to display formats stored in Local Format Storage (LFS) memory and, optionally, to delete selected formats. If the update option (,u) is specified, you must use the supervisory password to enter this utility.

A host letter may be input as a parameter to the utility (for example, 2,b for Host b). If the host parameter is omitted, the message will be sent to the host to which the session is attached. If the session is not currently attached to a host, such as the utility is being run from an ASCII host session, the host input will default to Host A.

A valid host entry displays the Display/Update Local Format Storage panel.

Local Format Storage Panel

```
Display/Update Local Format Storage            LINCS C8.2 Central Control
                              Host A

Group Name      Format Name      Size   Operator       Delete ?
Selectable

MOD2 GRP 0001   MOD2 MAP 0001    0139H  YES - MOD20001     N
                MOD2 MAP 0002    0139H  YES - MOD20002     N
  .  .  .  .  .  .  .  .  .  .
                MOD2 MAP 000E    0139H  YES - MOD2000E     N

 PF: 1-Main                             8-Forw 9-Refresh 10-Process
```

The fields are described below:

Group Name

The group name of the format.

Format Name

The name of the format.

Size

The length of the data within the format.

Operator Selectable

The local name, if any, of the format.

Local Format Deletion

If you want to delete a format, and the update option is specified, enter Y under the Delete ? column and press the PF10 key.

SMS Server Data

```
SMS Server Data                                    LINCS C8.2 Central Control
 Server Name: solo          Server Type:  TN3270       TCP Port:  00101
                    Conns   Sessions                    Conns     Sessions
 IP Addresses    Cfg  Act   Cfg  Act   IP Addresses      Cfg  Act    Cfg  Act

199 005 182 165  512  109    32   9    199 005 182 190   512  107     32   7
                   0    0     0   0                       0    0      0   0
                   0    0     0   0                       0    0      0   0
                   0    0     0   0                       0    0      0   0
                   0    0     0   0                       0    0      0   0
                   0    0     0   0                       0    0      0   0
                   0    0     0   0                       0    0      0   0
                   0    0     0   0                       0    0      0   0
                   0    0     0   0                       0    0      0   0
                   0    0     0   0                       0    0      0   0
                   0    0     0   0                       0    0      0   0
                   0    0     0   0                       0    0      0   0
                   0    0     0   0                       0    0      0   0
                   0    0     0   0                       0    0      0   0
                   0    0     0   0                       0    0      0   0
                   0    0     0   0                       0    0      0   0
                   0    0     0   0                       0    0      0   0

PF: 1-Menu                    7-Back     8-Forw    9-Refresh
```

For a more complete discussion on the SMS feature, refer to the LINCS Features manual.

The SMS Server Data panel displays the data collected by the SMS (Session Management System) server by polling the TN3270 or Telnet servers, when the SMS feature is configured. The SMS feature provides load balancing and disaster recovery across multiple network cards, which can be installed on one or more LINCS platforms. The information on this panel displays a snapshot of the data at the time that you display this panel or from the last time that you pressed the PF9 key to refresh the data on this panel.

SMS is a client/server function with one LINCS platform acting as the SMS server and one or more LINCS platforms functioning as SMS clients. On the LINCS platform functioning as the server, one or more server panels can be configured, to load balance sessions based on the number of sessions configured for a particular TCP port. Each SMS client is polled for current

status periodically and the results can be viewed on the SMS Server Data panel. A description of the fields follow.

Server Name

This field displays the name of the server as configured on the SMS server platform. This name also serves as the first part of a DNS name that is configured on the TN3270 or Telnet client as their host connection. (Example solo.visara.com, where solo is the SMS server name and Visara.com is the DNS domain.) Up to 16 different SMS servers can be defined per SMS server platform.

Server Type

This field displays whether the SMS server identified in the Server Name field is defined for TN3270 or for Telnet.

TCP Port

The TCP port number displayed is the port number assigned to this particular SMS server definition. Each of the SMS client platforms will have configured a number of sessions associated with this port number. The SMS server will assign sessions based on which card (as identified by its IP address) currently has the most sessions available for the designated TCP Port number.

IP Addresses

The IP Addresses columns identify which network cards are participating in the load balancing provided by this SMS server definition. These cards may be installed on different LINCS platforms or may be installed on the same platform. Up to 32 network cards can participate in a single load balancing scheme. (Up to 1024 TN3270 sessions per card are allowed in an SNA environment, allowing for the balancing of up to 32,768 users.)

Connections Configured

The value in this column represents the number of TN3270 (or Telnet) connections permitted for the network card identified. This value is assigned in the configuration of the LINCS platform that the card is installed on and can be a value in the range of 0-1024 for TN3270 or 0-128 for Telnet.

Connections Active

This value identifies the number of connections currently in use through the identified card. These connections are the total number of TN3270 (or Telnet) connections regardless of the TCP port they are connected to, and represent the total number of sessions using that network adapter.

Sessions Configured

The value in this column identifies the total number of sessions configured for the TCP port assigned to this SMS server, that are available through the network adapter. This number could be equivalent to the total number of connections through that card or could be smaller number.

Sessions Active

This value indicates the total number of sessions through the designated port that are in use currently.

11. Device Menu

The device menu contains informational tests which are only valid when devices are configured.

```
Device Menu                                    LINCS C8.2 Central Control

  Item                      Description

  1                         Terminal Test
  2                         Display Device Status
  3,u                       Display/Update Host Connections
  4,u                       Display/Update 3270 LU Connections
  5                         Broadcast Message to Devices
  6,u                       Display/Update Buffered Prints
  7                         Display/Update HAP Session Status
  8                         Extended Attributes Demo
  9,u                       LPD Queue Management
  10,u                      Display/Update LPD Printer Management
  11                        CE Bridge Status

  Select Item:              Depress Enter

PF: 1-Menu
```

Terminal Test and Device Characteristics

The device characteristics will be displayed in this format while showing information for the current port. Here you can test the terminal.

```
 Terminal Test                                  LINCS C8.2 Central Control

 Port Number  MCC1.000

 Unprotected:   Intensified     Selector Pen    Numeric     ==>      <==
                Unintensified   >Selector Pen   Nondisplay  ==>      <==
 Protected:     Intensified     &Selector Pen   Numeric     ==>      <==
                Unintensified   ?Selector Pen   Nondisplay  ==>      <==
                Insert check (8 character field)           ==> ...  <==
Device Characteristics:         Display         Mod Size 2

122-Native TW  Numeric Lock

Selector Pen    Mag Stripe

PF: 1-Menu                                     7-Back 8-Forw 9-Refresh
```

PF8-Forward will display information for other ports (in a different format).

Characteristics of an attached device, for combination type devices such as a display with attached printer, may be displayed by pressing the PF4 key.

This panel may also be called to display a different port's device statistics other than the port you are on. This is accomplished by indicating which port you wish to display when the test number is initially invoked. For example, at the Select Item prompt, typing "1,MCC1.007" will display the terminal test for the device attached on port 007 of the MCC1 card. The device has to be powered up to get useful information about it. You may also display similar information for network devices connecting via Telnet by indicating the NDD port number associated with the connection. For example, typing '1,FET1.000' will display the characteristics for a Telnet device that connected through network card FET1, and is assigned to port '000'.

See the Terminal Test Example panels for example panel fields. There is also further information on Running the Character Entry Test and Running the Selector Pen Test.

Terminal Test Options

The following parameters are valid options for entering the terminal test:

- - Selects and displays the Terminal Test and Device Characteristics for the current port.
- - Selects and displays the Device Characteristics and Summary Counters (2XX Errors) for the port specified by “xx”.

Character Entry Test

The cursor can be moved with the Tab, New Line, and cursor movement control keys. The Tab key moves the cursor to the next unprotected field. The New Line key moves the cursor to the first unprotected field on the next displayed line.

There are five unprotected fields that allow for character entry test:

- Unprotected Intensified
- Unprotected Numeric
- Unprotected Unintensified
- Unprotected Nondisplay
- Insert check

You may run tests for Character Entry by following the test procedures.

Character Entry Test Instructions

1. Press the Tab key until the cursor moves to the Unprotected Intensified character test field. This field will accept any alphabetic and/or numeric keys.
2. Press any alphabetic and/or numeric keys overtyping the words Selector Pen. When the field is full, the cursor will autoskip to the next field.
3. With the cursor at the Unprotected Numeric field and numeric lock feature enabled, only the numeric keys pressed will be displayed. Pressing any key other than numeric keys will display a Numeric Entry error. With the numeric lock feature disabled or not available (NUM is not displayed on the status row), this field will accept any alphanumeric keystroke. If you press more than eight numeric keys, a Field Full error () is displayed on the status row.

   Press the Reset key.
4. Move the cursor to the Unprotected Unintensified Nondisplay field. This field will accept any alphabetic and/or numeric keys. The nondisplay attribute of this field inhibits the display of keys pressed.

   The cursor moves and no characters are displayed.
5. Move the cursor to the Insert Check. This field checks insertion of characters on a line.
6. Press the Character Insert () key; an inverted V is displayed on the status row.
7. Press any alphabetic and/or numeric keys. The characters pressed are inserted into the field leading the four period (....) characters. When the field is full, a Field Full error

() is displayed on the status row.

8. Press the Reset key, and entered characters are erased.
9. Using the cursor movement control keys, place the cursor in the Protected Intensified Numeric field. Press any key. The cursor does not move, no characters are displayed, and a Go Elsewhere error is displayed on the status row.

   Press the Reset key to clear the error.
10. Using the cursor movement control keys, place the cursor in the Protected Unintensified Nondisplay field. Press any alphabetic and/or numeric keys. The cursor does not move, no characters are displayed, and a Go Elsewhere error is displayed on the status row.

    Press the Reset key to clear the error.

Selector Pen Test

The Selector Pen test may be performed with an attached selector pen or, if one is not installed, simulated with the keyboard. Please refer to the Terminal Test example panel to see the field locations.

Selector Pen Actual

If you have a selector pen, follow these steps:

- Touch the pen on SELECTOR PEN in the Unprotected Unintensified field area. The indicator changes to ? and will toggle with each touch of the pen.
- Touch the pen on ?SELECTOR PEN in the Protected Unintensified field area. The indicator ? changes to >> and will toggle with each touch of the pen.

Selector Pen Simulated

Follow these steps for the Selector Pen Keyboard Simulation:

1. Press the Return key twice. The cursor moves to the beginning of the Unprotected Unintensified Selector Pen field.
2. Press the Cursr Sel key. The indicator changes to ? and will toggle with each depression of the Cursr Sel key.
3. Using the cursor movement control keys, place the cursor into the Protected Unintensified Selector Pen field. Press the Cursr Sel key. The indicator ? changes to >> and will toggle with each depression of the Cursr Sel key.

Display Device Status

The Display Device Status utility panel is a convenient source of displaying the status of configured devices.

Coax, ASCII, and LAN device status's are displayed by separate panels. PF8-Forw will scroll you through the screens for the devices you have configured. For more information, see:

- Coax
- ASCII (ADA)
- LAN

The Display Devices Status panel provides information on the following items.

- Power-On Status
- Device Type
- File Transfer
- Status LU Indicators

Device Status - Coax

```
 Display Device Status                                LINCS C8.2 Central Control
 MCC1
                          0         1         2         3          0=Off, 1=On
CONNECTION                01234567890123456789012345678901       -=Inoperative
POR STATUS (0,1,-)        01.111.1  10.1101.  1110....  1111....  v=Video Display
DEVICE TYPE (v,c,i,e,p)   vv.vvv.v  vv.vvvv.  vvvv....  vvvv....  c=Combination
ATTACHED BY (a,m,d)       aa.aaaaa  aa.aaaa.  aaaa....  aaaa....  i=DFT Device
COAX ERRORS (x10)         1..1....  ........  ........  ........  e=DFT-E Device
FILE TRANSFER             e..e.e.e  ...ee.e.  e.e.....  ........  p=Printer
LOCAL (L)/APC(C) PRINT    ......... .........  ........  ........  b=CE Bridge
SESSION A                 3****T*3  ********  *****3*3  ********   a=Coax Dvc Adptr
On
SESSION B                 .A..AS..  ...S....  .A......  ........  m=Multiplexer
SESSION C                 .x..x...  .x.S....  ........  ........  d=Direct to MCC
SESSION D                 ........  ........  ........  ........  +=More than 90
SESSION E                 ........  ........  ........  ........  T=Test Mode
SESSION F                 ........  ........  ........  ........  A=ASCII Host
SESSION G                 ........  ........  ........  ........  3=3270
SESSION H                 ........  ........  ........  ........  S=Session/Select
SESSION I                 ........  ........  ........  ........  b=In Bracket
SESSION J                 ........  ........  ........  ........  *=Not Connected
PF: 1-Menu                                    7-Back 8-Forw 9-Refresh
```

Device Status - ASCII (ADA)

```
Display Device Status                                  LINCS C8.2 Central Control
ADAs
                          ADA-A     ADA-B     ADA-C     ADA-D      0=Off
CONNECTION                01234567  89012345  67890123  45678901   1=On
POR STATUS (0, 1, - )     ........  ........  ........  ........   -=Inoperative
DEVICE TYPE (v,c,i,e,p)   ........  ........  ........  ........   v=Video Display
ATTACHED BY (a,m,d)       dddddddd  dddddddd  dddddddd  dddddddd   c = Combination
LINE ERRORS (x10)         ........  ........  ........  ........   p=printer
                                                                   h=host
LOCAL (L)/APC(C) PRINT    ........  ........  ........  ........   d=direct to ADA
SESSION A                 ********  ********  ********  ********   l=leased line
SESSION B                 ........  ........  ........  ........   s=switched line
SESSION C                 ........  ........  ........  ........   w=three wire
SESSION D                 ........  ........  ........  ........   +=More than 90
SESSION E                 ........  ........  ........  ........   T=Test Mode
SESSION F                 ........  ........  ........  ........   A=ASCII Host
SESSION G                 ........  ........  ........  ........   3=3270
SESSION H                 ........  ........  ........  ........   S=Session/Select
SESSION I                 ........  ........  ........  ........   b=In Bracket
SESSION J                 ........  ........  ........  ........   *=Not Connected
PF: 1-Menu                                    7-Back     8-Forw      9-Refresh
```

Display Device Status - LAN

```
Display Device Status                                LINCS C8.2 Central Control
ETH1
                          0         1         2         3         0=Off
CONNECTION                01234567890123456789012345678901      1=On
POR STATUS (0, 1, - )     .........                             -=Inoperative
DEVICE TYPE (v,c,i,e,p)   .........
ATTACHED BY (a,m,d)       ttttttttt                             v=Video Display
                                                                c = Combination
FILE TRANSFER             .........                             p=printer
LOCAL (L)/APC(C) PRINT    .........
SESSION A                 *********                             l=LANSYS
SESSION B                 .........                             t=TELNET
SESSION C                 .........                             @=LAT
SESSION D                 .........
SESSION E                 .........                             T=Test Mode
SESSION F                 .........                             A=ASCII Host
SESSION G                 .........                             3=3270
SESSION H                 .........                             S=Session/Select
SESSION I                 .........                             b=In Bracket
SESSION J                 .........                             *=Not Connected
PF: 1-Menu                                  7-Back 8-Forw 9-Refresh
```

Device Power On Status

A dash (-) indicates the device port has been disabled. If the port has been disabled, it is probably due to a large number of errors occurring, indicating a bad coax or a bad coax circuit in either the device or the LINCS node.

If a zero (0) appears as status, the device was powered on but it is now powered off. If the device is powered on but a status of 0 is indicated, then the coax may be faulty or broken, or the device may have been previously connected to another coax and a different cable was connected without performing a POR to the display. If the latter is the case, POR the display and it should reconnect.

A period (.) indicates that the device was not powered on since the last IML of LINCS. The logic of the previous paragraph may be applied here.

A one (1) indicates the device is currently powered on.

Device Type

Often it is not known whether a display is a CUT or a DFT. This utility will give you the proper indication of d for a CUT or display, i' for DFT, or p for printer. Remember that a DFT cannot access most LINCS local features such as Windowing, Multiple Protocols, and the Calculator feature.

File Transfer

Remember that File Transfer mode and Windowing Profile mode are mutually exclusive. This indicator checks to see if File Transfer is on for a particular device. The display itself should have the symbol FX displayed in the status line if it is in File Transfer mode.

LU Indicators

This section of the panel indicates whether sessions have been configured for a particular device. Legends at the bottom of the screen can be used to identify how each port is defined and whether it is in session.

Display/Update Host Connections

Each LINCS port can support up to ten sessions. Sessions on the port are labeled A through J. The port's sessions can be attached to different hosts, enabling display stations to switch easily from one host to another. The sessions can be attached to 3270 hosts or ASCII hosts.

Using the update option (,u) and password, a supervisory disconnect on any host session may be processed. Each host-LU contains a field to the left of the host identifier (see the example panel). This field can be used to disconnect a session by entering the letter D or d in the field and then pressing the PF10 key. Multiple sessions may be disconnected simultaneously.

When the disconnect is processed, an asterisk (*) is placed to the left of the host-LU field. If the disconnect cannot occur for any reason, a question mark (?) appears to the left of the host-LU field.

An additional parameter may be entered to show only the connections for a particular host type. This parameter may be entered with or without the update option (such as 6,3 or 6,u,3). Use three (3) as the parameter to display 3270 host connection information, @ for LAT, T or t for TELNET, and X or x for ASCII.

Host Connection Panel

The Host Connection Panel displays the host connections that are configured, in a format similar to the configuration panel. As LINCS capabilities have grown from the original 16 Host support to 128 Host capabilities (on the SCON-28L), the format of the information has changed somewhat. The table following the example panel describes both the original and the newer or modified character representations.

```
Host Connections                                    LINCS C8.2 Central Control

           (A)     (B)     (C)     (D)     (E)     (F)     (G)     (H)     (I)     (J)
 Port      H-LU    H-LU    H-LU    H-LU    H-LU    H-LU    H-LU    H-LU    H-LU    H-LU
FET1.000  00 02   12 02   13 02d  14 02d  &  B1   *    d  19 02d   > 01    > 02    > 01
FET1.001  01 03   02 03   03 03   12 03   13 03   15 03    & A0    > 01    > 02
FET1.002  00 04   01 04   02 04   03 04   12 04   13 04   14 04   02 01   >T 02   > 03
FET1.003  01 05   02 05   03 05   12 05   13 05   14 05    & D7     *       *
FET1.004  01 06   01 06   02 06   03 06   >  01   > 01
FET1.005  01 07   01 07   02 07   03 07     *     > 02      *     > 01     *     > 01
FET1.006  01 08   01 08   02 08   03 08    . . . . .
FET1.013  00 0F   01 0F   02 0F   03 0F
FET1.014    *       *
FET1.015    *       *

PF: 1-Menu                          PF7-Back PF8-Forw PF9-Refresh PF10-Process
```

Host Connection H-LU fields

The following table describes the H(ost)-LU fields:

First Column Character		Description	Second Column Characters	Online Result
Original	Modified			
A-P	00-7F	3270 Host	Blank	3270 Connect Panel
			Session Numbers	Host Session Defined
3	=	3270 Host Class	Blank	3270 Connect Panel
			3270 Class Number	Session from 3270 Host Class
T	>	Telnet Host Class	Blank	Telnet Host Connection Menu
			Telnet Class Number	Session from Telnet Host Class
X (Not on SCON)	&	ASCII Host Class	ASCII Port Number	ASCII Host Session through identified port
			ASCII Class Number	Session from ASCII Host Class
@ (Not on SCON)	+	LAT Host	Blank	LAT Host Connection Panel
			LAT Class Number	Session from LAT Host Class
*	*	Connection Panel	Blank	Main Connect Menu
			3 or =	3270 Host Connection Menu
			X or &	ASCII Host Connection Menu
			T or >	Telnet Host Connection Menu
			@ or +	LAT Host Connection Menu
S	%	Print Server Queue	Print Server Class Number	Receives print jobs from indicated print queue

Please refer to the example panel for the format.

Display/Update 3270 LU Connections

This selection displays the connections for 3270 LUs. Using the update option (,u) and the supervisory password, any LU may be disconnected.

If the Host LU is connected via LAN attachment, the Host letter, Host LU number, LAN Address, and Mapped LU number is shown. If the Host LU is connected via coax, the Host letter, Host LU number, Port number, and Session Designator is shown.

If the host is connected to an IPX Client, then IPX is shown, followed by a node address.

A forced disconnect may be performed by using the procedure labeled: 3270 LU Disconnect

```
Display/Update 3270 LU Connections                    LINCS C8.2 Central Control

H    LU    Name:LAN Addr-SAP,LU                H    LU    Name:LAN Addr-SAP,LU
           or Name:ip addr,tcp port,sess                   or Name:ip addr,tcp port,sess
-    _     ____________________                -    _     ____________________
A    02                                        A    12
A    03    400011740000-04,02                  A    13    400011740004-02,04
A    04    005,b                               A    14    005,d
A    05    IPX-1000FA316731                    A    15
  .......
A    09    400011740001-02,04                  A    19    400011740005-02
DA   0A    400011740001-02,08                  A    1A    400011740005-03
DB   0B                                        A    1B
  .......
A    11                                        A    21

PF: 1-Menu                                      8-Forw 9-Refresh
```

3270 LU Disconnect

1. Enter this utility with a valid supervisory password.
2. Use the Tab key to move to the LU to be disconnected.
3. Enter a D for the Host LUs to be disconnected.
4. Press the PF10 key to disconnect all marked LUs. The panel will be refreshed with the disconnected LUs attached information cleared.

When a session is disconnected, a power off notify is sent inbound if the Host LU is active, and an inbound unbind is sent if the Host LU is bound. The released Host LU is made available for use by other DSNs, Sessions, or IPX Clients.

Broadcast Message to Devices

This utility enables you to send a message to the status line of another display terminal or to all other CUT display terminals attached to LINCS. The supervisory password is required.

When entering the utility, the cursor is positioned at the beginning of the message field. “Enter the desired message.”

To clear a received message from the status line, press the Reset key.

Note: Devices that are in File Transfer mode will not receive the Broadcast.

```
Broadcast Message to Status Line                LINCS C8.2 Central Control
Port Number: ********       (********=all ports)
Message: MCC1.000:.................................
Message Received by:        121 Ports
PF: 1-Menu                                      9-Refresh 10-Process
```

Port Number

To send the message to an individual display, use the Tab key to move to the port ID field, enter the port ID desired, then press the PF 10 key. The port number should be in the form of MCC.001 or ETH1.004.

To send the message to all displays attached to LINCS, enter * * * in the port ID field then press the PF10 key.

Message Received

After the message is sent, a Message Received by: field is displayed indicating the number of ports that received the message.

Display/Update Buffered Prints

```
 Display/Update Buffered Prints                  LINCS C8.2 Central Control
  DEVICE         SESSION         NUMBER         PRINTER          DELETE?
    PORT          NUMBER        BUFFERED      PORT/CLASS
 MCC1.000           A              03             C01             N
 MCC1.001           A              06             C02             N
 MCC1.001           B              05          MCC1.003           N
 MCC1.004           A              05             C01             N
 . . . . .
PF1-Menu                     PF8-Forw  PF9-Refresh  PF10-Process
```

This panel displays all the print jobs queued to LINCS printer devices. If the optional update parameter (,u) is entered, any of the buffered prints can be deleted. If the update parameter is not entered, only those print jobs queued by your device can be deleted.

Buffered Prints Delete

Using the cursor control keys to position the cursor over an N in the column labeled 'Delete?' and then entering a Y, will cause the queued print jobs listed to the left of the Y to be deleted after the PF10 key is pressed. More than one N may be changed to a Y before pressing the PF10 key.

Display/Update HAP Session Status

Some terminal types support Host Addressable Printing (HAP), which allows the printer attached to your terminal to be used as a system printer.

Display/Update HAP Session Status allows you to enable or disable a HAP session for your terminal's printer. Using this utility you can override the configuration of the HAP Status at IML set during configuration (on the Device Profile/Display panel). ASCII displays require this utility to update their HAP session status, but coax displays can update HAP status using the display's setup mode.

When you enter the HAP Session Status utility, LINCS will tell you whether the current HAP session is enabled as a printer or display. You can change the HAP status from printer to display, or display to printer. The change will take effect when you Power On/Reset the display. You need at least two sessions configured for your device to change a session.

You should configure LINCS so that a printer LU will be assigned to the HAP session when the display PORs. The end user should follow these guidelines when updating the HAP session, to ensure reconnection to the proper type LU:

Changing from printer to display

After PORing the display to apply the change, swap to the HAP session and disconnect from the printer LU (using EXSEL-D). Once disconnected, connect the display session to the desired host resource.

Changing from display to printer

Prior to PORing the display to apply the change, swap to the HAP session and disconnect from the display LU. Then POR the display, and the correct LU will be assigned to the HAP connection.

HAP Supported Terminals

Printers attached to a 3472-type display station can be addressed by the host and can perform host addressable prints.

The following ASCII display stations support a printer for both local screen printing and host addressable printing:

- ADDs Viewpoint A2
- DEC VT100, VT241
- IBM 3151, 3161, 3162, 3163, and 3164
- IBM File Transfer and Terminal Emulator Program (FTTERM)
- Lear Siegler color and monochrome, ADM 11, ADM 12, 1178
- TeleVideo 970

Extended Attributes Demo

This utility demonstrates the proper functioning of a terminal equipped for extended functions (APL/Text, 7-color, extended attributes). Each line of the utility will demonstrate the function that is described, if that function is working properly. For example, Blink will be blinking.

A monochrome display will show this panel in monochrome form. A color display without extended functions will display turquoise, pink, and yellow as blue, red, and white, respectively.

```
Extended Attributes Demo Panel                          LINCS C8.2 Central Control

BLUE ..... NORMAL    BLUE ..... BLINK   BLUE ..... REVERSE   BLUE ..... UNDERLINE
BLUE ..... NORMAL    BLUE ..... BLINK   BLUE ..... REVERSE   BLUE ..... UNDERLINE
RED ...... NORMAL    RED ...... BLINK   RED ...... REVERSE   RED ...... UNDERLINE
RED ...... NORMAL    RED ...... BLINK   RED ...... REVERSE   RED ...... UNDERLINE
GREEN .... NORMAL    GREEN .... BLINK   GREEN .... REVERSE   GREEN .... UNDERLINE
GREEN .... NORMAL    GREEN .... BLINK   GREEN .... REVERSE   GREEN .... UNDERLINE
WHITE .... NORMAL    WHITE .... BLINK   WHITE .... REVERSE   WHITE .... UNDERLINE
WHITE .... NORMAL    WHITE .... BLINK   WHITE .... REVERSE   WHITE .... UNDERLINE
TURQUOISE  NORMAL    TURQUOISE  BLINK   TURQUOISE  REVERSE   TURQUOISE  UNDERLINE
TURQUOISE  NORMAL    TURQUOISE  BLINK   TURQUOISE  REVERSE   TURQUOISE  UNDERLINE
PINK ..... NORMAL    PINK ..... BLINK   PINK ..... REVERSE   PINK ..... UNDERLINE
PINK ..... NORMAL    PINK ..... BLINK   PINK ..... REVERSE   PINK ..... UNDERLINE
YELLOW ... NORMAL    YELLOW ... BLINK   YELLOW ... REVERSE   YELLOW ... UNDERLINE
YELLOW ... NORMAL    YELLOW ... BLINK   YELLOW ... REVERSE   YELLOW ... UNDERLINE

PF: 1-Menu
```

LPD Queue Management

```
LPD Queue Management                               LINCS C8.2 Central Control
              ID  Queue Name      Jobs         ID  Queue Name  Jobs
              __   _________      ____         __   _________  ____

              01  LQPRINT         2            17
              02  LINEPRINT       0            18
              03                  19
.   .   .   .   .   .
              16                  32

ENTER ID: __

PF: 1-Menu
```

This utility allows you to manage print jobs in LPD Print Server queues. Enter an ID number for the queue you are interested in and press Enter to access a queue.

LPD Queue Status

```
LPD Queue Status                                 LINCS C8.2 Central Control
              Queue: LQPRINT
 Job          Job
Number        Name                User                 Kbytes   Port
______        _____________     __________             ______   _____

 057          MCC1.012_005        LINCS                1        MCC1.003
d 058         PROFITS             THEM                 1        MCC1.019

PF: 1-Menu    3-Return           7-Prev  8-Forw 9-Refresh 10-Process
```

PF1 returns you to the Supervisor Functions Menu.

PF3 returns you to the LPD Queue Management panel.

PF8 and PF7 scrolls the screen, if there are more jobs than will fit on one screen.

PF9 refreshes the screen.

PF10 processes job deletion. Place a “d” in front of the jobs you wish to delete, as shown above.

LPD Printer Management

This utility allows you to manage LPD print jobs that are queued to a LAN printer.

```
LPD Printer Management                          LINCS C8.2 Central Control
CMD        Port            Queue Name           Status        Size Kbytes
_          ____            __________           ______        ___________
           ETH1.000        1330                 Printing      1

PF: 1-Menu                 7-Back      8-Forw       9-Refresh    10-Process
```

CMD

The CMD (Command) column allows you to issue commands to a queued print job. Command instructions that can be used are: D - Delete the print job.

Port and Queue Name

This identifies the virtual port on the LAN card that the print job was directed to. Each virtual port is assigned to a specific IP address on the Network Device Definition panel of configuration. The Queue name is configured on the same panel as the LAN printer’s IP address and represents the LPD Queue name that is defined at the print server that this print job is being directed.

Status

This field identifies what state the queued up print is in. Possible states are:

- Printing
- Idle
- Holding

Size Kbytes

The size field indicates how large the queued up print job is. Values are rounded up to the next 1 KB value.

CE Bridge Status

This panel allows you to view the Coax MAC address of attached 1683 NCT terminals attached to the 1174.

```
CE Brides Status:  MCC1                          LINCS C8.2 Central Control
Port          LAN Address               Port         LAN Address
-----------------------------------------------------------------------
  0           00242010000ad              16          Powered Off
  1           Non CE Bridge              17          Powered Off
  2           Powered Off                18          Powered Off
  3           Powered Off                19          Powered Off
  4           Powered Off                20          Powered Off
  5           Powered Off                21          Powered Off
  6           Powered Off                22          Powered Off
  7           Powered Off                23          Powered Off
  8           Powered Off                24          Non CE Bridge
  9           Powered Off                25          Powered Off
 10           Powered Off                26          Powered Off
 11           Powered Off                27          Powered Off
 12           Powered Off                28          Powered Off
 13           Powered Off                29          Powered Off
 14           Powered Off                30          Powered Off
 15           Powered Off                31          Powered Off
```

There are three types of port status that may be displayed on this panel. A device may be described as:

- Powered Off (therefore it is unknown what type of device might be detected)
- Non CE Bridge (the device is powered on, and it has not identified itself to be CE Bridge capable
- MAC Address of the CE Bridge device is displayed

12. Event Logs Menu

```
Event Logs Menu                                  LINCS C8.2 Central Control
   Item            Description

     1             All Events
     2             Port Events
     3             LU Events
     4             Event Code
     5             ASCII Event Log
     6             APPN Problems and Exceptions
     7             APPN Audits
     8             Summary Counters
     9             Clear ALL Summary Counters
    10             Clear ALL Event Logs

Select Item:       Depress Enter

PF1-Menu
```

LINCS keeps event logs and error logs to help in the determination of problems. This panel allows you to display the event logs and error logs, all together or in separate groups. This panel can also be used to clear (reset) the logs and counters.

All Events Log

The All Events Log keeps track of LINCS events such as all online errors detected by LINCS as well as IML events, configuration events, etc. Included in the log is a time stamp of when the event occurred. This facility can be very useful in determining the frequency of a particular error, or in helping keep track of whether an error continues after LINCS was IMLed (such as after swapping a card) or reconfigured. For a more complete definition of the error codes listed, refer to the LINCS Problem Determination Manual. For an example panel, see Port, LU or Event Code Events Log.

Port Events Log

This log is displayed by pressing the 2 key followed by a comma and the port number that you wish to display logs on (for example: ‘2.mcc1.005’) followed by the Enter key on the Event Logs menu. The Port Events Log displays events for the port selected only. For a more complete definition of the error codes listed, refer to LINCS Problem Determination Manual. For an example panel, see Port, LU & Event Code Events Log.

This facility can be very useful in determining the frequency of a particular error.

LU Events Log

This selection displays events logged for the specified LU. Optional parameters are ,host,lu where host is the host circuit number (00-7F) or host letter for older versions of code (a-z,1-6) and LU is the LU number in hexadecimal. An example selection of this log would look like: ‘3,00,05’.

If the parameters are omitted, the logs for the current LU (the LU attached to the session in LINCS Central Control) is displayed.

For a more complete definition of the error codes listed, refer to LINCS Problem Determination Manual. For an example panel, see Port, LU & Event Code Events Log. This facility can be very useful in determining the frequency of a particular error.

Event Code Events Log

This log is displayed by pressing the 4 key followed by a comma followed by the 4-digit event code that you wish to display the log for (for example: '4,0505') followed by the Enter key on the Event Logs menu. The Event Code log displays all LINCS events. For a more complete definition of the error codes listed, refer to LINCS Problem Determination Manual. For an example panel, see Port, LU & Event Code Events Log. This facility can be very useful in determining the frequency of a particular error.

ASCII Event Log

This log is displayed by pressing the 5 key followed by a comma followed by the port number of the ASCII port that you wish to display the log for (for example: '5,a7') followed by the Enter key on the Event Logs menu. The ASCII Event Log displays events for only the port selected. For a more complete description of the error codes listed, see the LINCS Problem Determination Manual. This facility can be very useful in determining the frequency of a particular error.

```
 ASCII Event                                        LINCS C8.2 Central Control
Port       Device    Frame     Parity    Overrun   Special   Escape   LAST 16
           Type      Errors    Errors    Errors    Errors    Errors   ERRORS
 A0        Display   0         0         0         0         0
 . . . . . . . .
 A7        Host      0         0         0         0         0
 B0        Undef
 . . . . . . . .
 B7        Undef
PF1-Main  PF3-Prev  PF7-Back  PF8-Forw
```

APPN Problems and Exceptions Summary Counters

This log contains problems and exceptions detected by the APPN feature if configured. The message 'No Events Logged' will display if there are no problems or exceptions to report. Problems and Exceptions are logged in chronological order, but upon entering the utility you will be shown the most recent event logged. An example of this panel appears below.

```
APPN Problems and Exceptions                        LINCS C8.2 Central Control
Event   Data
000A    APPN_Problem                    06/01/05, 16:27.10, 5923113
       Message 533:0  (from  SRC$:DCL$NDSLCTSG.C)
       Locate search failed: LU not found
         Sense code           =   0x08400007
         Origin CP name       =   USMTXDEV.STEVE
         Origin LU name       =   USMTXDEV.STEVE
         Destination LU name  =   USMTXDEV.NCMVS01
                              *

                          End of Trace Buffer>

 PF: 1-Menu                                        7-Back
```

APPN Audits

This log displays the Audits recorded by the APPN feature when configured. Audits are logged in chronological order, but upon entering the APPN Audits utility, the last Audit is displayed. You can page forwards and backwards through the Audits log to display each Audit, one per page. An example of what one of these Audits looks like is shown below.

```
APPN Audits                                        LINCS C8.2 Central Control

Event   Data
                        Beginning of Trace Buffer>
0000    APPN_Audit                        05/24/05, 12:10.04, 4380432
        Message 252:0  (from  C:\DIAB\WORK\DCL$NOFINIT.C)
        Node started
         CP name (Alias)     = VISARA.VIS1       (VIS1)
         Node type           = 02
         Node info           = LINCS Network Node, MTX, Inc.


 PF: 1-Menu                                                  8-Forw
```

Summary Counters

This log displays summary counters for 200 and 500 series errors for the host circuit that the display viewing the panels is connected to. This is a good log to start with to get an idea of the type of event codes being logged. For a more complete definition of the error codes listed, refer to the LINCS Problem Determination Manual.

```
 Summary Counters                                LINCS C8.2 Central Control
 200 Summary Counters              500 Summary Counters
 201_03 31                         505_01 01
 211_01 01                         505_10 03
                                   531_60 01
                                   532_02 01
                                   532_03 02
PF:  1-Menu
```

Clear All Summary Counters

Password protected. Selection 7 erases the summary counters. A 100-21 will be displayed in the event log to indicate that the summary counters were cleared.

Clear All Event Logs

Password protected. Selection 8 erases the event logs. When the logs are cleared, Code 174-20 will be logged in the Event Log.

Port, LU & Event Code Events Log

This is an example of what you will see if you choose All Events, Port Events, LU Events or Event Code Events from the Event Logs Menu. The panel title in the upper left corner identifies which panel is displayed.

```
 All Events                                          LINCS C8.2 Central Control
Date  Time  Error  H/G  LU  Connector  Extended Data      Description
04/01 11:50 0589-01         ETH1       00009999 02010BFF  IPX Packets
04/01 10:32 0589-01         ETH1       DBB00459 02040BFF  IPX Packets
04/01 10:16 0501-01         SCC1.0                        Idle timeout
04/01 10:16 0505-01 A       SCC1.0                        SNRM/SABME/SABM required
04/01 10:16 0174-02      00                               LINCS IML, no BATs
04/01 10:05 0505-01      00                               LINCS IML, DDO, no BATs
PF1-Main                  PF3-Prev
```

13. Communications Menu

The Communications menu allows you to select between the available communication tests.

```
Communications Menu                              LINCS C8.2 Central Control

Item          Description

 1,u          Display/Update Line Statistics
 2,u          Display/Update Gateway Circuits Status
 3            TCP/IP Menu
 4            LLC Menu
 5            LAT Menu
 6            IPX Menu
 7            APPN Menu
 8            Frame Relay Menu
 9            ESCON Menu

Select Item:  Depress Enter

PF: 1-Menu
```

Line Statistics

This selection displays statistics for one line per viewing page. Displayed are the Line ID (such as FET1 for Ethernet board one), LAN address if it is a LAN line, and slot number where the board is located. If a Line ID is not entered as a parameter, the first LAN line will be displayed.

To clear the counters, the update option (,u) must be used and the supervisory password entered (unless no password was configured). When properly enabled, the PF4 key clears all counters. If not manually reset, all the displayed error counters are automatically reset upon rollover of one or more of the counters. This automatic reset ensures that all counters are synchronized.

Three examples of Line Statistics are given, one for Ethernet (ETH), HSC, and Token Ring (TRC).

Line Statistics FET

```
 Line Statistics                                  LINCS C8.2 Central Control

 Line:     FET1                Slot:  03      Address: 0200117401001

 Successful Transmissions             155667
 Transmissions with Collisions        7
 Deferred Transmissions               78
 Late Collisions                      0
 Excessive Collisions                 0
 Receive Bufs Exhausted               0
 Internal Transmission Errors         0
 Successful Receptions                961804
 Frame Check Sequence Errors          0
 Frame Alignment Errors               0
 Transmit Bufs Exhausted              0

PF:  1-Menu   4-Clr_Ctrs          7-Back      8-Forw   9-Refresh
```

Successful Transmissions

Indicates the number of frames that have been transmitted without excessive collisions, excessive deferrals, or internal transmission errors.

Transmissions with Collisions

Indicates the number of frames that have been transmitted having one or more collisions.

Deferred Transmissions

Indicates the number of transmissions that have been deferred.

Late Collisions

Indicates the number of transmissions containing illegal collisions.

Excessive Collisions

Indicates the number of transmissions aborted as a result of 16 or more collisions.

Receive Bufs Exhausted

Indicates the number of times that the receive buffers have been exhausted.

Internal Transmission Errors

Indicates the number of transmissions aborted from FIFO Underrun or Byte Count Mismatch.

Successful Receptions

Indicates the number of frames that have been received without CRC or length errors.

Frame Check Sequence Errors

Indicates the number of frames that contained CRC errors that were not alignment errors.

Frame Alignment Errors

Indicates the number of frames with a CRC error that were not correctly aligned on an 8-byte boundary.

Internal Receive Errors

Indicates the number of frames received with lack of adequate buffers, FIFO overruns, or disabled receivers.

Line Statistics ETH

```
Line Statistics                              LINCS C8.2 Central Control
Line:     ETH1                Slot:  08      Address: 020011740001
Successful Transmissions              1037528
Transmissions with Collisions         20089
Deferred Transmissions                2074
Late Collisions                       0
Excessive Collisions                  48
Receive Bufs Exhausted                0
Internal Transmission Errors          48
Successful Receptions                 21658053
Frame Check Sequence Errors           34
Frame Alignment Errors                128
Internal Receive Errors               33761
PF:  1-Menu   4-Clr_Ctrs          7-Back      8-Forw   9-Refresh
```

Successful Transmissions

Indicates the number of frames that have been transmitted without excessive collisions, excessive deferrals, or internal transmission errors.

Transmissions with Collisions

Indicates the number of frames that have been transmitted having one or more collisions.

Deferred Transmissions

Indicates the number of transmissions that have been deferred.

Late Collisions

Indicates the number of transmissions containing illegal collisions.

Excessive Collisions

Indicates the number of transmissions aborted as a result of 16 or more collisions.

Excessive Deferrals

Indicates the number of transmissions aborted from expiration of the excessive deferral timer (3.2ms).

Internal Transmission Errors

Indicates the number of transmissions aborted from FIFO Underrun or Byte Count Mismatch.

Successful Receptions

Indicates the number of frames that have been received without CRC or length errors.

Frame Check Sequence Errors

Indicates the number of frames that contained CRC errors that were not alignment errors.

Frame Alignment Errors

Indicates the number of frames with a CRC error that were not correctly aligned on an 8-byte boundary.

Internal Receive Errors

Indicates the number of frames received with lack of adequate buffers, FIFO overruns, or disabled receivers.

Line Statistics TRC

```
Line Statistics                              LINCS C8.2 Central Control

Line: TRC1              Slot:  09              Address: 400011740000
Line Errors                     0
Burst Errors                    0
ARI/FCI Errors                  0
Lost Frame Errors               0
Receive Congestion Errors       0
Frame Copied Errors             0
Token Errors                    0
DMA Bus Errors                  0
DMA Parity Errors               0

PF:  1-Main             4-Clr_Ctrs          7-Back   8-Forw 9-Refresh
```

Line Errors

Count of errors that may occur. Some example errors are:

- a frame is repeated
- the Error Detected Indicator (EDI) in the incoming frame is zero
- or a Frame Check Sequence (FCS) error exists

Burst Errors

Count of the times the adapter detects the absence of transitions on the line for a selected period of time.

ARI/FCI Errors

Address Recognized Indicator/Frame Copied Indicator. Count of the times the adapter received a frame it had previously transmitted but the ARI or FCI is zero, indicating frame not recognized or copied by the destination.

Lost Frame Errors

Count of the times an adapter fails to receive the end of frame it previously transmitted.

Receive Congestion Errors

Count of the times an adapter recognizes a frame with its address but insufficient buffer space prevents reception of the frame.

Frame Copied Errors

Count of the times an adapter recognizes a frame with its address but the ARI bit has already been turned on. This may indicate a duplicate ring address.

Token Errors

Counter in the Active Monitor station. Incremented only when:

- A priority token has the Monitor Count bit set to one. Indicates the token is not being received.
- A frame has the Monitor Count bit equal to one. Indicates the token is not being received.
- No token or frame is received within a 10-ms window. Code violation exists in the Starting Delimiter/token sequence.

DMA Bus Errors

Occurrences of DMA bus errors.

DMA Parity Errors

Occurrences of DMA parity errors.

Line Statistics HSC

```
Line Statistics                              LINCS C8.2 Central Control
Line: HSC1.0                      Slot: 07
Successful Receptions             493
Invalid Length Frames Received    0
Frame Alignment Errors            0
Aborts Received                   0
Frame Check Sequence Errors       0
Discarded Frames                  0
Receive Overruns                  0
Successful Transmissions          5404
Transmit Underruns                0
CTS Lost During Transmission      0
PF:  1-Menu   4-Clr_Ctrs          7-Back 8-Forw 9-Refresh
```

The maximum value for all HSC counters is 2,147,483,647. Once a counter has reached the maximum value, the next increment to that counter will reset all counters. A 584-20 will be logged if the successful transmissions or successful receptions counters overflow. A 584-21 will be logged if an error counter overflows. See Event Logging for additional information.

Successful Receptions

Number of frames successfully received.

Invalid Length Frames Received

Number of frames received with invalid lengths.

Frame Alignment Errors

Number of frames received which contained a number of bits not divisible by eight.

Aborts Received

Number of frames received with at least seven consecutive one bits.

Frame Check Sequence Errors

Number of frames received which contained CRC errors.

Discarded Frames

Number of frames discarded due to lack of buffers.

Receiver Overruns

Number of frames received with receiver overruns.

Successful Transmissions

Number of frames successfully transmitted.

Transmit Underruns

Number of frames transmitted which contained underruns.

CTS Lost During Transmission

Number of times CTS was lost while transmitting a frame.

Gateway Circuit Status Panel

The Gateway Circuits Status panel is identical to the Gateway Circuits panel in Configuration, except for the Current Status field. When the ,u (update) option is used to enter this panel the circuit currently being displayed can be reset or "downed" After either PF4, PF5 or PF6 is pressed to cause a circuit to be reset the message "Process Initiated. Use PF9 to update display" will be displayed on row 23 of the screen. Pressing PF9 again will erase the message.

```
Gateway Circuit 000                              LINCS C8.2 Central Control
UPSTREAM CONNECTION - USC
Line:                    TRC1
Link Profile:            07 (LLC)
Local SAP:               04
Remote LAN Address:      4000 1111 0000       Current Status: Link Down
Remote SAP:              04
DOWNSTREAM CONNECTION - DSC
Line:                    SCC1.0               Current Status: Sending SNRMs
3270 Link Profile:       05 (SDLC/DAP)
PU Address:              C1
PUID Override            _______
Primary Group Addr:      E0
PF:  1-Menu   3-Down DSC 4-Down USC 5-REQDISC  7-Back 8-Forw 9-Refresh
```

The following special PF keys are used to “down” a circuit:

- PF3 Down DSC Force the downstream circuit down
- PF4 Down USC Force the upstream circuit down
- PF5 REQDISC Send a request disconnect to the host

Note that downing a circuit will not keep it down. Most downstream devices will try to re-establish within 30 seconds or less. Additionally, this function downs the circuit but makes NO attempt to bring it back up.

Current Status of Gateway Circuits

Options for Current Status of the Gateway Circuit are:

- Link Down - No link activity. The link is in Normal disconnect or Disconnected mode.
- Sending SNRMs - SNRMs are currently being sent to this PU address.
- Sending SABME - SABMEs are currently being sent to this PU address.
- Link Up - Link is up and in normal response mode. Data will flow when available.
- Local Busy - The local side of the link is temporarily out of communication buffers.
- Remote Busy - The remote side of the link is temporarily out of communication buffers.
- CONNECT Received - A CONNECT/CONTACT has been received, but a positive response has not been received from the DSN.
- PU Active - The PU is currently active. Data will flow when available.
- Flowed Off - The local side of the link is temporarily out of communication buffers.
- Remote Flow - The remote side of the link is temporarily out of communication buffers.
- TCP Window - The TCP window has closed on the local side of the link.
- Remote Window - The TCP window has closed on the remote side of the link.
- Circ Idle - No TCP connection has been made between partners.
- TCP_Half - One of the two TCP connections has been made between the partners.
- Disconnected - Both TCP connections have been made between the partners.
- Resolve Pend - The local link is processing the CANUREACH from the remote link.
- Circ Pending - The local link is waiting for the REACH_ACK command from the remote link.
- Circ Estab - The SSP circuit is established.
- Conn Pending - The local link is waiting for a CONTACTED response to a CONTACT command.
- Cont Pending - The local link is waiting for the downstream side of a gateway circuit to establish a connection.
- Connected - The SNA circuit has been established.
- Disc Pend - The local link is waiting for a DL_HALTED in response to a HALT_DL command.
- Halt Pend - The local link is waiting for its SNA circuit to be taken down.
- Restart Pend - The local link is waiting for its SNA circuit to be taken down and subsequent restart.
- Circ Restart - The local link is waiting for its SNA circuit to be restarted.

TCP/IP Menu

This selection allows you to select the TCP/IP information tests. Item 4 is password protected.

```
TCP/IP Menu                                    LINCS C8.2 Central Control

       Item             Description
       1                ARP Table
       2                TCP Socket Status
       3,u              Display/Update IP Summary Counters
       4                Clear All IP Summary Counters
       5,u              Display/Update DNS Local Cache
       6                IP Router Menu
       7                TCP/IP Stack Trace
       8                Network Device Status
       9                Ping
       10               Trace Route

       Select Item:     Depress Enter
PF:  1-Menu
```

ARP Table

This utility displays the LAN address that has been determined for each configured IP address by the ARP protocol. Each configured IP address is displayed on the left side and, if the LAN address has been found using ARP, then it is displayed on the right. If the LAN address has not been resolved, then all zeroes will be displayed.

If the list is longer than one screen, use PF8 to scroll forward, and PF9-Restart if you wish to restart the list at the beginning.

```
ARP Table                                      LINCS C8.2 Central Control

  Line                IP Address            LAN Address

  FET1                192 034 252 010       0800 3E20 4FEA
  FET1                192 034 252 020       0800 3E20 4FEA
  FET1                192 034 252 030       0000 0000 0000
  FET1                192 034 252 040       0800 3E20 4FEE
  ..
  ..
  FET1                000 000 000 000       0000 0000 0000
  FET1                000 000 000 000       0000 0000 0000

PF:  1-Menu           8-Forw                9-Restart
```

TCP Socket Status

This utility provides connection status on a per TCP port basis. This utility can be used to determine the ports that have connected to a TELNET host. The source port field displays the value used by a particular session. The IP class and the device port and session are displayed to indicate which TCP port is displayed with the application, if it is well known. The current receive window is displayed for the connection. The PF8-Forw key will only be displayed if there is more than one page of socket status.

```
TCP Socket Status                                LINCS C8.2 Central Control

Source                                      Destination    Receive
TCP Port      IP Class       Port-ses       TCP Port       Window        Line
0123          --             ----------       1057         2048          FET1


PF:  1-Menu                                          9-Restart
```

IP Summary Counters

The IP summary counters can be displayed on a per class basis. The utility may be initiated by entering a class number (3,xx). The class number can be 01 to 16. If no class number is entered, the utility will display Class 01.

```
 IP Summary Counters                              LINCS C8.2 Central Control
                                                 ICMP
Class          ARP      Counters      Type/Code          Counters
01             REQ      14            03/01              02
               +RESP    10            04/00              06
               -RESP    02
               Timeout  02

 PF:  1-Menu  4-Clr_Ctrs                         7-Back 8-Forw 9-Refresh
```

The PF7-Back key pages to the summary counter of the previous class. The PF8-Forw key pages to the summary counters of the next class. Selecting the update option (,u) and entering the supervisory password enables the PF4 key to clear the counters of the currently displayed class only.

The IP Summary Counters display IP protocol notifications. For ARP, counts are kept for requests, positive and negative ARP responses, and time-outs. For ICMP, counts are kept for ICMP type frames described in the ICMP Frame Type/Code table.

ICMP Frame Type/Code

The following list describes ICMP type frames for IP protocol notifications:

Type	Code	Description
03	—	Destination Unreachable
	00	Network Unreachable
	01	Host Unreachable
	02	Protocol Unreachable
	03	Port Unreachable
	06	Network Unknown
	07	Host Unknown
	09	Communication with network administratively prohibited
	10	Communication with host administratively prohibited
	11	Network Unreachable for type of service
	12	Host unreachable for type of service
04		Source Quench
05	—	Redirect (change route)
	00	Redirect for Net
	01	Redirect for Host
	02	Redirect for type of service and net
	03	Redirect for type of service and host
08		Echo Request
11	—	Time Exceeded
	00	Count Exceeded
	01	Fragment reassembly time exceeded
12	—	Parameter Problem
	00	Field invalid
	01	Field missing
13		Timestamp Request
15		Information Request
17		Address Mask Request

Clear All IP Summary Counters

When selected, a screen prompting for the supervisory password is displayed. If the correct password is entered, this utility clears the IP Summary Counters for all classes and displays a message upon completion.

DNS Local Cache

The Domain Name Service (DNS) is an application layer protocol that runs on top of TCP/IP. This naming service associates information (host names) with objects (Internet addresses). The function of DNS is to retrieve and provide information about hosts on the Internet network by querying and answering queries.

This utility allows the user to view or modify (if the update option selected) the local cache. The DNS names with their corresponding Internet addresses are displayed. The local cache is used for name to address mappings for all lines on the LINCS node. The name is displayed on two lines if the length is greater than 64 characters. The maximum length of the name is 128 characters.

```
 DNS Local Cache                                LINCS C8.2 Central Control

Host Name                          Internet Address

SULU.RALENG.VISARA.COM.            192 084 252 203
SPOCK.RALENG.VISARA.COM.           192 084 252 204
TREK.RALENG.VISARA.COM.            192 084 252 202

PF:  1-Menu   4-Clear                          9-Restart
```

DNS Names

DNS names have a hierarchical organization, consisting of domains nested within one another. Names are written from bottom-to-top, with dots separating the levels. The root of the tree is maintained by the Network Information Center (NIC). To join the Internet, you must contact the NIC to get the authority to be a member. NIC will grant that access and the root name server will be updated with this information. There is usually a name server at each node in the DNS structure tree. A name is defined by listing each label separated by dots all the way to the root label. For example: SULU.RALENG.VISARA.COM

The name can be fully-qualified which includes the dot after the top level domain or the name can be relative to a known origin, in which case only part of the full name may be used to identify the host. In the previous example, the name SULU can be used as a relative name to identify the fully-qualified name, if the default domain is equal to RALENG.VISARA.COM.

The name is not case-sensitive. Labels must be 63 characters or less and domain names must be less than or equal to 255 bytes. However, LINCS limits the length of a DNS name in a query to 128 bytes. The label must start with a letter, end with a letter or digit, and have as interior characters only letters, digits, and/or hyphens.

IP Router Menu

This selection allows you to select the IP Router tests.

```
 IP Router Menu                                 LINCS C8.2 Central Control

 Item          Description

  1            Display IP Router Table
  2,u          Display/Update Line Counters
  3            Restart Router

Select Item:  Depress Enter

PF: 1-Menu
```

IP Router Table

The IP Router Table displays all of the entries that the router uses to determine where to forward packets to. The IP Router performs a logical AND operation between the destination address of a packet, and the subnet mask then attempts to match the result with the Network IP Address field. A description of the different fields follows the example panel.

```
 IP Router Table: TRC1                          LINCS C8.2 Central Control

    Network            Network                    Next HOP            Route
   IP Address        Subnet Mask      Line      IP Address      HOPs  Type   TTL
   ________          ________         __         ________        __    ___    _

 196 081 252 000   255 255 255 000   ETH1   000 000 000 000    00   LOCAL  180
 196 081 254 000   255 255 255 000   TRC1   000 000 000 000    00   LOCAL  180
 196 081 253 000   255 255 255 000   TRC1   196 081 254 001    01    RIP   163

PF:  1-Menu    4-Prev_Ln   5-Next_Ln    7-Back     8-Forw      9-Refresh
```

- Network IP Address - This entry identifies the network to which the table entry is for.
- Network Subnet Mask - This field indicates what subnet mask is used to used by the network entry.
- Line - The Line entry identifies which LINCS adapter the packet needs to be routed to.
- Next HOP IP Address - If the packet is to be forwarded to another router, this field indicates the address of this next router.
- HOPs - The HOPs count identifies the number of routers that must be crossed to arrive at the destination.
- Route Type - This field identifies the source of entry into this table. The choices are:
  - Local - This is a LAN card installed within the LINCS platform.
  - RIP - This identifies the entry as one that was learned through a RIP broadcast.
  - Static - This entry was defined manually by the administrator.
- TTL - The Time-To-Live value displayed in this field indicates the number of seconds the router is allowed to keep this entry before discarding it. The maximum amount of time is 180 seconds. Local and Static routes should always show a value of 180. The dynamic RIP entries should change with successive pressing of the PF9 (refresh) key . Every time a new RIP broadcast is received the TTL values are updated. Typical values for this field will be in the 150-180 range when RIP broadcasts are being received regularly, and all routes are remaining active.

Display/Update Line Counters

This panel provides a display of various interface statistics.

```
IP Router Line Counters: TRC1                          LINCS C8.2 Central Control

IN interface bytes:              00000000  IN  pkts with unknown prot:    00000000
Unicast pkts delivered:          00000000  IN  err-free pkts discarded:   00000000
IN  Broadcasts or multicasts:    00000000  IN  pkts delivered up stack:   00000000
IN  pkts discarded/no error:     00000000  OUT IP pkts originating local: 00000029
IN  pkts containing errors:      00000000  OUT err-free IP pkts discard:  00000000
IN  pkts with unknown prot:      00000000  IP  pkts discarded/no route:   00000000
OUT interface bytes:             00000000  IP  Fragments need reassembly: 00000000
OUT unicast pkts:                00000000  Failures in IP reassembly:     00000000
OUT broadcast/multicast pkts:    00000029  IP  pkts fragmented here:      00000000
OUT pkts discarded/no error:     00000000  IP  pkts unable to fragment:   00000000
OUT pkts discarded/with error:   00000000  IP  fragments created:         00000000
OUT pkts in queue:               00000000  Routing pkts discarded:        00000000
IN  ICMP msgs:                   00000000  RIP bad pkts received:         00000000
IN  ICMP msgs/with errors:       00000000  RIP bad routes:                00000000
OUT ICMP msgs:                   00000000  RIP updates sent:              00000000
OUT ICMP msgs/with errors:       00000000  Total Heap (bytes):            00272756
IN  IP pkts:                     00000000  Available Heap (bytes):        00228372
IN  pkts discarded/header err:   00000000
IN  pkts discarded/bad addr:     00000000
IN  forwarded pkts:              00000000

PF: 1-Menu              4-Clr_Ctrs                    7-Back 8-Forw 9-Refresh
```

Restart Router

This command restarts the IP Router if it is configured. The current router table is cleared and is repopulated as routing information is received from the network.

TCP/IP Stack Trace

The TCP/IP Stack Trace allows you to trace and view a trace that is taken internal to the IP stack used by LINCS. The trace does not automatically run, so you must configure it and start it if you want a trace. If the LINCS platform is dumped while the trace is running, the trace will be included in the dump. To conserve on space in the trace buffer (allow the trace to include data for longer periods of time) there is a lot of control over what gets traced. Eleven

categories of IP protocols can be enabled or disabled, depending on what you are trying to capture. Note that this trace facility is not a good substitute for traces taken by a sniffer.

```
TCP/IP Stack Trace                                    LINCS  C8.2  Central
Control
    ARP Trace:          Disable        Detail Of Trace:   Basic
    IP Trace:           Disable
    Router Trace:       Disable
    ICMP Trace:         Disable
    UDP Trace:          Disable
    TCP Trace:          Disable
    SNMP Trace:         Disable
    PPP Trace:          Disable
    Modem Trace:        Disable
    PROXY Trace:        Disable
    NAT Trace:          Disable
    1. Start Trace
    2. Stop and Display Trace

    Select Item:

 PF: 1-Menu                                                    10-Process
```

Additional controls for the TCP/IP Stack Trace include:

Detail of Trace – Can be set to ‘Basic’ (default) or ‘Extensive’. When set to ‘Extensive’ a more detailed description of the captured information is displayed.

Start Trace – Typing a ‘1’ after the ‘Select Item:’ prompt and pressing the PF10 function key starts the Trace facility. Prior to starting the facility, you should have already toggled the protocol traces that are to be included. Upon pressing the PF10 key to start the trace, a message ‘Trace Started’ should display near the bottom the screen to inform you that the trace facility is running. Note that if more than one LAN card is installed in the platform, the trace facility records information for all LAN cards (tracing only the selected protocols).

Stop and Display Trace – Typing a ‘2’ after the ‘Select Item:’ prompt will stop the trace facility and display the data that has been captured since it was started. Use the PF8 key to move forward through the trace and PF7 to page backwards through the trace. Use PF4 and

PF5 to display other LAN cards when multiple LAN cards are used. PF9 will move you back to the top of the trace and PF10 will move you to the bottom of the trace. An example of an IP Stack Trace is shown below.

```
TCP/IP Stack Trace Messages: FET1              LINCS C8.2 Central Control
  Beginning of Trace Buffer>
    <tcp send>
    <ip frsend> imm. src addr : 192.84.252.35
    <ip frsend> imm. dest addr: 192.84.252.228
    <ip frsend> org. src addr : 192.84.252.35
    <ip frsend> ult. dest addr: 204.48.63.217
    <arp_r> Found in ARP cache
    xmit pkt:
    08 00 4E 30 7C 00 02 00 11 74 00 35 08 00 45 00
    00 37 13 E4 00 00 3C 06 A2 5B C0 54 FC 23 CC 30
    3F D9 00 17 04 24 B5 47 4F 48 BA D2 55 F3 50 18

    Received ETH pkt:
    02 00 11 74 00 35 08 00 4E 30 7C 00 08 00 45 00
    00 28 07 0D 40 00 7E 06 2D 41 CC 30 3F D9 C0 54
    FC 23 04 24 00 17 BA D2 55 F3 B5 47 4F 57 50 10

    <ip up>
    <tcp up>

 PF: 1-Menu          4-Prev_Ln 5-Next_Ln   7-Back 8-Forw   9-Top 10-Bottom
```

Network Device Status

The Network Device Status panel gives the current status of each LAN card installed.

```
Network Device Status  FET1                      LINCS C8.2 Central Control

    Device line: REAL       Device name: FET_1      Device Id: 3
    Device Flags: [Init'ed] [Online] [IP addr set]
    Device type: Ethernet   Mac addr: 2 0 11 74 0 35
    IP Addr: 192.84.252.35   Mask: ffffff00    MTU: 1500
    Inter-Board Routing: No      Interface Routing: Disabled


 PF: 1-Menu                                    7-Back 8-Forw 9-Refresh
```

Information that is included on the Network Device Status panel is:

- Device Line – Indicates whether the line is associated with a physical connection (REAL)
- Device Name – The name of the card
- Device ID – Displays the Slot ID associated with the displayed card
- Device Flags – List of status flags associated with this card
    - Init-ed – Initialized
    - Online – communicating with the network
    - IP addr set – indicates the IP address configured on the card
- Device Type – Ethernet or Token Ring
- MAC Address – The hardware address of the card given in hex
- IP Address – The IP address of the card displayed
- Mask – The subnet mask used on the card

- MTU – Maximum transmission frame size
- Inter-board Routing – Indicates whether IP routing is enabled between cards
- Interface Routing – Indicates whether IP routing is enabled on the card

PING

The Ping panel allows you to test the network interfaces by generating a PING to other nodes on the network. Just type the IP address you wish to PING at the 'Ping:' prompt and press PF10. If the LINCS platform has been configured to communicate with a DNS server, you can also PING DNS names. The PING response success will be indicated in the Response area of the panel.

```
Ping (ICMP Echo Request)                          LINCS C8.2 Central Control
     Response
     ____________________________

    Rsp from 199.005.182.180 seq.= 001 Time 00000 ms
    Rsp from 199.005.182.180 seq.= 001 Time 00000 ms
    Rsp from 199.005.182.180 seq.= 001 Time 00000 ms
    ____________________________

    Average Response Time:00000
 Ping: 199.5.182.180
 Complete
 PF: 1-Menu                4-Clear                                  10-Process
```

Trace Route

This utility is currently not available from LINCS.

LLC Menu

From the LLC menu, you may display or clear LLC circuit statistics.

```
LLC Menu                                          LINCS C8.2 Central Control
       Test                  Description
       1,u                   Display/Update Circuit Status
       2                     Clear All Circuit Statistics
       Select Item:          Depress Enter
PF:  1-Main                  3-Prev
```

Display Circuit Status - LLC Menu

The Display Circuit Status panel allows you to display various types of LLC circuits that are supported by LINCS. Included are:

- Host Circuits
- Gateway Circuits
- APPN Circuits
- LU/PU Mapped Circuits

Host Circuit Status Example:

```
Circuit Status                                    LINCS C8.2 Central Control

 3270 Host Circuit: 01                  Station State: Disconnected
 STA: 01FF3960
 Line: FET1
 Local SAP: 04                         Remote Address-SAP: 020037450006-04

 Info frames transmitted:                        0000
 Info frames received:                           0000
 Info frames received with error:                00
 Info frames transmitted ending in error:        00
 T1 expirations when not sending data:           0000
 Last LLC control byte received:                 00
 Last LLC control byte transmitted:              00
 Link Primary State:                             40
 Link Secondary State:                           00
 V(s):                                           00
 V(r):                                           00
 Last NR received:                               00
 Length of LAN header:                           10


 PF: 1-Menu              4-Clr_Ctrs              7-Back 8-Forw 9-Refresh
```

Gateway Circuit Status Example:

```
 Circuit Status                                    LINCS C8.2 Central Control

 Gateway Circuit:  0001                          Station State: Opened

 Line: ETH1
 Local SAP: 04                          Remote LAN Addr-RSAP:  020093000017-04
 Info frames transmitted:               0022
 Info frames received:                  0022
 Info frames received with error:       00
 Info frames transmitted ending in error:     00
 T1 expirations when not sending data:        0000
 Last LLC control byte received:        01
 Last LLC control byte transmitted:     7F
 Link Primary State:                    01
 Link Secondary State:                  00
 V(s):                                  22
 V(r):                                  22
 Last NR received:                      22
 Length of LAN header:                  10

PF: 1-Menu    4-Clr_Ctrs          7-Back 8-Forw 9-Refresh
```

APPN Circuit Status Example:

```
Circuit Status                                  LINCS C8.2 Central Control

 APPN Circuit: 0001                     Station State: Opened
 STA: 01FF3AC0
 Line: FET1
 Local SAP: 04                         Remote Address-SAP: 020011740201-04

 Info frames transmitted:                      000D
 Info frames received:                         000D
 Info frames received with error:              00
 Info frames transmitted ending in error:      00
 T1 expirations when not sending data:         0000
 Last LLC control byte received:               01
 Last LLC control byte transmitted:            73
 Link Primary State:                           01
 Link Secondary State:                         00
 V(s):                                         0D
 V(r):                                         0D
 Last NR received:                             0D
 Length of LAN header:                         10


 PF: 1-Menu                                      7-Back 8-Forw 9-Refresh
```

LU/PU Mapping Circuit Status Example:

```
Circuit Status                                  LINCS C8.2 Central Control

 LU to PU Mapping Circuit: 0000    Station State: Closed
 STA: 019EDB40
 Line: ETH1
 Local SAP: 04                   Remote Address-SAP: 000000000000-00


 Info frames transmitted:                      0000
 Info frames received:                         0010
 Info frames received with error:              00
 Info frames transmitted ending in error:      00
 T1 expirations when not sending data:         0000
 Last LLC control byte received:               00
 Last LLC control byte transmitted:            00
 Link Primary State:                           00
 Link Secondary State:                         00
 V(s):                                         00
 V(r):                                         00
 Last NR received:                             00
 Length of LAN header:                         00


 PF: 1-Menu                                      7-Back 8-Forw 9-Refresh
```

Circuit Type

This field will be:

- HOST indicates that this circuit is functioning as a DSPU to a gateway.
- GATEWAY indicates that this circuit is functioning as an SNA gateway.
- APPN indicates that this circuit is functioning as an APPN NN circuit.
- LU to PU Mapping indicates that this provides a mapping of upstream SNA LUs to downstream SNA PU/LUs.
- LANSYS indicates that this is a LANSYS port.

Line

This is the LAN board id.

Local SAP

This is the LAN Address and SAP number belonging to this (local) LINCS node.

Remote LAN Address-SAP

This is the LAN Address and SAP number belonging to the remote node to which this circuit is connected.

Station State

Indicates the current primary link state. See codes listed under Link Primary State on this panel.

T1 expirations

The T1 timer is used to timeout a required response from the circuit partner. This parameter keeps a count of all instances where this timer has timed out.

Last LLC control byte received/transmit

Following is a list of LLC commands that may show up for this status:

0F/1F	Disconnect Mode
43/53	Disconnect
63/73	Unnumbered ACK Response
6F	SABME Command
7F	SABME Response
87/97	Frame Reject
AF	XID Command
BF	XID Response
E3	Test Command
F3	Test Response
01	Receiver Ready
05	Receiver Not Ready
09	Reject
XX	Information Frame (XX any even hex value)

Link Primary State

Only one primary state is valid at a time. The following table indicates the values that may be found for this parameter. A discussion below the table describes each of these states.

80	Link Closed	Station is closed (has not been opened).
40	Disconnected	SABME/UA not exchanged. For 3270 LAN communications, the gateway LINCS node always sends the SABME (not the DSPU).
20	Disconnecting	Disconnect command sent
10	Link Opening	SABME has been sent but the corresponding UA has not been received.
08	Resetting	Frame Reject Sent(By this station.)
04	Frame Reject Sent	
02	Frame Reject Received	(By this station.)
01	Link Opened	SABME/UA has been exchanged.

Link Secondary State

Multiple secondary link states may occur simultaneously. The value of the hex byte displayed is the sum of the values listed below. For example, a value of 0A indicates Rejection (08) and Window Algorithm Running (02). The state definitions are shown in the list below. A brief explanation of the secondary states follows.

80	Checkpointing	Frame has been sent
40	Local Busy (user set)	LINCS has run out of receive buffers. An RNR frame is being sent until buffers become available.
20	Local Busy (buffer set)	The Token Ring chip set has run out of buffers to receive data with. RNR type frame is being sent until buffers become available.
10	Remote Busy	
08	Rejection	Rejection sent requiring retransmit of frame.
04	Clearing	
02	Window Algorithm Running	Outstanding frames not acknowledged yet.
01	Reserved	

V(s)

This is the value of the next Nr expected.

V(r)

This is the value of the next Ns expected.

Length of LAN header

A value of 0E indicates that the session does not cross a bridge. A value larger than hex 0E indicates that Source Routing is being used and that there is at least one bridge between circuit partners.

Clear All Circuit Statistics

If you choose this item, you will be prompted for the supervisory password. If you enter the correct password, all statistics for all LLC circuits will be reset, and a message will be displayed on line 24 of your display.

LAT Menu

This panel allows you to select between the LAT information panels.

```
 LAT Menu                                        LINCS C8.2 Central Control

      Item                 Description
      1,u                  Display/Update LAT Line Statistics
      2,u                  Display/Update LAT Node Statistics
      3                    Clear All LAT Statistics

      Select Item:         Depress Enter

PF:  1-Main
```

Entering the update option (,u) enables the PF4 key. The PF4 key provides for the clearing of counters for selected tests.

LAT Line Statistics

This utility displays LAT line statistics for a given Ethernet line. If a LAT line number is not entered as a parameter, the default is the first Ethernet line configured for LAT.

```
LAT Line Statistics                             LINCS C8.2 Central Control

  Line:  ETH1               Slot:  10           Address:  020011740451

Circuits Started                    0
Sessions Started                    0
Frames Received                     86
Frames Transmitted                  1
Illegal Frames                      0
Circuit Timeouts                    0
Service Messages Transmitted        1
Service Messages Received           92
Service Messages Used               53
Service Messages Discarded          0

PF:  1-Menu                                     9-Refresh
```

Pressing the PF4 key, if active, clears all counters for the currently displayed line, except the Active Circuits and Active Sessions fields. All counters stop incrementing when their maximum value (4,294,967,295) is reached.

The PF9 key is used to update the statistics for the currently displayed Ethernet line.

Circuits Started

Current number of active circuits.

Sessions Started

Current number of active sessions.

Frames Received

Number of LAT frames received.

Frames Transmitted

Number of LAT frames transmitted.

Illegal Frames

Number of illegal frames detected.

Circuit Timeouts

Number of circuit timer expirations.

Service Messages Transmitted

Number of service messages transmitted.

Service Messages Received

Number of service messages received.

Service Messages Used

Number of service messages processed.

Service Messages Discarded

Number of service messages discarded.

LAT Node Statistics

This utility displays LAT node statistics for a given LAT node. If a LAT node name is not entered as a parameter, the default is the first node on the first Ethernet line configured for LAT.

```
LAT Node Statistics                          LINCS C8.2 Central Control
  Line :  ETH1              Slot:  10                 Node Name: 1174PLC
Run Messages Received                0
Run Messages Transmitted             0
Slots Received                       0
Slots Transmitted                    0
Bytes Received                       0
Bytes Transmitted                    0
Duplicate Messages                   0
Forward Out-Of-Sequence Messages     0
Retransmitted Messages               0
Bad Circuit Messages                 0
Bad Circuit Slots                    0
Host-initiated Accepted              0
Host-initiated Rejected              0
Multiple Nodes                       0
PF: 1-Menu                 4-Clr_Ctrs          8-Forw 9-Refresh
```

Pressing the PF4 key, if active, clears all counters for the currently displayed line. All counters stop incrementing when their maximum value (4,294,967,295) is reached.

The PF9 key is used to update the statistics for the currently displayed Ethernet line.

Run Messages Received

Number of run messages received.

Run Messages Transmitted

Number of run messages transmitted.

Slots Received

Number of slots received.

Slots Transmitted

Number of slots transmitted.

Bytes Received
Number of bytes received.

Bytes Transmitted
Number of bytes transmitted.

Duplicate Messages
Number of duplicate messages detected.

Forward Out-Of-Sequence Messages
This is the number of messages received out of order.

Retransmitted Messages
Number of frames retransmitted.

Bad Circuit Messages
Number of bad circuit messages detected.

Bad Circuit Slots
Number of bad circuit slots detected.

Host-initiated Accepted
Number of host-initiated connections accepted.

Host-initiated Rejected
Number of host-initiated connections rejected.

Multiple Nodes
Number of multiple nodes detected.

Clear All LAT Statistics
This utility is password protected. It clears all LAT line and node statistics. If no parameters are entered at this test, all statistics will be cleared on all ETH boards. If a line number is entered as a parameter, all statistics for that line only will be cleared.

IPX Menu
This IPX Menu will give users access to IPX, RIP, and SAP status information display panels and Router and Server functions.

```
IPX Menu                                        LINCS C8.2 Central Control

 Item         Description

  1           Display/Update IPX Network Status
  2           Display RIP Routing Information Table
  3           Display SAP Service Information Table
  4           Reset IPX Router

Select Test:  Depress Enter

PF: 1-Menu
```

Display/Update IPX Network Status
This LINCS Central Control will allow you to view the IPX, RIP, and SAP status and error counters for the internal network and each direct connect IPX network segment. You can also reset the various IPX counters for the currently displayed network. Additional information about the last packet discarded will also be displayed, if a packet has been discarded since the

IPX counters were last reset.

This LINCS Central Control, in conjunction with the Communications Menu, Display/Update Adapter Statistics, provides an extended Visara implementation of Novell's MONITOR.NLM LAN/WAN Information Utility.

IPX Network Status Example

```
IPX Network Status                                  LINCS C8.2 Central Control

Protocol:  802.2 LLC  Network: 5362E001     Node: 020011740001 Line: ETH1
RIP State: Link Up      Seconds until next Broadcast:           35
SAP State: Link Up      Seconds until next Broadcast:           50

Packets Received:  35255         Packets Sent:  559886

PACKETS DISCARDED SUMMARY COUNTERS            Total Packets Discarded:  7757
Network Number Conflict:          7668     TC (HOPs) Overflow:  0
Route Unknown:          61        Socket Unknown:              0
No IPX Rx Buffer:       10        Rx Packet too Small:         0
No RIP Tx Buffer:       1         Rx Packet too Large:         16
No SAP Tx Buffer:       1         Tx Packet too Large:         0
Checksum Packet:        0

Last Packet Discarded Cause: Network Number Conflict IPX Packet Size: 0028

Receive          Network: 5362E001   Node: 020093000070     Line:  ETH1
Source           Network: 027400A2   Node: 400198529222     Socket: 4023
Destination      Network: 43810001   Node: 400027884000     Socket: 1F80
      PF: 1-Menu    4-Clr_Ctrs    7-Back 8-Forw 9-Refresh
```

If you select this utility with the optional ,u update parameter, pressing PF4 will reset the IPX counters for the current network.

Protocol

This field will display the protocol for the indicated internal or direct connect IPX network. The displayed protocol will be one of the following:

- NULL (IPX Internal Network)
- SNAP
- Ethernet 802.3
- Ethernet V2

Network

This field will display the IPX Network Number of the internal or direct connect network for the indicated protocol.

Node

This is the Node address for the LAN board connected to the internal or direct connect network. If the RIP State is Link Down, this field will have a value of 000000000000. After the link becomes active for the first time, the Node address assigned to the LAN board will be displayed (configured or burned in address). If this panel is displaying the Internal IPX Network, the Node address will be 000000000001.

Line

This is the LAN board line type and occurrence for the LAN board (or Internal IPX Network). Line types will be Internal for the Internal IPX Network, TRCx for a Token Ring LAN board,

or ETHx for a Ethernet LAN board (where x indicates the board number, e.g. TRC1 = 1st Token Ring LAN board).

RIP and SAP States

Current states of the RIP and SAP protocols are:

- Link Down - The LAN board IPX connection to the network is not accessible by RIP/SAP.
- IPX Router Reset Initiated - A Reset IPX Router function has been initiated via the LINCS Central Control. This state indicates that RIP or SAP was not in a Link Down state at the time the reset was initiated. During this state, the IPX router is broadcasting all internal and direct connect network routes and services which were not in the Link Down state as AVAILABLE and all routes and services on remote network segments as UNAVAILABLE.
- Initial Broadcast Pending - The LAN board IPX connection to the network has become available or the IPX Router Reset operation has completed. RIP/SAP is now attempting to perform an Initial Routes/Services Broadcast to the IPX network.
- General Request Pending - After attempting to perform an Initial Routes/Services Broadcast, RIP/SAP is now attempting to issue a General Request for Routing/Service information from other Routers/Servers in the network.
- Link Up - The LAN board IPX connection to the network is up and RIP/SAP now have access to the network. When the RIP State is Link Up, all other IPX protocol applications and IPX LAN boards have access to this network.

RIP and SAP Seconds until next Broadcast

This field will display the time, in seconds, until the next RIP/SAP Periodic Broadcast will be sent.

Packets Received

This field indicates the number of IPX packets received from this network.

Packets Sent

This field indicates the number of IPX packets sent on this network.

Packets Discarded

These fields indicate the number of IPX packets which have been discarded. See the individual Packets Discarded Summary Counters for a breakdown on the number of IPX packets discarded for various reasons. See the Last Packet Discarded for additional information extracted from the Last IPX Packet discarded.

Total Packets Discarded

This field indicates the total number of IPX Packets which have been discarded. The remaining fields display a breakdown of the number of IPX packets discarded based on the reason the packets were discarded.

Network Number Conflict

The received IPX packet Destination Address matched the receiving LAN board Node Address or Broadcast Address, but the Destination Network in the IPX packet did not match the network number configured for the receiving LAN board and frame format.

Route Unknown

The route to the destination network indicated in a transmit IPX packet was not known. This counter applies to packets received from the external (direct connect) IPX network (if the network became inaccessible before the packet could be routed), or the internal IPX network.

No IPX Rx Buffer

No internal buffer was available to receive an IPX packet. Also see the Consecutive No Buffers field.

No RIP Tx Buffer

No internal buffer was available to transmit a RIP broadcast or response packet. Also see the Consecutive No Buffers field.

No SAP Tx Buffer

No internal buffer was available to transmit a SAP broadcast or response packet. Also see the Consecutive No Buffers field.

Checksum Packet

An IPX packet was received that did not have the default 0xFFFF checksum, and the packet could not be routed, because the only path available was via Ethernet 802.3. The Ethernet 802.3 protocol only supports an IPX Checksum value of 0xFFFF (LAN drivers identify Ethernet 802.3 IPX packets by the Checksum field).

Socket Unknown

A IPX packet was received for an Unknown Socket on this LAN board.

Rx Packet too Small

The received IPX packet was to small (incomplete IPX header)

Rx or Tx Packet too Large

The packet was too large (exceeded the Packet Size specified on the IPX Options panel). Either the IPX Packet Size option must be increased to support a larger packet size or the IPX packet source (Client, Server, or Router) must be configured for a packet size less than or equal to that defined on the IPX Options configuration panel.

TC (HOPs) Overflow

IPX Packet has traversed 16 decimal or more routers.

Last Packet Discarded Cause

This field indicates why the last IPX packet was discarded. The indicator will show No Packets Discarded or one of the causes listed under the Packets Discarded Summary Counters.

Packet Size

This field indicates the IPX Packet size of the last packet discarded (if applicable).

Receive Line, Network, Node

These fields indicate the LAN Board Line, Network, and Node the IPX packet was received from.

Source Network, Node, Socket

These fields indicate the Source Network, Node, and Socket extracted from the IPX packet.

Destination Network, Node, Socket

These fields indicate the Destination Network, Node, and Socket extracted from the IPX packet.

Display RIP Routing Information

The RIP Routing Information Table allows you to view the Routing Information Table network entries and the network status. It is an extended Visara implementation of Novell's Display Networks File Server Utility.

When selecting this test, you have the option of entering either the test number (e.g. 2) or the test number followed by a comma and a starting destination network number (e.g. 2,11740001). If only the test number is entered, the panel will begin with the first (lowest numeric value) destination network in the RIP Routing Information Table. If the test number is entered along with a destination network, the panel will begin with the first destination network with a value equal to or greater than the indicated destination network.

Up to five RIP Routing Information Table Network entries will be displayed on each panel. All Network entries will be ordered based on the Destination Network numeric value.

Display RIP Routing Example

```
Display RIP Routing Information Table          LINCS C8.2 Central Control

Destination Network:      43810001  TICKs:    0005         HOPs:     0004
Source Network:  53620001 Line:     TRC1     Router Node: 400066110001
Status:          Primary Route      Age:     000024

Destination Network:      53620011  TICKs:    0005         HOPs:     0004
Source Network:  53620001 Line:     TRC1     Router Node: 000000091375
Status:          Primary Route      Age:     000024

Destination Network:      43810001  TICKs:    0005         HOPs:     0004
Source Network:  53620002 Line:     TRC1     Router Node: 400066110001
Status:          Alternate Route    Age:     000024

Destination Network:      43810007  TICKs:    0005         HOPs:     0004
Source Network:  53620002 Line:     TRC1     Router Node: 400066110001
Status:          Primary Route      Age:     000024

Destination Network:      000BC825  TICKs:    0081         HOPs:     0004
Source Network:  53620001 Line:     TRC1     Router Node: 000006021001
Status:          Primary Route      Age:     000024

PF: 1-Menu       7-Back 8-Forw 9-Refresh
```

This example panel shows only a partial screen.

Destination Network

This field indicates the destination IPX network number.

TICKs

This field indicates an estimate of the amount of time that it takes to transfer a packet to the destination network. One TICK is equal to 1/18th of a second (18.21 TICKs per second).

HOPs

This field indicates the number of routers that a packet must pass through to reach the destination network. If this field indicates a value greater than or equal to 16 (decimal), this entry has either Aged out or the router or LAN board supplying access to this destination network has broadcast this network as UNAVAILABLE.

Source Network (RIP)

This field indicates the source direct connect network that this destination network was learned from. The Source and Destination Network will be the same for a direct connect network or the internal IPX network. If the source and destination networks are different, another router is used to access this network (See the Router Node field for the node address of the router on the source network).

Line

This field indicates the LAN board line type and occurrence for the source direct connect network or internal IPX network. Line types will be:

- internal for the Internal IPX Network
- TRCx for a Token Ring LAN board
- ETHx for a Ethernet LAN board

(where x indicates the board occurrence, e.g. TRC1 = 1st Token Ring LAN board).

Router Node

If this network entry is for a remote external network, this field will indicate the Node Address of the router which provides access to the destination network. For all direct connect networks and the internal IPX network, this field will be set to 000000000000.

Status

This field indicates the status of the network entry. Possible status values are:

- Unavailable: If this Network entry is for a Direct Connect Network, this network is not accessible by the LAN board at this time. If this Network entry is for a remote external network, the Network entry has either been Aged out (No RIP Broadcast received, indicating that the network is still accessible - See the Age field) or the router used to access this network has indicated that it is no longer able to access the destination network (HOPs field is greater than or equal to 16 decimal). For remote external networks, this network entry will be deleted after the direct connect networks have been notified that this destination network is no longer available.
- Primary Route: This status indicates that this route is the current primary (best) route to the destination network. The primary route is always used when routing IPX packets. The primary route is based on, in order of importance: the route with the lowest TICKs, lowest HOPs, highest network transfer rate (16Mbps Token Ring, 10 Mbps Ethernet, 4 Mbps Token Ring), and protocol (802.2, SNAP, Ethernet V2, Ethernet 802.3). If multiple routes exist with equal TICKs, HOPs, network transfer rates, and protocols, the first destination network path registered with RIP will be the primary.
- Alternate Route: This status indicates that this is currently a alternate route to the destination network. An alternate route is also an indication that a looped network (multiple paths to the destination network) exists. In order to be registered with RIP as an alternate route network entry in the RIP Routing Information Table, the TICKs count must equal that of the Primary Route.
- Not Best Route: An entry with this status indicates that a new/better route to the destination network has been found. This Network entry or path to the destination network will be deleted from the RIP Routing Information Table after the better route has been broadcast to the network.

The Status field for the Internal IPX Network will always indicate Primary Route.

Age

This field applies to remote external network entries only. This count indicates the time, in seconds, since the last RIP broadcast was received from the router supplying access to this destination network. If the Age exceeds the RIP Aging Timer value configured on the Line Options/IPX Options configuration panel for the source network, this network entry will be flagged as UNAVAILABLE.

SAP Service Information

The SAP Service Information Table provides an extended Visara implementation of Novell's Display Servers File Server Utility. Up to four SAP Service Information Table Service entries will be displayed on each panel. All Service entries will be ordered based on the Server Type numeric value. The Status field for servers on the Internal IPX Network will always indicate Primary Service.

If only the test number is entered, the panel will begin with the first (lowest numeric value) server type in the SAP Service Information Table. If the test number is entered along with a server type, the panel will begin with the first server type with a value equal to or greater than the indicated server type. For example, 3,130 to display the panel starting with the first NetWare Communications Server.

```
Display SAP Service Information Table        LINCS C8.2 Central Control

Server Name:     CORPORATE_FILE_SERVER       Type: 0004
Server Network: 5362E001  Node:000000000001  Socket: 0451 SAP HOPs:  0004
Source Network: 5362E007  Line:ETH1 RIP TICKs: 0004       RIP HOPs:  0004
Status:          Primary Service    Age:     000007

Server Name:     ROUTENETWK1                 Type: 0004
Server Network: 00038667  Node:000000000001  Socket: 0451 SAP HOPs:  0002
Source Network: 5362E001  Line: ETH1         RIP TICKs: 0002 RIP HOPs:  0002
Status:          Primary Service    Age:     000007

Server Name:     SALES1             Type:    0004
Server Network: 00099221  Node:000000000001  Socket: 0451 SAP HOPs:  0002
Source Network: 5362E001  Line:ETH1 RIP TICKs: 0002       RIP HOPs:  0002
Status:          Primary Service    Age:     000007

Server Name:     SALES2             Type:    0004
Server Network: 00099221  Node:000000000001  Socket: 0451 SAP HOPs:  0002
Source Network: 5362E001  Line: ETH1         RIP TICKs: 0002 RIP HOPs:  0002
Status:          Primary Service    Age:     000006

PF: 1-Menu       7-Back 8-Forw 9-Refresh
```

Note that this utility will have no effect on direct connect networks which were in the RIP Link Down state at the time the Reset IPX Router operation was initiated.

Server Name

This field indicates the name given to the Server.

Type

This field indicates the hex value of the Server Type. Listed below are the currently defined Server Types and the hex value associated with the Server Type:

0x0000 - Unknown	0x0053 - Appletalk
0x0001 - User	0x0058 - X.25 Gateway
0x0002 - User Group	0x0072 - WANCopy
0x0003 - Print Queue	0x007A - TES - NetWare for VMS
0x0004 - File Server	0x0098 - NetWare Access Server
0x0005 - Job Server	0x009E - Portable NetWare
0x0006 - Gateway	0x00AC - Compaq IDA Status Monitor
0x0007 - Print Server	0x0107 - NetWare 386 Server
0x0008 - Archive Queue	0x0114 - CSA_MUX
0x0009 - Archive Server	0x0115 - CSA_LCA
0x000A - Job Queue	0x0116 - CSA_CM
0x000B - Administration	0x0117 - CSA_SMA
0x0021 - NAS SNA Gateway	0x0118 - CSA_DBA
0x0023 - NACS	0x0119 - CSA_NMA
0x0024 - Remote Bridge Server	0x011A - CSA_SSA
0x0026 - Bridge Server	0x011B - CSA_STATUS
0x0027 - TCP/IP Gateway	0x011E - CSA_APPC
0x0029 - Gateway	0x0126 - SNA-Test
0x002D - Time Synchronization Server	0x012A - CSA_TRACE
0x002E - Archive Server	0x0130 - Communications Executive (NetWare for SAA)
0x0047 - Advertising Print Server	0x0133 - NNS Domain
0x004B - Btrieve VAP/NLM 5.xx	0x0135 - NNS Profile
0x004C - SQL VAP/NLM	0x0137 - NNS Queue
0x004D - Xtree Network Version	0x8888 - WordPerfect Network Version
0x0050 - Btrieve VAP/NLM 4.xx	0xFFFF - Wildcard

Server Network

This field indicates the destination network on which the Server resides.

Server Node

This field indicates the node address of the Server.

Server Socket

This field indicates the IPX socket which the server will receive requests (e.g. NetWare Comm Server would use Server Type 0130 and IPX Socket 1F80).

Source Network

This field indicates the source direct connect network that this server was learned from. The Source and Server Network will be the same for a direct connect or the internal IPX server. If the Source and Server Network are different, another IPX router is used to access the Server Network.

Line

This field indicates the LAN board line type and occurrence for the Source Network (or Internal IPX Network). Line types will be internal for the Internal IPX Network, TRCx for a Token Ring LAN board, or ETHx for a Ethernet LAN board (where x indicates the board occurrence, e.g. TRC1 = 1st Token Ring LAN board).

SAP HOPs

This field indicates the number of routers that a packet must pass through to reach the destination server. If this field indicates a value greater than or equal to 16 decimal, then this entry has either Aged out or the router/server supplying access to this server has broadcast the server as UNAVAILABLE.

RIP HOPs

This field indicates the RIP best route HOPs to the destination network in which this server resides. If this field indicates a value greater than or equal to 16 (decimal), this entry is no longer accessible because the only known route to the destination network has either Aged out or the router supplying access to this server network has broadcast the network as UNAVAILABLE.

RIP TICKs

This field indicates the RIP best route TICKs to the destination network in which this server resides. TICKs provide an estimate of the amount of time that it takes to transfer a packet to the destination network. One TICK is equal to 1/18th of a second (18.21 TICKs per second).

SAP Service Status

This field indicates the status of the Service entry. Possible status values are:

- Unavailable - The Service entry has either been Aged out (No SAP Broadcast received, indicating that the server is still accessible - See the Age field), the server itself has broadcast the service as UNAVAILABLE (SAP HOPs field set to greater than or equal to 16 decimal), or the router used to access the destination network on which the server resides has indicated that it is no longer able to access the destination network (RIP HOPs field set to greater than or equal to 16 decimal). This Network entry will be deleted after the direct connect networks have been notified that this server is no longer available.
- Primary Service - This service is the current primary or best route to the destination network and service. If multiple routes exist to the server, with equal RIP TICKs, RIP HOPs, and SAP HOPs, the first destination network path registered with SAP will be the primary.
- Alternate Service - This service is currently an alternate route to the destination network

and service. An alternate route is also an indication that a looped network exists (multiple paths to the destination network and server). In order to be registered with SAP as an alternate route Service entry in the SAP Service Information Table, the RIP TICKs count must equal that of the Primary Service.

- Not Best Service - This status indicates that a new or better route to the destination network and service has been found. This Service entry will be deleted from the SAP Service Information Table after the better route has been broadcast to the network.

Age

This field applies to servers on remote external networks. This count indicates the time, in seconds, since the last SAP broadcast was received from the router or server supplying access to this service. If the Age exceeds the SAP Aging Timer value configured on the Line Options/ IPX Options configuration panel, this Service entry will be flagged as UNAVAILABLE.

Reset IPX Router

This utility allows you to reset the IPX Router if the RIP Routing Information Table or SAP Service Information Table becomes corrupted for any reason. It provides a Visara implementation of Novell's Reset Router File Server Utility. An example panel for Reset IPX Router is provided.

Under normal circumstances, lost networks and services will normally become known by a Router Going Down RIP and SAP broadcast, or it will be handled by the RIP and SAP Aging process. In the event that the router or server went down before a broadcast could be sent or if the Aging timers have been set to a long time interval, this utility may be used to expedite removal of the lost networks and servers. Caution should be used when using this utility, as this may cause networks accessed by other clients and servers in the network to be temporarily lost while the reset operation is in progress (since the RIP Routing Information Table or SAP Service Information Table is flushed and rebuilt when this utility is initiated).

For more information on IPX Reset sequence of events, see IPX Reset Operation and IPX Reset Panel.

IPX Reset Operation

When the Reset IPX Router utility is initiated, all packet counters and error counters are reset. A RIP broadcast is then sent to all direct connect networks indicating that all remote networks accessed via this IPX router are no longer accessible. All accessible direct connect networks and the internal network are broadcast as AVAILABLE in the same RIP broadcast. A SAP broadcast is also sent to all direct connect network indicating that all services accessible via the remote networks are no longer available. If any Server resides on the IPX internal network, any servers which do not require internal cleanup will be broadcast as available. Otherwise they will be broadcast as UNAVAILABLE, then later broadcast as AVAILABLE when their internal cleanup is complete. After the reset broadcast sequence is complete, all UNAVAILABLE RIP Routing Information Table and SAP Service Information Tables entries are purged, and the IPX Router initialization sequence is initiated. The initialization sequence (which consists of a broadcast available networks/services, and request information on all networks and services from other routers and servers on the internetwork) will then allow the RIP Routing Information Table and SAP Service Information Table to be rebuilt as new networks and services are learned from the network.

IPX Reset Panel

You must enter a password to enter this panel, which indicates that a request has been issued to the IPX Router application to reset the IPX Router.

```
Reset IPX Router                                LINCS C8.2 Central Control

                            Router Reset Initiated

  Use the following IPX Utilities to monitor the Reset operation:

                 Display/Update IPX Network Status
                 Display RIP Routing Information Table
                 Display SAP Service Information Table

 PF: 1-Menu
```

APPN Menu

```
APPN Menu                                       LINCS C8.2 Central Control

Item                          Description

 1,u                          Display/Update Node Status
 2,u                          Display/Update Circuit Status
 3                            Display ISR Sessions
 4                            Display End Point Sessions
 5,u                          Display/Update RTP Connection
 6                            Display Directory
 7                            Display Node Topology
 8                            Display TG Topology
 9                            APPN Ping
 10                           Display Problems and Exceptions
 11                           Display Audits
 12                           APPN Tracing
 13                           Display DLC Trace Events
 14                           APPN Internal Trace
 15                           Display Memory Manager Tuning Data

  Select Item:                Depress Enter

PF: 1-Menu
```

From the APPN Menu you can determine the status of the LINCS APPN node, its adjacent nodes and the links. Items 12 through 15 do not normally appear on this panel and are for Visara field support personnel only when the Field Support switch is enabled.

APPN Node Status

If this utility is entered with the update option (by specifying ,u and password), then the node may be stopped and started using this utility.

```
Node Status                                    LINCS C8.2 Central Control
Node Name:                  LINCS    LINCS15X
Time Up (days:hrs:mins:secs):        023:01:33:02
                            Configured          Active
                            ______    ___
Adjacent Network Nodes      00                   00
Adjacent End/LEN Nodes      00                   00
APPN Links:                 00                   02
Intermediate Sessions       0256                 0000
Configured Directory Entries:        0002        Memory Size:  0001572864
Registered Directory Entries:        0000        Memory Used:  0000130770
Cached Directory Entries:  0000
Congestion:                 No/Yes
Route Addition Resistance: 128
PF: 1-Menu                  4-Start_Node         5-Stop_Node   9-Refresh
```

Node Name

This field identifies the fully qualified CP name of this APPN node.

Time Up

This field indicates the amount of time this APPN node has been running.

Adjacent Network Nodes

The number of configured and active adjacent network nodes are displayed under the columns Configured and Active respectively.

Adjacent End/LEN Nodes

The number of configured and active adjacent End/LEN nodes are displayed under the columns Configured and Active.

APPN Links

This field displays the maximum number of APPN links to other nodes supported at one time.

Intermediate Sessions

The number of configured (max) and active Intermediate sessions are displayed under the columns Configured and Active respectively.

Configured Directory Entries

This field Displays the number of resource entries that were customized and reside in this node or in attached LEN end nodes.

Registered Directory Entries

This field displays the number of resource entries residing in attached end nodes that were registered after link activation.

Cached Directory Entries

This field displays the number of resource entries which have entered the directory as a result of a successful locate request.

Congestion

This field displays if the LINCS node is over-using the buffers or cycles.

Route Addition Resistance

This field displays the Route Addition Resistance for this node.

Memory Size

The Memory Size field indicates how much memory is available for use by APPN.

Memory Used

The Memory Used field indicates how much memory is being used by APPN.

PF4-Start_Node

This key is only displayed when the utility is entered in update mode. It allows you to start the APPN node. You may want to start the node if you previously stopped it and want to start it without IMLing LINCS.

PF5-Stop_Node

This key is only displayed when the utility is entered in update mode. It allows you to stop the APPN node. You may want to stop the node to isolate a problem or to take the LINCS node out of APPN network without affecting the other users. Once the node is stopped, all the APPN sessions are destroyed. The APPN users may have to restart their sessions if the node is started using PF4-Start_Node.

APPN Circuit Status

This panel lists all defined APPN Circuits and their status. If the utility is entered with the update option, then links may be stopped and started.

```
Circuit Status                                LINCS C8.2 Central Control
NETID       CP           Name       Node    Type  Status    Sessions
                                                     Link      Station Name

____        ____         ____       _____       ____        ________
THISNTWK    LINCSCP1    Network     Active        2          @I000001
THISNTWK    LINCSCP2      End       Active        4          @I000002
THISNTWK    LINCSCP3    Network   Not Active      0          LS000000
THISNTWK    LINCSCP4    Network   Pend Active     0          LS000001
THISNTWK    LINCSCP5      VRN     Pend Inact      0          LS000002
THISNTWK    LINCSCP6     Learn    Not Active      0          LS000003
PF: 1-Menu  3-Details  4-Start_All   5-Stop_All     8-Forw      9-Restart
```

PF3-Details displays an additional panel with detailed information about the individual links. The first panel displays a Circuit Status/Details panel for the first circuit currently displayed on the Circuit Status/Summary panel. PF8-Forw displays the details for other circuits.

NETID

The NETID is the Network ID of this network if the link is active.

CP NAME

The CP NAME is the Control Point Name of the adjacent node if the link is active.

Node Type

The adjacent node types are Network Node, End Node, Learn Node, and Virtual Routing Node (VRN).

If the status is Not Active, the Node Type will always be LEARN.

If the status is Active, but no sessions are established, the Node Type will always be END. This is true even if the adjacent node was configured as something else.

Status

Status displays the link status as active, inactive, pending-active or pending-inactive.

Sessions

Sessions displays the number of active sessions using this link.

Link Station Name

For dynamic circuits, the link station name starts with "@" character. For the predefined circuits, the name starts with "LS".

PF4-Start_All

This key starts all predefined links, and is only displayed when the utility is entered in update mode. You can attempt to start all of the predefined circuits which have not been started, which might be useful after stopping and starting the LINCS node.

PF5-Stop_All

This key stops all links, and is only displayed when the utility is entered in update mode.

You may want to stop all of the links to isolate a problem. You can also stop a specific circuit from the Circuit Status/Details panel.

PF9-Restart

Redisplay this panel starting with the first entry.

APPN Circuit Status/Details

```
Circuit Status                                  LINCS C8.2 Central Control

APPN Circuit:          0000
NETID:                 NETID001      CP Name:               NETNODE1
Link Station Name:     @I000001      Link Station Address: 0000 8370 4FA5 04
Port Name:             PORT0000      Line:                  TRC1
DLC Name:              DLC00029      TG Number:             021
Node Type:             Network       Link Station State:    Active
CP-CP Session Support:               Yes                    Active Sessions:
00004
HPR Support:           Yes           Lnk-Lvl Err Recovery: No
XIDs Received:         0000000010    Frames Received:       0000000040
XIDs Sent:             0000000012    Frames Sent:           0000000028
XID Errors:            0000000000    Frame Errors:          0000000000
Bytes Received:        0000001446    Bytes Sent:            0000012039

PF1: 1-Menu 3-Summary       8-Forw 9-Refresh
```

PF3-Summary returns you to the Circuit Status Summary panel.

Network ID

This is the network ID of the network.

CP Name

This is the control point name of the adjacent node.

Link Station Name

This is the name of the circuit.

DLUS Name on APPN Circuit Status

This line shows the name of the DLUS in session with the LINCS DLUR, when it exists. It also shows the Host Circuit used for that session.

Link Station Address

This is the LAN/SAP address of the adjacent node for LAN Lines.

This is the DLCI for Frame Relay lines.

Port name

This is the name of the port.

Line

This is the line id such as TRC1, ETH1, CHP1 or HSC1.0.

DLC name

This is the name of the DLC.

TG number

This is the number associated with the TG.

Node Type

This is the type of the adjacent node determined during link activation. It is one of the following: End, Network, LEN (LEN End Node), or VRN (Virtual Routing Node).

Link Station State

This is the state of this link station. This field is set to one of the following: Not Active, Pending Active, Active, or Pending Inactive.

CP-CP Session Support

This specifies whether CP-CP sessions are supported (YES or No).

SSCP Session Solicited

YES indicates that the circuit has requested the host to initiate an SSCP-PU session for dependent LUs during the XID negotiation.

Active Sessions

This is the total number of active sessions (both endpoint and intermediate) using this link.

HPR Support

This indicator states whether the node supports High Performance Routing.

Link Level Error Recovery

This indicates whether Link Level Error Recovery is supported or not.

XIDs Received

This is the total number of XID (Exchange IDentification) frames received on this circuit.

XIDs Sent

This is the total number of XID (Exchange IDentification) frames sent on this circuit.

XID Errors

This is the total number of unsuccessful XIDs that have occurred on this circuit since it was started.

Frames Received

This is the total number of data frames received on this circuit.

Frames Sent

This is the total number of data frames sent on this circuit.

Frame Errors

This is the total number SNA invalid frames received on this circuit.

Bytes Received

This is the total number of data bytes received on this circuit.

Bytes Sent

This is the total number of data bytes sent on this circuit.

PF4-Start_Circ

If the circuit is not active, you can activate it by pressing this PF key. This is particularly useful after stopping a predefined circuit using PF5.

PF5-Stop_Circ

If the circuit is active and you want to stop it, pressing this key deactivates that circuit. If the circuit is predefined, you can restart it by pressing PF4-Start_Circ. The dynamic circuits cannot be restarted since their information is gone.

ISR Sessions Summary

This panel displays information about the sessions for which this APPN node is providing Intermediate Session Routing.

```
Display ISR Sessions                          LINCS C8.2 Central Control

                                  Originators
PCID                        NETID             CP Name
1A223B33CC678D9             THISNTWK          NODE1
1AD23B33CC678D4             THISNTWK          NODE2
1A223B3423678D9             THISNTWK          NODE3
1A223B33C2348D9             THISNTWK          NODE4
1A223B33CC67234             THISNTWK          NODE5

PF: 1-Menu  3-Details                         8-Forw  9-Restart
```

Press PF3-Details to see an example of an ISR Session Details panel.

PCID

This is the Procedure Correlator ID. It is an eight byte hexadecimal string that uniquely identifies a session.

Originator's NETID and CP Name

This is the network qualified CP name of the session originator.

ISR Sessions Detail

```
Display ISR Sessions                          LINCS C8.2 Central Control
 PCID:                    xxxxxxxxxxxxxxx    COS Name: ________
 Originators CP Name:     ________ ________  Transmission Priority:  Medium
                          Primary            Secondary
 Adjacent nodes:          ________ ________  ________ ________
 Circuit Name:            xxxxxxxx           xxxxxxxx
 Frames Transmitted:      xxxxxxxxxxxxxxxx   xxxxxxxxxxxxxxxx
 Bytes Transmitted:       xxxxxxxxxxxxxxxx   xxxxxxxxxxxxxxxx
 Frames Received:         xxxxxxxxxxxxxxxx   xxxxxxxxxxxxxxxx
 Bytes Received:          xxxxxxxxxxxxxxxx   xxxxxxxxxxxxxxxx
                          PRI  SEC                            PRI  SEC
 Session RU Size:         xxx  xxx      Max Send BTU Size:    xxx  xxx
 Max Send Pacing Window:  xxx  xxx      Max Recv BTU Size:    xxx  xxx
 Cur Send Pacing Window:  xxx  xxx      Session ID High Byte: xx   xx
 Max Recv Pacing Window:  xxx  xxx      Session ID Low Byte:  xx   xx
 Cur Recv Pacing Window:  xxx  xxx      ODAI:                 x    x
PF: 1-Menu  3-Summary                          8-Forw  9-Refresh
```

Press PF3-Summary to return to the ISR Sessions summary panel.

End Point Sessions Summary

This panel displays information about the sessions for which this APPN node is an end point.

```
Display End Point Sessions                    LINCS C8.2 Central Control
Originators CP Name     Partner      LU Name Mode        Session ID
_________               __________           ____        _________
THISNTWK LINCS15X       THISNTWK  NODEA      #INTER      EE935C259828A8FA
THISNTWK LINCS15X       THISNTWK  NODEB      SNASVCMG    EE935C259828A8F9
THISNTWK LINCS65R       THISNTWK  NODEC      CPSVCMG     EEAF5C17982F8710
THISNTWK LINCS15X       THISNTWK  NODED      CPSVCMG     EE935C259828A8F8
PF: 1-Menu    3-Details                        8-Forw  9-Restart
```

Pressing PF3-Details displays the details panel.

Originators CP Name

This is the network qualified CP name of the session originator.

Partner LU Name

This is the network qualified CP name of the adjacent node running this session.

Mode

This is the Mode Name.

Session ID

This is an eight byte identifier of the session

End Point Session Details

The details panel is displayed for the first session currently displayed on the summary panel. Press PF8-Forw to page through the detail panels for each session.

```
Display End Point Sessions                    LINCS C8.2 Central Control

PCID:                   EE935C259828A8FA    COS Name:              #INTER
Originators CP Name:    THISNTWK LINCS15X   Transmission Priority: High
Partner LU Name:        THISNTWK LINCS65R   Mode Name:             #INTER
Partner LU Alias:       @I000004            Polarity:              Primary
Session ID:             EE935C259828A8FA    Contention:            Winner

Link Station Name:      LS000000
Frames Transmitted:     0000000012
Bytes Transmitted:      0000010667
Frames Received:        0000000001
Bytes Received:         0000000041

Session RU Size:        4096                Max Send BTU Size:     1400
Max Send Pacing Window: 001                 Max Recv BTU Size:     1400
Cur Send Pacing Window: 001                 Session ID High Byte:  02
Max Recv Pacing Window: 001                 Session ID Low Byte:   02
Cur Recv Pacing Window: 001                 ODAI:                  1

PF: 1-Menu  3-Summary            8-Forw                    9-Refresh
```

Press PF3-Summary to return to the End Point Sessions summary panel.

PCID

The Procedure Correlator IDentifier is an 8-byte hexadecimal string which uniquely identifies a session.

Originators CP Name

This is the network qualified CP name of the session originator.

Partner LU Name

This is the network qualified CP name of the adjacent node running this session.

Transmission Priority

This is set to one of LOW, MEDIUM, HIGH, or NETWORK.

Mode Name

The Mode name designates the network properties for a group of sessions.

Polarity

This specifies the polarity of the session as Primary or Secondary.

Contention

This specifies the session contention polarity which indicates whether the local LU has “first refusal” for the use of this session (Winner) or whether it must bid before using the session (Loser).

Link Station Name

This is the name of the APPN link station that the session originated on.

Frames Transmitted

Number of normal flow data frames sent.

Bytes Transmitted

Number of normal flow data bytes sent.

Frames Received

Number of normal flow data frames received.

Bytes Received

Number of normal flow data bytes received.

Session RU size

Specifies the maximum RU size.

Max Send Pacing Window

Maximum size of the send pacing window on this session.

Cur Send Pacing Window

Current size of the send pacing window on this session.

Max Recv Pacing Window

Maximum size of the receive pacing window on this session.

Cur Recv Pacing Window

Current size of the send pacing window on this session.

Max Send BTU size

Maximum BTU size that can be sent.

Max Recv BTU size

Maximum BTU size that can be received.

ODAI I

Origin Destination Address Indicator. When bringing up a session, the sender of the BIND sets this field to zero if the local node contains the primary link station. It sets it to one if the BIND sender is the node containing the secondary link station.

Display Directory

The APPN directory is a list of all Network Resources that this Network node “knows” about. Resources includes CPs, LUs, CNs, and the Wildcard. They are “known” by the NN because the resource was Defined during LINCS configuration, Cached as the result of an APPN Locate function, or Registered by an Endnode when it established a CP-CP session.

Note that the Cached entries will be safe-stored and recovered when the LINCS node is IMLed.

```
Display Directory                                               LINCS C8.2 Central Control
--------- Resource ----------                                   ---- Parent ----
NETID     Name      Type      Entry_type   Location   NETID      Name       Type
----      ----      ----       ----        ----       ----       ----       --

THISNTWK  LINCSCP1  NN CP     Defined      Local      THISNTWK   LINCSCP6    NN
THISNTWK  LINCSCP2  EN CP     Cached       Domain     THISNTWK   LINCSCP6    EN
THISNTWK  LINCSLU3  LU        Registered   Cross-D    THISNTWK   LINCSCP6    EN
THISNTWK  LINCSLU4  Wildcard  Registered   Domain     THISNTWK   LINCSCP6    EN
THISNTWK  LINCSCP5  NN CP     Registered   Domain     THISNTWK   LINCSCP6    NN
THISNTWK  LINCSCP6  NN CP     Defined      Domain     THISNTWK   LINCSCP6    NN
. . .                         . . .
  PF: 1-Menu                                                       8-Forw
```

Resource information

- **NETID -** Network Id
- **Name -** This is the name of the resource.
- **Type -** The type of resource: CP, LU, CN, Wildcard.
- **Entry_type -** Defined, Cached, Registered
- **Location**
  - **Local:** within the node,
  - **Domain:** within the APPN network,
  - **Cross-domain:** in another APPN network

Parent information

- **NETID -** Network ID
- **Name -** This is the name of the parent node resource.
- **Type -** Network Node (Control Point), End Node (Control Point)

Display Node Topology

This panel displays information about the Node Topology, which is gathered over the period by Topology Database Updates (TDUs).

Note that this information will be safe-stored and recovered when the LINCS node is IMLed.

```
Display Node Topology                                      LINCS C8.2 Central Control

Node Name                   Node      Node        Function  Days     Route    Add
____________                __        ___          ____      __      _____    _____

THISNTWK  NODE1xxx          NN        Normal        ISR      14       128     0000000001
THISNTWK  NODE2xxx          NN        Congested     ISR      12       100     0000000001
THISNTWK  NODE3xxx          NN        Normal        HPR      10       050     0000000001
THISNTWK  NODE4xxx          NN        Normal      CDS+ISR     0       000     0000000001
THISNTWK  NODE5xxx          VRN       Normal        ISR      10       128     0000000003
.
PF: 1-Menu  8-Forw  9-Restart
```

Node Name - It consists of Network ID and CP Name.

Node Type - It can be a Network Node (NN) or Virtual Routing Node (VRN).

Node Status

Normal	Uncongested
Congested	low on buffers
IRR Maxed	all Intermediate Routing Sessions are in use
EPS Maxed	all End Point Sessions are in use
Quiescing	the node is in the process of shutting down

Functions Supported

ISR	Intermediate Source Routing
HPR	High Performance Routing
CDS	Central Directory Server
BN	Border Node

Days Left

This field shows the number of days left before the entry is purged from the Topology Database. This LINCS node will always show 0 Days Left.

Route Addition Resistance

It displays RAR in the range of 0 to 255. LINCS nodes always use a value of 128.

FRSN

Flow Reduction Sequence Number

Display Transmission Group (TG) Topology Summary

```
Display TG Topology                                  LINCS C8.2 Central Control
        Owner           Owner      Destination       Dest   TG                Days
Netid       CP Name      Type Netid        CP Name    Type   Num  Status       Left
_________   _________    __   __________   _________  ___    ___  _________    ____
THISNTWK    NODE1XXX     NN   THISNTWK     NODE2XXX   NN     10   OPR+CPCP     10
THISNTWK    NODE1XXX     NN   THISNTWK     NODE3XXX   NN     12   CP-CP        00
THISNTWK    NODE1XXX     NN   THISNTWK     NODE4XXX   NN     01   Quiescing    05
THISNTWK    NODE2XXX     NN   THISNTWK     NODE3XXX   NN     03   OPR+CPCP     12
THISNTWK    NODE3XXX     VRN  THISNTWK     NODE5XXX   NN     20   OPR+CPCP     11
PF: 1-Menu 3-Details  8-Forw  9-Refresh
```

This panel displays summary information about the TG Topology gathered over the period by Topology Database Updates (TDUs). Note that this information will be safe-stored and recovered when the LINCS node is IMLed.

Pressing PF3-Details displays TG Topology/Details for the currently selected Owner.

Owner Name

The name of the owner of the TG is displayed as Network ID and CP Name.

Owner Type

It can be Network Node (NN) or Virtual Routing Node (VRN).

Destination Name

The name of the destination of the TG is displayed as Network ID and CP Name.

Destination Type

It can be Network Node (NN) or Virtual Routing Node (VRN).

TG Num

The TG number as assigned by SNAP APPN.

Status

Operative	the link is up, but CP-CP sessions are not established
CP-CP	CP-CP sessions are up
Quiescing	the link is in the processing of going down

Days Left

It shows the number days left before this entry can be purged from the Topology Database.

Display Transmission Group (TG) Topology Details

```
Display TG Topology                                LINCS C8.2 Central Control

Owner Name:          THISNTWK NODE1XXX          Owner Type:       NN
Destination Name:    THISNTWK NODE2XXX          Dest  Type:       NN
TG Number:           010
Status:              OPR+CPCP
Days Left:           10
DLC Address:         0000 0000 0000 00 (only for VRN)
FRSN:                0000000007
RSN:                 0000000006

             APPN TRANSMISSION GROUP CHARACTERISTICS

Effective Capacity: Minimum          Security:                    Nonsecure
Propagation Delay:  Minimum          User-Defined 1:              000
Cost/Connect:       000              User-Defined 2:              000
Cost/Byte:          000              User-Defined 3:              000

PF: 1-Menu 3-Summary                                 8-Forw  9-Refresh
```

Pressing PF3-Summary returns you to the TG Topology/Summary panel.

Owner Name

The name of the owner of the TG is displayed as Network ID and CP Name.

Owner Type

It can be Network Node (NN) or Virtual Routing Node (VRN).

Destination Name

The name of the destination of the TG is displayed as Network ID and CP Name.

Destination Type

It can be Network Node (NN) or Virtual Routing Node (VRN).

TG Number

The TG number as assigned by SNAP APPN.

Status

Operative	the link is up, but CP-CP sessions are not established
CP-CP	CP-CP sessions are up
Quiescing	the link is in the processing of going down

Days Left

It shows the number days left before this entry can be purged from the Topology Database.

DLC Address

The DLC (MAC address and SAP) address is displayed only for Virtual Routing Nodes.

FRSN

Flow Reduction Sequence Number is a ten digit number as assigned by SNAP APPN.

RSN TG

Resource Sequence Number is a ten digit number as assigned by the Network Node that owns this resource.

Transmission Group Characteristics

The Transmission Group Characteristics are as they are defined in Link Profiles.

APPN PING

APPN PING is a network groper used to determine the existence of an APPN PING responder. APPN PING provides the time required to find the remote TP (APINGD). By performing a number of consecutive sends, the minimum, average, and maximum time required for sending a data string are determined.

```
APPN Ping                                          LINCS C8.2 Central Control

Fully Qualified LU name:              THISNTWK       LINCSCPN
(netid.luname)
Packet Size:            0128
Consecutive Sends:      0002
Iterations:             0010
Echo:                   Disable
Mode:                   #INTER
Abort Timeout (sec)     030

Partner Running On:     LINCS Network Node, MTX, Inc.

Allocate Time (ms):     0000000140             Minimum Time (ms):   0000000080
Average Time (ms):      0000000089             Maximum Time (ms):   0000000110

PF: 1-Menu                                          9-Default 10-Process
```

To APING a remote node, enter the desired information and press PF10-Process. When the process is complete, the Time fields on the panel will be formatted with the results. Press PF10 again to repeat the operation.

If the APING operation fails, refer to “Problems and Exceptions” log for more information.

Fully Qualified LU Name

This is used to specify the Network ID and LU name of the APPN node to APING.

APING Packet Size

Enter a decimal number from 0 to 9999.

APING Consecutive Sends

Send this number of back-to-back packets in one PING.

APING Iterations

Repeat the Consecutive Sends this many times.

APING Echo

Enabling this requests the receiver to transmit the packets back.
Disabling this requests the receiver to acknowledge the packets, but not to echo them.

APING Mode

This field toggles to the modes which are currently defined.

APING Partner Running On

If the partner node sends a string back in response to the APING, this protected field will be filled in with the string sent back. Otherwise, it will be left blank.

APING Allocate Time

This protected field shows the time required (in milliseconds) for the MC_ALLoCATE to the remote TP to complete.

APING Minimum Time

This protected field is the minimum time (in milliseconds) required for a data-sending iteration. This includes the time required for the partner to respond, either by sending data or issuing a confirm, depending on the setting of the echo parameter.

APING Average Time

This protected field is the average time (in milliseconds) required for a data-sending iteration. This includes the time required for the partner to respond, either by sending data or issuing a confirm, depending on the setting of the echo parameter.

APING Maximum Time

This protected field is the maximum time (in milliseconds) required for a data-sending iteration. This includes the time required for the partner to respond, either by sending data or issuing a confirm, depending on the setting of the echo parameter.

Abort Timeout

This value determines how long the LINCS node will wait for a response before determining that a timeout occurred. If a timeout occurs, a message indicating that the APING failed will be posted on the panel.

Display Problems and Exceptions

This panel displays APPN Problems and Exceptions which have been logged, with the most recent event first.

This information is saved to a file whenever a problem is logged. The file is maintained across IMLs with the same IL level. Please NOTE that these events are not logged while displaying this panel.

```
Display Problems and Exceptions                LINCS C8.2 Central Control

Event          Data

0004           APPN_Exception                    03/13/95, 11:53.47, 4283347
               Message 492:0  (from NDSLCTSG.C)
               Locate request failed:
                 Sense code            =         0x0840007
                 Origin CP Name        =         APPN.NODEA
                 Origin LU Name        =         APPN.NODEA
                 Destination LU Name   =         APPN.NODEB

PF: 1-Menu     7-Back  8-Forw
```

For more information on a problem or exception (such as the cause, effect, and action), refer to Problem Determination Messages (chapter 3) of the SNAP APPN Problem Determination Guide. Use the message number to find the corresponding message description.

APPN Problem

A problem is an anomalous event that degrades the system in a way potentially perceptible to a user. Problems are logged, for example, for resource shortages (when creates, buffer reservations, or control block reservations fail), when session allocations fail, when a BIND contains errors, when an ACTLU or DACTLU violates SNA protocol, and when session limits are exceeded.

APPN Exception

An exception is an anomalous event that degrades the system in a way not yet perceptible to a user. Exceptions are logged for events such as XID failures, when locate requests fail, and when critical buffer congestion occurs or is relieved. Exceptions generally precede problem reports.

Display Audits

Audits report diagnostic information. This panel displays APPN audits which have been logged with the most recent event displayed first.

```
Display Audits                                  LINCS C8.2 Central Control
Event          Data
0008           APPN_Audit                     03/13/95, 11:58.47, 4284232
               Message 37:0  (from NRMSTTP.C)
               TP_STARTING (started locally)
               TP Name                 = MDSSENDTP
               Local LU Name (Alias)   = NETID.CPNAME01  (CPNAMEs)
               TCB ID                  = 16790028
PF: 1-Menu     7-Back  8-Forw
```

An audit is a normal event which is useful for tracking activity or accounting. Audits are logged, for example, when circuits are started or stopped, when sessions are activated or deactivated, when alert data is logged, when an adjacent CP is contacted, and when CP-CP sessions are established.

Please NOTE that these events are not logged while the panel is being displayed.

APPN Tracing

The LINCS APPN feature can be traced internally. The APPN Tracing panel is used to enable/disable the trace facility and also to generate the trace file to one of the LINCS drives. This panel is only available to authorized support personnel.

```
APPN Tracing                                    LINCS C8.2 Central Control

APPN Tracing:                    Enable
Write IPS Trace File Now:        Disable

PF: 1-Menu    10-Process
```

APPN Tracing

This option is used to enable or disable tracing of APPN traffic while LINCS is online. LINCS also allows you to determine whether APPN Tracing will occur beginning at IML time. This configuration is made on the SNA Options panel where APPN is initially configured.

Write IPS Trace File Now

This option allows you to toggle the various disk drives installed as the destination for the trace file to be written to. You use the <PF10> key to actually initiate the copy to be made.

DLC Trace Events

The DLC Trace Events panel provides a tracing of the data link control packets handled by the APPN feature. This panel is only available to authorized support personnel.

```
 Display DLC Trace Events                              LINCS C8.2 Central Control

Event  Data

0063   APPN _DLC                              11/06/98, 12:01.33
Ln/Dir 00BB01
DLC    DLC00229
Port   PORT0002
LS     LS000000
Data   00000000  00000000  007AEADE  00040000 00000000 000020FA 00030000 10990090
       0301009E  5010000E  00900014  02030001 00020000 02000004 00010000 4C533030
       30303030  00000000  1500026E  00000002 00010001 00900007 00000200 DDDD0065
       08000000  00000000  00000000  00000000 00000000 00000000 00000000 00000000
       00000000  00002E00  0302000C  4B910100 2E000302 000C4B91 01040006 00000000

PF: 1-Menu                                                        7-Back 8-Forw
```

APPN Internal Trace

The Internal trace provides a logging of events internal to the APPN protocol stack. The information contained within is for use by support personnel only. This panel is normally only accessible to support personnel.

```
 APPN Internal Trace                                  LINCS C8.2 Central Control

Event       Data
00C8        APPN_Internal       11/06/98, 12:01.33
            SRC$:APN$DSU  571: apn_dlc_trace_flow  LS_CB:  0x78aefe
            State: 9, SEND SIG: dlc_mu
00C9        APPN_Internal       11/06/98, 12:01.33
            SRC$:APN$DSU  564: apn_dlc_trace_flow  EVENT: DLC_MU
            Signal buffer available - COM_I_FRAME frame sent
00CA        APPN_Internal       11/06/98, 12:33.57
            SRC$:APN$DSU  677: apn_nof_trace_msg   NOF Rcvd Message,
            pcm=0x4d5070, msgid=  0x601e, sender=0x13000d
00CB        APPN_Internal       11/06/98, 12:33.57
            SRC$:APN$DSU  653: apn_nof_trace_sig   NOF Rcvd Sig,
            appc_Hdr=0x7b97fe, opcode=  0x2129, prc=0x610, src= 0
            End of Trace Buffer>

PF: 1-Menu                                                            7-Back
```

Memory Manager Tuning Data

This panel is no longer available at current levels of code.

RTP Connection

This panel allows you to display RTP connections only when HPR (High Performance Routing) is in use. When the update option is chosen, it is possible to initiate the use of an alternate route from this panel.

Frame Relay Menu

```
Frame Relay Menu                                LINCS C8.2 Central Control

       Item                  Description

       1,u                   Display/Update Frame Relay Line Statistics
       2,u                   Display/Update Frame Relay PVC Statistics
       Select Item:          Depress Enter

PF: 1-Menu
```

The Frame Relay menu allows you to view and reset statistics for your Frame Relay line(s).

Frame Relay Line Statistics

This test displays Frame Relay statistics for a given line. By default, the first Frame Relay line will be displayed. The line to be displayed can also be entered as a parameter after the test number on the Frame Relay menu.

```
Frame Relay Line Statistics                     LINCS C8.2 Central Control
Line: HSC1.0               Slot: 07

Open PVCs:                          001

Frames Received:                    0
Bytes Received:                     0
BECNs Received:                     0
FECNs Received:                     0
Frames Received with Invalid DLCIs: 0
Frames Received with Unknown DLCIs: 0
Frames Received with Other Errors:  0
LMI Frames Received:                0
Percent Receive Buffers In Use:     000
Frames Transmitted:                 0
Bytes Transmitted:                  0
LMI Frames Transmitted:             0
PF:  1-Menu    4-Clr_Ctrs   7-Back   8-Forw     9-Refresh
```

In order to clear the line statistics counters, you must enter the test number followed by the update symbol (1,u) on the Communications menu. This will enable the use of the PF4 key to clear all counters for the currently displayed line. A 584__31 event will be logged when PF4 is used to clear the Frame Relay line counters.

The maximum value for all line counters is 4,294,967,295. Once a counter has reached the maximum value, it will start back at zero.

The refresh key (PF9) updates the line statistics for the currently displayed line. The PF7 and PF8 keys display line statistics for other Frame Relay lines.

Line - Line ID of this line.

Slot - Slot of this HSC board.

Open PVCs - Current number of PVCs in use on this line. The total number of open PVCs on an HSC board can not exceed 256.

Frames Received - Total number of frames received.

Bytes Received - Total number of bytes received.

BECNs Received - Number of frames received with the BECN bit set.

FECNs Received - Number of frames received with the FECN bit set.

Frames Received with Invalid DLCIs - Number of frames received with invalid DLCIs.

Frames Received with Unknown DLCIs - Number of frames received with unknown DLCIs.

Frames Received with Other Errors - Number of frames received with other errors.

LMI Frames Received - Number of LMI frames received.

Percent Receive Buffers In Use - Percentage of receive buffers currently in use.

Frames Transmitted - Total number of frames transmitted.

Bytes Transmitted - Total number of bytes transmitted.

LMI Frames Transmitted - Number of LMI frames transmitted.

Display/Update Frame Relay PVC Statistics

To clear the PVC statistics counters, you must enter the test number followed by the update symbol (2,u) on the Communications menu. This will enable the PF4 key to clear all counters for the currently displayed PVC. A 584__32 event will be logged if PF4 is used to clear the Frame Relay PVC counters.

The maximum value for all counters is 4,294,967,295. Once a counter has reached the maximum value, it will start back at zero.

The refresh key (PF9) can be used to update the statistics for the currently displayed PVC. The PF7 and PF8 keys can be used to display statistics for other Frame Relay PVCs.

Line - Line ID of this line.

DLCI - DLCI number shown in decimal.

Status - Current status of this PVC.

- Up indicates that this PVC is in a normal data transfer state.
- Congestion indicates that the PVC is in a data transfer state but the transmit rate has been temporarily reduced due to congestion.
- Down indicates that this PVC has is not currently in a data transfer state. PVCs may be “down” due to line problems, such as an unplugged cable, or network reasons such as an inactive switch or destination FRTE.

Frames Received - Total number of frames received.

Bytes Received - Total number of bytes received.

BECNs Received - Number of frames received with the BECN bit set.

FECNs Received - Number of frames received with the FECN bit set.

Frames Transmitted Within CIR - Number of frames transmitted within the CIR.

Bytes Transmitted Within CIR - Number of bytes transmitted within the CIR.

Frames Transmitted in Excess of CIR - Number of frames transmitted above CIR but within Excess Burst (Be).

Bytes Transmitted in Excess of CIR - Number of bytes transmitted above CIR but within Excess Burst (Be).

Frames Transmitted after Deferral - Number of frames transmitted which were internally deferred due to CIR constraints.

Bytes Transmitted after Deferral - Number of bytes transmitted which were internally deferred due to CIR constraints.

Frames Dropped due to Congestion - Number of frames dropped during the transmit process due to congestion.

Bytes Dropped due to Congestion - Number of bytes dropped during the transmit process due to congestion.

ESCON Menu

The ESCON feature of LINCS provides support for multiple control unit images (CUI) through one or two ESCON interfaces. The ESCON menu includes a single utility to allow you to reset individual CUs without affecting the other CUs. When two ESCON (ESC) cards are installed on the platform, you must type '1,esc2' at the prompt to access CUs on the second card.

```
ESCON Menu                                        LINCS C8.2 Central Control

 Item    Description
  1      Reset Individual Control Unit


    Select Item: 1,esc2                Depress Enter

 PF: 1-Menu
```

Reset Individual Control Unit

This utility simulates the receipt of a Control Unit System Reset by the CU selected, causing device sessions associated with the CU to be reset back to their initial state. A communications indicator is placed into the Event Log associated with the execution of this utility. The entry will normally indicate 'communications available' (event 0500-01) if the ESCON path is established, or a different communications event if there is a problem with the host communications.

To make use of this utility, the cursor positions itself at the CU Index prompt allowing you to select the CU Index number that you want to affect. Only configured CUs will toggle with this field using the <Enter> key. Once you have toggled the desired CU, press <PF10>. The word 'Done' will appear when the action has been completed. Note that resetting the CU occurs very quickly and will normally be complete within a second or two.

```
Reset Individual Control Unit                    LINCS C8.2 Central Control

 Line: ESC1                Slot: 05                CU Index:     00


 PF: 1-Menu                                                    10-Process
```

14. Field Support Utilities

This section describes the field support utilities, available as part of Central Control. To access these utilities, the FE switch must be activated.

FE Switch Activation and Deactivation

The FE switch is a logical switch, not a physical switch. The FE switch may be turned on two different ways and may also be turned off two different ways. Each way of turning on the switch yields equivalent results. The passwords referred to are available to authorized support personnel and customers that perform self maintenance only.

- Offline Method - The FE switch may be turned on using Offline Utility 23, and turned off using Offline Utility 24, using the offline FE password when prompted.
- Online Method - The FE switch may be turned on or off while the LINCS node is online by use of a special online FE procedure.

Field Support Menu

```
Field Support Menu                              LINCS C8.2 Central Control

Item    Description

 1            Memory Menu
 2            Traffic Monitor Menu
 3            Slot Population Table
 4            Coax R/W Test
 5            Activate/Deactivate All Features

Select Item:  Depress Enter
PF: 1-Menu
```

To select a utility from this menu, type the desired item number and press the Enter key.

Memory Menu

The Memory Menu gives access to specific areas in memory, such as image buffers and data areas. Many of the data areas cannot be readily decoded by field personnel. When this information is needed to resolve a problem, a Dump disk should be taken to accompany the problem report when it is reported to the next level of technical support. Note that Screen Image Buffers are not included on the Dump disk when taken. If these are needed, you may need to access the Memory menu and make printouts of this information.

```
 Memory Menu                                    LINCS C8.2 Central Control

 Item         Description

  1           Dump Memory
  2           LU Table
  3           Device Table
  4           Line Table
Select Item:  Depress Enter

 PF: 1-Menu
```

Dump Memory

The Dump Memory panel gives you access to all of LINCS memory locations.

```
Dump Memory                                    LINCS C8.2 Central Control
Address: 0400000                 Slot:  16    Mode:  R

         0400000  00404000  00408400  00000000  00000000  .àà..àe.........
         0400010  00000000  00000000  00000000  00000000  ................
         0400020  00000000  00000000  00000000  00000000  ................
         0400030  00000000  00000000  00000000  00000000  ................
         0400040  00000000  00000000  00000000  00000000  ................
         0400050  00000000  00000000  00000000  00000000  ................
         0400060  00000000  00000000  00000000  00000000  ................
         0400070  00000000  00000000  00000000  00000000  ................

         0400080  00000000  00000000  00000000  00000000  ................
         0400090  00000000  00000000  00000000  00000000  ................
         04000A0  00000000  00000000  00000000  00000000  ................
         04000B0  00000000  00000000  00000000  00000000  ................
         04000C0  00000000  00000000  00000000  00000000  ................
         04000D0  00000000  00000000  00000000  00000000  ................
         04000E0  00000000  00000000  00000000  00000000  ................
         04000F0  00000000  00000000  00000000  00000000  ................

PF: 1-Menu                          7-Back 8-Forw 9-Refresh 10-Process
```

To move around in memory:

- Type the address you desire to look at in the Address field, then press PF10.
- Page forward and backward through memory with PF8 and PF7.
- Look at memory on another board by typing the slot number of the board that you want to access in the Slot field.
- LINCS will interpret the data as ASCII, EBCDIC, or REGEN by typing A, E, or R into the Mode field.

LU Table

This panel may be used to obtain the address locations of session edit buffers. The base buffer for a session is listed under the BFR column. There is a buffer defined for each LU that has been powered on. If the device has an EAB, an EAB BFR is also defined. The BFR addresses can be entered on the Dump Memory panel to view the hex data associated with the LU's screen image.

```
LU Table                                       LINCS C8.2 Central Control
       Host: A     Protocol: SNA          HDA: 008A1190
LU  Minor    Port        SDA          DDA          BFR          EAB
00  Undef
01  Undef
02  0001     MCC1.000    008B28A0     00EF72C0     00E96DE0     00E97DE0
03  0002     ETH1.003    008B2B90     00E7EBD0     00E7AEA0     00E7B6A0
04  0003     None        008B2E80     009109D0
05  0004     None        008B3170     009109D0
06  0005     None        008B3460     009109D0
07  0006     None        008B3750     009109D0
08  Undef
09  Undef
0A  Undef
0B  Undef
0C  Undef
0D  Undef
0E  Undef
0F  Undef
PF: 1-Menu   7-Back 8-Forw
```

Device Table

This test can be used to obtain the Screen Image Buffer (SIB) address location. The SIB is given in the BFR column. The SIB is a buffer that displays in hex the information that is being displayed on the device indicated by the port ID. In the case of a windowed screen, this includes all of the window frame characters as well as the data from the various sessions in their relative screen positions.

```
Device Table                                                    LINCS C8.2 Central
Control
Port    MCC1.000 MCC1.001 MCC1.002 MCC1.003 MCC1.004 MCC1.005 MCC1.006 MCC1.007
Type    Display  Undef    Undef    Undef    Undef    Undef    Undef    Undef
Minor   0000     0001     0002     0003     0004     0005     0006     0007
SIB     E96DE0   E99DE0   E9CDE0   E9FDE0   EA2DE0   EA5DE0   EA8DE0   EABDE0
DDA     EF72C0   EF76A0   EF7A80   EF7E60   EF8240   EF8620   EF8A00   EF8DE0
SDA A   4C47A0   4C4A90   4C4D80   4C5070   4C5360   4C5650   4C5940   4C5C30
    B   8A0E98   Undef    Undef    Undef    Undef    Undef    Undef    Undef
    C   8A0BA0   Undef    Undef    Undef    Undef    Undef    Undef    Undef
    D   8A08A8   Undef    Undef    Undef    Undef    Undef    Undef    Undef
    E   8A05B0   Undef    Undef    Undef    Undef    Undef    Undef    Undef
    F   Undef    Undef    Undef    Undef    Undef    Undef    Undef    Undef
    G   Undef    Undef    Undef    Undef    Undef    Undef    Undef    Undef
    H   Undef    Undef    Undef    Undef    Undef    Undef    Undef    Undef
    I   Undef    Undef    Undef    Undef    Undef    Undef    Undef    Undef
    J   Undef    Undef    Undef    Undef    Undef    Undef    Undef    Undef
 Calc   8A02B8   Undef    Undef    Undef    Undef    Undef    Undef    Undef
PF: 1-Menu  7-Back  8-Forw
```

Line Table

This utility supports only SCC lines. A line number may be entered as a test parameter. If no line number is specified, the test will default to Line 0. The PF8 key pages forward through the circuits on the line being displayed.

```
Line Table                                      LINCS C8.2 Central Control
        Line: SCC1.0      Protocol: SNA   68K LDA: 41E100    188 LDA: FE10
CU          68K CCD           188 CCD          HDA     HST

PF: 1-Menu
```

Traffic Monitor Menu

This group of tests may be very useful if you are familiar with communication protocols, however in most cases you will be using these utilities to capture data for analysis by Visara engineers. These traces are included in Dumps. Access to these utilities may allow capture of data without having to dump the LINCS platform.

```
Traffic Monitor Menu                              LINCS C8.2 Central Control
Item          Description
 1            Host Monitor Menu
 2            Line/Channel Monitor Menu
 3            Trace Utility Menu
 4            Printer Sharing Monitor Menu
Select Item:  Depress Enter
PF: 1-Menu
```

The Traffic Monitor menu allows you to select a monitor trace.

- The Host Monitor selection (item 1) allows definition and selection of a Host Monitor Trace, which traces the protocol layer above the Link layer.
- The Line/Channel Monitor selection (item 2) allows selection of the Link Layer Line Trace. Line traces are available for the following interfaces:
  - SCC
  - HSC
  - Bus and Tag Channel
  - ESCON
- The link level trace is currently available for Token Ring and Ethernet via the Trace Utility menu, but require Visara engineering involvement.
- The printer sharing monitor monitors between bracket printer sharing.

Host Monitor Menu

The Host Monitor allows you to trace the protocol layer above the Link layer. You can trace SNA and non-SNA datastreams on a per host, per port, or per LU basis, and then display the traced data. By default, the host monitor is set to monitor all LUs at IML.

The host monitor can capture and display SNA TH/RH/RU data for remote-attached LINCS nodes (SDLC/X.21/X.25), Token Ring, and Ethernet-attached DSPU LINCS nodes, and Channel-attached LINCS nodes. All SNA data is displayed as hexadecimal data.

The host monitor can also capture and display non-SNA data for remote-attached LINCS nodes (BSC), and Channel-attached (ESCON or Bus and Tag) LINCS nodes. All non-SNA events are translated to English mnemonics and data associated with the event is displayed in hexadecimal.

The amount of memory allocated for storing the host monitor data varies according to the hardware and software configuration, but is limited in size. After all memory has been allocated for system use, the remaining memory is allocated for the host monitor. This memory is equally divided between all host circuits configured on each line. Once a trace buffer has filled, the trace buffer wraps. This makes it important to pull the information off as soon after an event occurs as possible. There are no provisions in LINCS to save the trace off as a file, so you must either screen scrape the information or dump the LINCS platform. One good option

for screen scraping is to use the Visara eManager product. This product provides among its utilities one that will allow you to manage the interface to set filters, and to retrieve the trace and save it as a file. This utility can be run without intimate knowledge of the FE Switch password.

```
Host Monitor Menu                                  LINCS C8.2 Central Control

Item          Description

 1            Display Monitor Status
 2            Clear Monitor Buffer
 3            Monitor all LUs
 4            Monitor a Specific LU
 5            Monitor a Specific Device
 6            Stop Monitor
 7            Display Monitor from Beginning
 8            Display Monitor from End

Select Item:  Depress Enter

PF: 1-Menu
```

Display Monitor Status

This selection allows you to display the status of the host monitor for all host circuits configured on the LINCS node. Possible monitor statuses includes:

Status	Definition
Undefined	The host circuit is not configured.
Monitor Stopped	The host monitor has been stopped.
Monitoring LU xx	Monitoring a specific (xx) LU.
Monitoring Device Port xx	Monitoring a specific (xx) device.
Monitoring All Lus	Monitoring all LUs defined for the host circuit.
Buffer Being Viewed	An additional status displayed if a host monitor buffer is being viewed by another user.

Clear Monitor Buffer

This test clears individual or all host monitor buffers. You must specify the buffer to be cleared when this option is selected by entering 2,h where 2 is the test option and h is the host letter (a through p or * for all buffers). If no host letter is specified, the host buffer for the current display session is cleared. The host monitor buffer can be cleared only if no other user is currently viewing the buffer.

After the selected operation has been performed, the Monitor Status panel will be displayed with a Buffer Cleared message for all host monitor buffers cleared.

Monitor All LUs

This test monitors the host traffic for all LUs on the specified host circuit. You specify the host circuit to be monitored by entering 3,h where 3 is the test and h is the host letter (a through p or * for all host circuits) when entering this test. If no host letter is specified, the requested action is taken on the current session's host circuit.

The monitor buffer is not cleared when this test is selected, so any residual data may still appear when the monitor data is displayed (if the buffer has not wrapped).

After the selected operation has been performed, the Monitor Status panel will be displayed.

Monitor a Specific LU

This test monitors host traffic for a specific LU on a specific host circuit. You specify the LU and host circuit to be monitored by entering 4,h,lu when entering this test, where 4 is the test, h is the host letter (a through p), and lu is the LU number in hexadecimal. If no LU or host letter is specified, the requested action is taken on the current session's LU and host circuit. For SNA, LU 00 may be entered to monitor host traffic for the PU.

The monitor buffer is not cleared when this test is selected, so any residual data may still appear when the monitor data is displayed (if the buffer has not wrapped).

After the selected operation has been performed, the Monitor Status panel will be displayed.

Monitor a Specific Device

This test monitors host traffic for all sessions on a given device port. You specify the device port to be monitored when this test option is selected by entering 5,port where 5 selects this test and port is the coax or ASCII device port number. For example: you can enter coax MCCX.YYY or ASCII ADAX.YYY, where X is the board number and Y is the port number. If no port number is specified, the requested action is taken on the current port sessions.

This test is not support for LANSYS, LU-PU MAPPED, or IPX SNA CLIENTS. The Monitor a Specific LU test must be used on these types of devices.

The monitor buffer is not cleared when this test is selected, so any residual data may still appear when the monitor data is displayed (if the buffer has not wrapped).

After the selected operation has been performed, the Monitor Status panel will be displayed.

Stop Monitor

This test stops the host monitor on the specified host circuit. Entering 6,h selects this test (6) where h is the host letter (a through p or * for all host circuits). If no host letter is specified, the requested action is taken on the current session's host circuit.

After the selected operation has been performed, the Monitor Status panel will be displayed.

Display Monitor from Beginning and Display Monitor from End

These tests temporarily stop the host monitor and display the monitor data for the specified host circuit. You must enter the test with 7,h or 8,h, where 7 or 8 is the test specified and h is the host letter specified (host a through p). If no host letter is specified, the requested action is taken on the current session's host circuit.

The Display Monitor from Beginning (Test 7) displays the monitor buffer starting with the oldest event captured. Display Monitor from End (Test 8) starts with the most recent event. Oldest to newest events are displayed from the top down (oldest event on top and newest event on bottom).

The current host monitor buffer being viewed is displayed at the top of the display screen as Display Monitor for Host: x where x is the selected host circuit. While viewing the host monitor for a given host circuit, the same host monitor cannot be viewed or cleared by another user. The host monitor buffer is also temporarily stopped so no additional data will be captured while the buffer is being viewed.

When you exit this test, the host monitor will again begin to capture data (provided the host monitor was not manually stopped, using menu option 6, before viewing the data) and the monitor buffer can be viewed by another user.

Host Monitor - SNA Trace

Here is an example of an SNA Host Monitor trace screen. A greater than symbol (>) indicates that the data is coming from the host. A less than symbol (<) indicates that LINCS is generating the data to send to the host. The data itself is shown in hex, beginning with the SNA TH, and followed by the RH and RU. The TH consists of the first six bytes of data, the RH consists of the next three bytes of data, and the remaining data for the frame makes up the RU. The SNA traces for SDLC, X.25, X.21, Token Ring, Ethernet, and local SNA are the same.

```
Display Monitor For Host:A                          LINCS C8.2 Central Control
< 2C00000800000B80008106200C06030001000000
< 2C00000800024B900004082B0000
>
280008000003038000D5C5E3E6D6D9D240E2E8E2E3C5D4E240C2E4E2C9D5C5E2E240C7D9D6
D74B40E5E2C561E5E3C1D440D3D6C7D6D540D4C5D5E44015401540404040404040404040
40404040404040404040C6D6D940C1D7D7D3404040404040404040C5D5E3C5D91540404040
40404040404040404040404040404040404040E5D461E2D740F14BF64040404040404040E5D4
15404040404040404040404040404040404040404040C3C9C3E24040F14BF74040404040
404040C3C9C3E21540404040404040404040404040404040404040
< 2C000008000387900010070000
> 24000800000340404 0C4D6C3E2404040404040404040404040C4D6C3E21540404040404040
40404040404040404040404040404040D5C5E3E5C9C5E640F14BF3404040404040D5C5E3E5C9
C5E61540404040404040404040404040404040404040404040404040D5C5E3E5C9C5E640C4D44040
4040404040D5C4D4C9D6C615401540154015401540154015C5D5E3C5D940D3D6C7D6D57A
> 2C00080000008B8000810620
< 2C00000A00000B80008106200C06010001000000
< 2C00000A00014B90000408310000
> 2C000A0000008B8000810620
  PF1-Menu                PF8-Forw
```

Note that for X.25 traces, the SNA frames are the frames which have been reassembled from data received over the link. (Some SNA frames are divided into smaller packets before sending over the X.25 link.) These packets, in traversing the network, may get out of order until the receiving unit reassembles them.

Host Monitor - BSC and Non-SNA Trace

Here is an example of a BSC Host Monitor trace. A greater than symbol indicates that the data is coming from the host. A less than symbol indicates that LINCS is generating the data to send to the host. The format of the BSC or non-SNA trace is detailed below:

```
Display Monitor for Host:B                          LINCS C8.2 Central Control

<STATUS          07   0301      40C7C240
< ACK            07   0303
> EOT            FF   0301
>COMM REM        FF   0002
> COMM REM       FF   0002
>GPOLL           FF   0002
< STATUS         00   0301
> DESELECT       00   0002
>SELECT          00   0002
>ACK0            00   0000
>OUTB DATA       00   0302 27F540A38889A24089A2408140A385A2A340968640A388854082
  A28340A399818686898340949695 89A39699
<ACK0(1)         00   1300
>DESELECT        00   0002
<GPOLL           FF   0002
<INB DATA        00   0301 40407D4040A38889A24089A2408140A385A2A340968640A388
  854082A28340A399818686898340949695 89A39699
>ACK             00   0303
> EOT            FF   0301

  PF1-Menu       PF7-Back       PF8-Forw
```

Flag Byte 1	
Bit 7	PCM is in use as DSC working buffer.
Bit 6	Frame contained an error.
Bit 5	Frame requires an inbound transmission.
Bit 4	Reserved bit.
Bit 3	Reserved bit.
Bit 2	Chained command (non-SNA).
Bit 1	First of message.
Bit 0	Last of message.
Flag Byte 2	
Bit 7	Transparent text.
Bit 6	Reserved bit.
Bit 5	Reserved bit.
Bit 4	Response is from a DFT.
Bit 3	Reserved bit.
Bit 2	Reserved bit.
Bit 1	1 = outbound frame, 0 = inbound frame.
Bit 0	Reserved bit.

Line/Channel Monitor Menu

The Line/Channel Monitor selection (item 2) allows you to select the Link Layer SCC Line Trace or the Local Channel Trace, depending on the host interface configuration The Line/Channel Monitor selection traces remote link level communications using SDLC, X.25, X.21,

or BSC protocols and channel level S/370 or S/390 communications using SNA or non-SNA protocols. By default, these trace facilities are enabled at IML, and cannot be disabled by the user (trace continuously).

Selection of the Line or Channel monitor is transparent. If the selected line is a local channel, the Channel monitor will be displayed. If the selected line is a remote, the Line monitor will be displayed. Because these monitors are continuously running, the Line/Channel trace is not accessible via CSCF.

```
Line/Channel Monitor Menu                          LINCS C8.2 Central Control

Item          Description

 1            Display Monitor from Beginning
 2            Display Monitor from End
 3            ESCON Traffic Monitor

Select Item:  Depress Enter

PF: 1-Menu
```

The selections available allow you to request the Line/Channel monitor data be displayed for the specified line. Entering T,line where T is menu selection 1 or 2, and line is the line number (Line 0 through 48). If no line is specified, Line 0 is used.

Display Monitor from Beginning

Displays the monitor buffer starting with the oldest event captured.

Display Monitor from End

Starts with the most recent event. Oldest to newest events are displayed from the top down (oldest on the top, newest on the bottom).

The current line monitor buffer being viewed is displayed at the top of the display screen as Display Monitor for Line: x where x is the selected line ID (for example: ESC2, CHP2, SCCI.0, SCCI.2).

While viewing the data contained in the Line/Channel monitor buffer, data is continuously being captured and written to the monitor buffer. If you display a panel of the Line/Channel monitor while there is host activity, it is possible that the data displayed when you page forward or backward will no longer be valid.

Line Monitor trace data formats vary depending on what type of line is being monitored:

- ESCON (SNA or Non-SNA)
- SDLC or SDLC/DAP
- X.25
- BSC
- Local Bus and Tag Channel (SNA or Non-SNA)

Line Monitor - SDLC or SDLC DAP Trace

The SDLC Line Monitor facility captures and displays the SDLC frames, but does not display flags and FCS bytes. The monitor also displays a portion of the SNA frame to make it easier to compare with the corresponding Host Monitor trace. Note that only traffic destined for the LINCS node is captured. Frames directed to other devices on the same link will not be captured or displayed. The facility displays the data in the following format:

- Greater than or less than symbols indicate the direction of SDLC frames. Traffic received by LINCS uses the greater than symbol (>), and traffic being sent by LINCS uses the less than symbol (<).

- The first two bytes represent the SDLC frame portion, which includes the SDLC address (first hex byte) followed by the SDLC command byte (second hex byte).
- The remaining bytes represent the information portion of an information frame, usually the SNA frame. When an SNA frame is present, only the TH, RH, and first couple of bytes of the RU are displayed. The rest of the RU is truncated to allow more room in the monitor for link level frames. For a complete display of the RU, you must observe the corresponding Host Monitor trace.

```
Display Monitor Forward                        LINCS C8.2 Central Control
> 1591
< 15D1
> 25D1
< 25F1
  .
  .
  .
> 1591
< 15D1
  PF1-Menu                          PF7-Back     PF8-Forw
```

Line Monitor - X.25 Trace

The X.25 Line Monitor facility displays the entire link level data packet, including the entire information area (SNA) data. Note that the entrees into the Line Monitor are not a true representation of the traffic over the link in reference to time, but are a close approximation. Data that LINCS transmits is placed in the monitor just prior to sending. Data received is entered into the monitor upon receiving the entire packet. Therefore, a packet that LINCS begins to receive prior to one that is being transmitted may in fact be entered into the monitor after the one that was transmitted. Note too, the nature of a Full-Duplex packet protocol such as X.25 allows for packets to pass each other in the network due to different routing paths. Therefore, the sequence that the packets are received in may not be the same in which they were sent. The trace shows the packets in the order in which they were received. The example panel presents a typical trace. The format of the data is as follows:

- Greater than or less than symbol to indicate direction of SDLC frame. Traffic received by LINCS uses the greater than symbol (>), while traffic being sent uses the less than symbol (<).
- The first two bytes represent the X.25 link layer and are very similar to SDLC. Address 03 always represents a Network command or a LINCS response. Address 01 always represents a LINCS command or a Network response. The second byte is the Control byte.
- The next three bytes represent the X.25 packet layer. The first two of the three bytes represent the logical channel number that is being used (high order bit is a Q bit and may change with the frame type). Each PU has its own LCN in a multihost circuit environment.
- For PSH protocol only, the next two bytes represent the PSH header. For QLLC protocol, there is no 2-byte header.
- The remaining bytes represent the information portion of an information frame, usually the SNA frame. The SNA frame may be divided among multiple packets. The X.25 header will give an indication of which order the packets should be reassembled to restore the SNA frame. Refer to the corresponding SNA Host Monitor trace to view the SNA data.

```
Display Monitor Backward                          LINCS C8.2 Central Control
< 0321
> 032210010B000A0A000255420707430303C300
< 014210010F0006420707430303
> 0344900100FF93
< 0164100121
< 01669001200173
> 03861001222D00000000006B800011010105000000001
< 0188100141
< 018A1001422D0000000000EB800011114040404040404000000701000000000
  0000
> 03C81001442D000A0000016B80000D010101
< 01AC100161
< 01A01001662C00000A00000B80008106200C06010001000000
> 032A1001862D000A0100016B800031010303B19030800001858700000200000
  000018501850020000
< 01C2100181
< 01E81001AA2D00010A0001EF900080050000A0
  PF1-Menu                  PF7-Back
```

Line Monitor - BSC Trace

The BSC Line Monitor facility captures and displays the BSC frames, less the Sync bits (hex 32) and ending flag (FF). Note that all frames of data traveling in the same direction are treated as one frame. There is no indication of time that may have elapsed between the sending of the two frames. All BSC data is captured and displayed with the exceptions noted above. If a Sync bit (32) occurs in the middle of data, it will also be displayed. The panel below is an example of a BSC Line Monitor trace.

```
Display Monitor Backward                        LINCS C8.2 Central Control
> 1070
< 016CD90240C1C24003
> 1061
< 016CD90240C7C24003
> 1070
< 37
> 0227F540A38889A24089A2408140A385A2A340968640A388854082A28340A399
    818686898340949695 89A396990349813232
< 1061
> 3740407F7F2D
< 37
> 3740407F7F2D
< 0240407D4040A38889A24089A2408140A385A2A340968640A388854082A28340
    A399818686898340949695 89A3969903
> 1061
< 37
  PF1-Menu    PF7-Back
```

Line Monitor - Local Bus and Tag SNA/Non-SNA Channel Trace

Unlike the BSC, SDLC, and X.25 Line Monitor, the Local Bus and Tag SNA and Non-SNA Channel Interface does not include the data transferred on the channel. This facility supplies a record of the physical channel activity which has occurred (such as Channel Command Received, Status Presented, Channel Resets, and Sense Data Transferred).

This LINCS facility is a continually running monitor started at IML. Data is being displayed via the Central Control Utility Line Monitor test. If there is a high rate of channel activity, the channel trace buffer may wrap before the next panel is displayed if paging slowly through the trace buffer. Only traffic for channel addresses configured on the LINCS node is captured.

```
Display Monitor Forward                          LINCS C8.2 Central Control
EVENT   MESSAGE    DESCRIPTION             EXTENDED DATA
0000 < 8C81E080   Set Config. Parms.      AddrHi=81  Flags=E0   AddrLo=80
0001 > 44000000   Command Complete
0002 < 8B000000   Go Online
0003 > 44000000   Command Complete
0004 < 8A801006   Present Async Status    Addr=80    Flags=10   Status=06
0005 > 40800006   Status Accepted (S)     Addr=80    Flags=00   Status=06
0006 > 10800400   Ch. Cmd. Received       Addr=80    Cmd=04     Status=00
0007 T CD800200   Sense Data Xfered       Addr=80    Sense=0200
0008 > 0080000C   Status Accepted         Addr=80    Flags=00   Status=0C
0009 < 8A811006   Present Async Status    Addr=81    Flags=10   Status=06
0010 > 40810006   Status Accepted (S)     Addr=81    Flags=00   Status=06
0011 > 10810400   Ch. Cmd. Received       Addr=81    Cmd=04     Status=00
0012 T CD810200   Sense Data Xfered       Addr=81    Sense=0200
0013 > 0081000C   Status Accepted         Addr=81    Flags=00   Status=0C
0014 > 10800500   Ch. Cmd. Received       Addr=80    Cmd=05     Status=00
0015 > 02800008   Status Accepted         Addr=80    Flags=00   Status=08
0016 < 8E802004   Present Ending Status   Addr=80    Flags=20   Status=04
0017 > 40800004   Status Accepted (S)     Addr=80    Flags=00   Status=04
  PF1-Menu                              PF8-Forw
```

The information displayed is described as follows:

Event	This number reflects the event number of each individual entry displayed on the screen. Event numbers start at 0000 for the first event in the buffer and are incremented by one for each successive entry.
Event Type (<< or >> or T)	This indicator identifies if the event was detected/generated by the CHC or the CHP board, or if the event was a Trace only type event. Events from the CHC are identified with the greater than symbol (>>) following the event number. Events from the CHP are identified with the less than symbol (<<) following the event number. Trace only type events will have a T following the event number. All CHC and CHC Trace only events are displayed as unintensified data (blue or low intensity green) while all CHP events and CHP Trace only events are displayed as Intensified data (white or high intensity green) on attached terminal displays.
Message	This is the actual 4-byte hexadecimal encoding of the Message/Event from the channel trace buffer.
Description	This is the description of the Message/Event.
Extended Data	This is the byte breakdown of the actual Message/Event.

Various messages logged in the Channel Trace buffer, description, and extended data displayed are listed in the sections on:

- CHC Messages
- CC Commands
- CHP Messages

Note that for traces captured on a platform that uses the CHS card, the CHC and CHP are logically integrated onto the same card.

CHC Messages

These messages are from the CHC to the CHP and Trace event messages from the CHC:

Channel Command Received

This message from the CHC indicates that a new channel command has been received on the channel. Included in the message are the Channel Address the command was addressed to, Channel Command, Initial Status presented by the CHC, and additional flags which identify any special conditions.

The format of the description and extended data is:

- Ch. Cmd. Received (C) Addr = xx Cmd = xx Status = xx

The C parameter indicates if Command Chaining was indicated when Initial Status was presented on the channel.

Status Accepted

This message from the CHC indicates that status has been presented and accepted on the channel by the CHC in response to a Channel Command or by the CHC in response to a Present Ending Status or Present Asynchronous Status CC Command from the CHP.

The format of the description and extended data is:

- Status Accepted (S,C,U) Addr = xx Flags = xx Status = xx

The S, C, U parameters indicate if the CHC message was Solicited (S) or Unsolicited (U), or that Command Chaining (C) was indicated when Status was presented on the channel. Solicited indicates that the status was generated by the CHP via a Present Ending Status or Present Asynchronous Status CC Command, while unsolicited indicates that the status was generated by the CHC during channel command processing.

Command Complete

This message from the CHC is received in response to all CC Commands issued by the CHP except Present Ending Status and Present Asynchronous Status. This message indicates that the CC Command issued to the CHC has been successfully processed by the CHC.

The format of the description and extended data is:

- Command Complete

Command Not Accepted

This message from the CHC is received in response to the Present Asynchronous Status or Go Offline CC Commands issued by the CHP to indicate that the CC Command could not be processed at this time by the CHC. This message can also be received from the CHC in response to any CC Command to indicate a synchronization problem between the CHC and CHP. Synchronization type errors will normally be logged as a Machine Check upon receipt of this message.

The format of the description and extended data is:

- Command Not Accepted Flags = xx

Chaining Terminated

This message from the CHC indicates that the channel has terminated command chaining after status had been presented which indicated command chaining but before the next channel command had been received (Suppress Out channel tag line goes inactive).

The format of the description and extended data is:

- Chaining Terminated

Expedite

This message from the CHC indicates that one of the three channel resets (System Reset, Selective Reset, or Interface Disconnect) has been detected on the channel or a non-SNA inbound data transfer has been terminated before all data has been transferred. The type of reset detected and the channel address which was selected when the reset was detected is included in the CHC message if applicable.

Also included in the message is a Sequence Number which will be used by the CHP and CHC for synchronization in the event that multiple resets are detected on the channel. After the CHP has completed any cleanup associated with the channel reset, a Reset Processed CC Command will be issued to the CHC which includes the Sequence Number of the corresponding Expedite CHC message.

The format of the description and extended data is:

Expedite (SYS RESET)		Flags = xx	Seq # = xx
Expedite (SEL RESET)	Addr = xx	Flags = xx	Seq # = xx
Expedite (INTF DISC)	Addr = xx	Flags = xx	Seq # = xx
Expedite (INC IBXFR)		Flags = xx	Seq # =xx

Trace Event

This message from the CHC is used to log any events detected by the CHC which do not require any processing by the CHP. These events include Short Busy Sequences, Busy sequences, Stack Status sequences, CUE status presented, Unsolicited TIO command received, and Multiple System Resets Received.

The format of the description and extended data is:

- CHC Trace Event Addr = xx Flags = xx Status = xx

Note that the extended data may not be applicable to all Trace Event messages.

CC Commands

These messages are from the CHP to the CHC.

Ready for Outbound

This command is issued to the CHC to indicate that the CHP is ready to begin an outbound data transfer on the channel. This command will only be seen in the event that the CHC had been preloaded for an inbound data transfer and a channel command was received which requests an outbound data transfer.

A Command Complete CHC message should be received from the CHC in response to this CC command.

The format of the description and extended data is:

- Ready for Outbound

Reset Processing Complete

This command is issued to the CHC to indicate that processing of an Expedite CHC message has been completed.

Also included in this message is the Sequence Number from the corresponding Expedite CHC message. This Sequence Number is used by the CHP and CHC for synchronization in the event that multiple resets are detected on the channel.

A Command Complete CHC message should be received from the CHC in response to this CC command.

The format of the description and extended data is:

- Reset Processed Seq # = xx

Set Direction Inbound (Non-SNA only)

This CC command is issued to the CHC during a Non-SNA Select Read Buffer from Position or Select Read Modified from Position channel command sequence to indicate to the CHC that it should prepare for an inbound data transfer.

A Command Complete CHC message should be received from the CHC in response to this CC command.

The format of the description and extended data is:

- Set Dir. Inbound

Accept Next Channel Command (Non-SNA only)

Following the completion of an outbound data transfer to LINCS (the data transfer has completed, CE has been presented, DE is pending), if the destination device is a printer or DFT, this command is issued to the CHC to indicate that it can accept another command even though final ending status is pending from the address associated with the device.

A Command Complete CHC message should be received from the CHC in response to this CC command.

The format of the description and extended data is:

- Accept Next Ch. Cmd.

Change Device Status (Non-SNA only)

This command is issued to the CHC to indicate that a device attached to the LINCS node has become unavailable or available. The channel address associated with the device is also included with the command.

A Command Complete CHC message should be received from the CHC in response to this CC command.

The format of the description and extended data is:

- Change Device Status Addr = xx Flags = xx

Change Buffer Status (SNA only)

This command is issued to the CHC to indicate a change in resource availability in the LINCS node. This message will indicate one of four possible resource conditions.

- No buffers available for a specific address
- Buffers available for a specific address
- No buffers available for all addresses
- Buffers available for all addresses

When no buffers are available for a specific address or for all addresses, any subsequent write type command on the channel will be rejected with the appropriate status indication. If the host is notified of a no buffers available condition for a specific address, the host will be notified via an asynchronous status x‘44’, SM,DE, when buffers become available for that address.

When buffers become available for an address, if the host had not been notified of the no

buffers condition, this command will be issued to the CHC to indicate that buffers are now available for that address. If the host has been notified of the no buffers available condition, the CHC will be notified when buffers become available via the Present Asynchronous Status CC Command when the asynchronous x‘44’, mentioned above, is presented.

Following a no buffers for all addresses condition, when buffers become available for all addresses, this CC command will be issued to the CHC.

A Command Complete CHC message should be received from the CHC in response to this CC command.

The format of the description and extended data is:

- Change Buffer Status Addr = xx Flags = xx

Present Asynchronous Status and Present Ending Status

These CC commands are issued to the CHC to request that status be presented on the channel. When channel command processing is active and the status to be presented is associated with a channel command, a Present Ending Status CC Command will be issued to the CHC. When no channel command is active, command chaining is not active, and a Sense command is not pending, if there is any asynchronous status to be presented on the channel, a Present Asynchronous Status CC Command will be issued to the CHC.

Following acceptance of the status on the channel, the CHC will acknowledge that the status has been presented by returning a Status Accepted CHC message to the CHC.

If, when requesting that asynchronous status be presented on the channel, the status cannot be presented, the CHC will notify the CHP of this condition by returning a Command Not Accepted CHC message.

The format of the description and extended data is:

- Present Async Status Addr = xx Flags = xx Status = xx
- Present Ending Status Addr = xx Flags = xx Status = xx

Go Online and Go Offline

These commands are issued to the CHC to request that the LINCS node be placed online to the channel or taken offline from the channel.

When no channel command is active, command chaining is not active, and a sense command is not pending, a Go Offline request can be made.

A Command Complete CHC message should be received from the CHC in response to both CC commands. If the CHC is unable to Go Offline for any reason, a Command Not Accepted CHC message should be received in response to the Go Offline CC command.

The format of the description and extended data is:

- Go Online
- Go Offline

Set Configuration Parameters

This command is issued to the CHC immediately following IML to notify the CHC of any configuration parameters which affect LINCS operation on the channel. Information included in this command includes Upper and Lower channel address, Data Transfer mode, Command Retry Support, and Protocol.

A Command Complete CHC message should be received from the CHC in response to this CC command.

The format of the description and extended data is:

- Set Config. Parms. Addr Hi = xx Flags = xx Addr Lo = xx

Abort

This command is issued to the CHC any time a catastrophic error is detected on LINCS. This command indicates to the CHC that it should attempt to get off the channel as gracefully as possible.

A Machine Check condition will normally be displayed on the LINCS node operator panel should this occur.

The format of the description and extended data is:

- Abort

CHP Messages

These are Trace Event messages from the CHP:

Inbound Protocol Message

This CHP Trace Event message is a trace message for tracking inbound communications.

The format of the description and extended data is:

- Inbound Protocol Msg ADDR = xx Msg = xxxxxxxxxxx

Outbound Protocol Message

This non-SNA CHP Trace Event message is a trace message for tracking outbound communications.

The format of the description and extended data is:

- Outbound Protocol Msg ADDR = xx Msg = xxxxxxxxxxx

Outbound Transfer Init

This CHP Trace Event message is a trace message for tracking data transfer hardware initialization on the CHP for outbound data transfers.

The format of the description and extended data is:

- Outbound Transfer Init

Inbound Transfer Init

This CHP Trace Event message is a trace message for tracking data transfer hardware initialization on the CHP for inbound data transfers.

The format of the description and extended data is:

- Inbound Transfer Init

Upstream State Change (SNA only)

This message is a trace message for tracking protocol state transitions.

The format of the description and extended data is displayed as:

- UPS State Change ADDR = xx OLD = xxx New = xxx

Sense Data Transferred

This message indicates the Sense Data transferred when an x‘04’ Sense command was received on the channel. For SNA, two bytes of Sense Data is presented. For non-SNA, one byte of Sense Data is presented.

The format of the description and extended data is displayed as:

- Sense Data Xfered Addr = xx Sense = xxxx
- Sense Data Xfered Addr = xx Sense = xx

The following table presents the CC Command Message format given in bit definitions. The sample message used is 8C81E080, Set Configuration Parameters.

CC Command Message	8C			81 E0 80
Byte	3			2 1 0
Bit	31..30	29..28	27..24	23..0
Contents	always 10	unused 00	CC Command Identifier	Optional Parameters

The following table presents the CHC Message format given in bit definitions. The sample message used is 40810006, Status Accepted.

CHC Message	40					81 00 06
Byte	3					2 1 0
Bit	31	30	29	28	27..24	23..0
Contents	always 0	Solicited Indicator	Chaining Indicator	CCR CHC Msg Indicator	CHC Message Identifier	Optional Parameters

The following table presents the CHP Message format given in bit definitions. The sample message used is CD800200, Sense Data Transferred.

CC Command Message	CD			80 02 00
Byte	3			2 1 0
Bit	31..30	29..28	27..24	23..0
Contents	always 11	always 00	CHP Message Identifier	Optional Parameters

ESCON Traffic Monitor

The ESCON Traffic Monitor panel is used to set filters on what is to be captured over the ESCON interface. By default, at IML time, the ESCON traffic monitor is enable to capture data on all configured circuits. You can also save the ESCON trace off as a file on the hard drive that can be retrieved by FTP or copied onto floppy using the Media Management Copy File utility. You may also use the Visara eManager product to interface remotely into this utility to simplify the process of setting filters, stop and starting the trace facility and pulling off the traces. eManager can also be used to convert the file from its native binary format to an expanded viewable text version. An example of the ESCON Traffic Monitor panel is shown below.

```
ESCON Traffic Monitor:  ESC1                        LINCS C8.2 Central Control
 Status:      ENABLED
 CU Index:    ALL
  Address:     **    (enter Hex Value or "**" for ALL Addresses)

 PF: 1-Menu             4-Stop
```

Since the ESCON Traffic Monitor runs by default, you must first stop the monitor, before you can make changes to what it is to capture. When the monitor is running you should see a status of 'ENABLED' displayed and a PF4-Stop key defined. Stop the monitor by pressing the <PF4> key. When the monitor stops, you will see the status change to 'DISABLED', and the 'PF4-Stop' key will go away. You will also notice three new PF keys defined:

- PF3 – Start
- PF5 – Clear
- PF10 – Save

Pressing the <PF3> key will restart the monitor, leaving the existing trace intact. Pressing the <PF5> key will clear the monitor. Pressing the <PF10> key will save the current contents of the trace into a binary file with the name of 'ESC_DEV.BIN'. This file can be found in the System directory. Note that if you want to save more than one trace, you will need to copy the trace file off after each save, since the new save will overwrite the previous file.

An example of a captured ESCON trace is shown below.

```
Display Monitor for Line: ESC1                      LINCS C8.2 Central Control

 EVENT  MESSAGE  DESCRIPTION           EXTENDED DATA

 0000 T C7000606 Outbound Protocol Msg Addr = 00     Msg = COMM REM
 0001 < 8D000400 Go Offline
 0002 T C7000606 Outbound Protocol Msg Addr = 00     Msg = COMM REM
 0003 T C7100606 Outbound Protocol Msg Addr = 10     Msg = COMM REM
 0004 < 8B000606 Go Online
 0005 > 0E000406 ESCON Link Error   Addr = 00     Flags = 04    Seq # = 06
 0006 > 0E010406 ESCON Link Error   Addr = 01     Flags = 04    Seq # = 06
 0007 < 8C100406 Logical Path  Est. LPAR = 01     Addr = C0     CUI = 01
 0008 > 0E030406 ESCON Link Error   Addr = 03     Flags = 04    Seq # = 06
 0009 > 0E040406 ESCON Link Error   Addr = 04     Flags = 04    Seq # = 06
 0010 > 0E050406 ESCON Link Error   Addr = 05     Flags = 04    Seq # = 06
 0011 T C7100606 Outbound Protocol Msg Addr = 10     Msg = COMM REM
 0012 T C7100606 Outbound Protocol Msg Addr = 10     Msg = COMM REM
 0013 > 0E080406 ESCON Link Error   Addr = 08     Flags = 04    Seq # = 06
 0014 > 0E080406 ESCON Link Error   Addr = 08     Flags = 04    Seq # = 06
 0015 < 8C000406 Logical Path  Est. LPAR = 03     Addr = C0     CUI = 00
 0016 T C7000606 Outbound Protocol Msg Addr = 00     Msg = COMM REM

 PF: 1-Menu                                          8-Forw
```

Events are numbered in the trace sequentially. A greater than symbol (>) is used to indicate outbound traffic (from the host) and the less than symbol indicates inbound traffic (to the host). The letter 'T' is used to denote Inbound and Outbound Protocol Messages exchanged

between the Visara PFA and the Luminex card. The Message field in the trace is an 4-byte field, that is further decoded on the remainder of that line. Each byte translates into a Description field, Address, Flags, and Sequence #.

Trace Utility Menu

The Trace Utility is used primarily by engineering to obtain necessary information to diagnose problems. Instructions from engineering will be given on which masks to use and what to trace to obtain the information needed.

```
Trace Utility Menu                              LINCS C8.2 Central Control

Item          Description

 1            Display Trace Buffer ID List
 2            Clear Monitor Buffer
 3            Display/Update Trace Control Mask
 4            Display Monitor from Beginning
 5            Display Monitor from End

Select Item:  Depress Enter

PF: 1-Menu
```

The Trace Utility Menu traces packets and events. First, choose Option 1 to determine the Trace Buffer ID of the trace buffer you wish to view. Then enter the Buffer ID along with options 2 through 5, by entering “Trace Utility Option,Trace Buffer ID”. For example: 4,1 displays Trace Buffer ID 1 from the beginning.

Display Trace Buffer ID List

```
Display Trace Buffer ID List                     LINCS C8.2 Central Control

    Trace Buffer ID     Trace Buffer Name
          1             ASCII Device
          2             ASCII Device
          3             Line ETH1
          4             Line FET1
          5             APPN Problems and Exceptions
          6             APPN Audits
          7             APPN DLC
          8             APPN Internal Trace

 PF: 1-Menu
```

Printer Sharing Monitor Menu

```
Printer Sharing Monitor Menu                      LINCS C8.2 Central Control
Item          Description
 1            Monitor one device
 2            Monitor Name Server Application
 3            Clear Printer Sharing Monitor Buffer
 4            Reset Printer Sharing Monitor Buffer
Select Item:  Depress Enter
PF: 1-Menu
```

Slot Population Table

This panel can be used as a quick ID reference for the cards that are installed and what slot they are in. It can also be used to view the Flash Date for several of the cards. Note that references to slots 13 and 16 are misleading and actually reference the SCP or Motherboard, depending on the model except on the model 1174-15X where the reference is correct.

```
Slot Population Table                                   LINCS C8.2 Central Control
                          Flash    ─────────Local Memory─────────

     Slot  Board   Date                  Partitions        Free           Total
      13   GPP     N/A    9EAD800 01354K  8000000 31345K  9E9C160 00070K   32768K
      03   FET    26Sep01  0917800 05885K                 0ED6900 01190K   16384K
      05   ESC    26Sep01  0017710 15997K                 0FB6900 00294K   16384K
      07   VHP    26Sep01  00D0A10 14455K                 0EEE300 01096K   16384K
      08   ETH     N/A    8186800 00009K                  8188A00 00478K   02048K
      09   SCC     N/A    0000400 00037K                  00097B0 00027K   00064K
      10   MCC     N/A    0000400 00005K                  0001770 00059K   00064K
      16   SCGPP   N/A    833A800 00790K  8000000 00389K  8061200 02918K   04096K

PF: 1-Menu                                              8-Forw
```

Coax R/W Test

This test displays a pattern on the screen as shown below. The test continues to run until the terminal is powered off or varied offline and back online at the terminal. The MCC card is tested for data integrity. If a failure occurs, the MCC card should be replaced. A successful test is indicated by the data remaining on the screen the same as when the test starts. A failure will result in some of the data skewing to other locations on the screen. The test should be run for at least three minutes. This test only needs to be executed on one port of an MCC board. Once the results of the test have been determined, you will need to turn the unit off.

```
AAAA
BBBB
CCCC
DDDD
EEEE
FFFF
GGGG
HHHH
IIII
JJJJ
KKKK
LLLL
MMMM
NNNN
OOOO
PPPP
QQQQ
RRRR
SSSS
TTTT
UUUU
VVVV
```

Activate/Deactivate All Features

Since non-volatile RAM resides on the SCP board or the Motherboard, it may be necessary to deactivate all features to facilitate replacement of that board. The following procedure should be followed to replace this board.

```
Feature Activation/Deactivation                LINCS C8.2 Central Control
Destination Disk Drive:    Drive A
Features currently activated on this unit ... SN 11880088:
 SNA Concentrator                          Access Server
 IPX SNA/TN3270 Clients                     112 Outgoing LAT ports
 Extended Outgoing LAT ports                Incoming LAT
 Incoming/Outgoing TELNET                   Advanced Feature Group
 003 Extended ESCON CUs

PF: 1-Menu                5-Deactivate All
```

SCP Board Replacement Procedures

1. Insert a blank diskette into the floppy drive A.
2. From the Field Support Menu in Test Mode, select Deactivate All Features. All features will be written on the diskette along with the machine's serial number. Take note of the serial number indicated on this panel, it will be used later. The feature flags will then be

cleared from non-volatile memory. Upon successful completion of the deactivation, the serial number will be displayed.

3. Replace the SCP board.
4. IML into DIAGNOSTICS mode. There will be no serial number on the new board.
5. Enter the machine's serial number into the new SCP's non-volatile memory.
6. IML with default configuration.
7. From the Field Support Menu in Test Mode, select Activate All Features. The diskette will be read. If the serial number previously entered matches the serial number on the diskette, all feature flags will be restored to non-volatile memory. The information on the diskette will then be deleted.

It is important to follow this procedure carefully. LINCS will not restore the features without a valid serial number.