SYSCP Utility - Code Page Administration

The SYSCP utility is used to obtain information on code pages and ICU (International Components for Unicode) data files available in the current Natural mainframe environment. In addition, you can use the SYSCP utility to change the code page assignment of a source object or convert code pages for a source object.

This helps avoid problems that can occur when a code page is not defined or enabled in Natural or when source objects are converted to an incorrect code page or Unicode format.

For detailed information on how Natural supports Unicode and code pages and Unicode-specific items, see the descriptions and presentations in the SYSEXV application and *Related Topics* below.

Note:
The use of the SYSCP utility can be controlled by Natural Security. For detailed information, see the section *SYSCP - Code Page Administration - Utility Profiles* in the *Natural Security* documentation.

The *SYSCP Utility - Code Page Administration* documentation covers the following topics:

- Invoking and Terminating SYSCP
- Code Page Maintenance of Sources
- All Code Pages
- Unicode Properties

Related Topics:

- *Unicode and Code Page Support*: *Natural* documentation
- Unicode: Unicode Consortium at web site at *http://www.unicode.org/*
- ICU: IBM ICU Documentation at web site *http://www-01.ibm.com/software/globalization/icu/index.jsp*
- IBM Converter Explorer documentation at web site *http://demo.icu-project.org/icu-bin/convexp*

Invoking and Terminating SYSCP

Instructions for invoking and terminating the SYSCP utility and performing a function are provided in the following section.

To invoke the SYSCP utility

- Enter the following system command:

```
SYSCP
```

A SYSCP menu similar to the example below appears:

```
11:19:07               ***** NATURAL SYSCP UTILITY *****             2007-06-13
User SAG                            - Menu -              ICU Version 3.6
                                                        Unicode Version 5.0


                           Function

                        _  Code Page Maintenance of Sources
                        _  All Code Pages
                        _  Unicode Properties
                        _  Help
                        _  Exit




Command ===>




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help        Exit                                                  Canc
```

The current ICU and Unicode versions are indicated at the top of the screen.

The functions contained in the menu are explained in the remainder of this documentation.

To execute a SYSCP function

- In the SYSCP menu, place the cursor in the input field next to the required function and press ENTER.

  Or:
  In the SYSCP menu, in the input field next to the required function, enter any character and press ENTER.

Note:
In the Command line of any SYSCP utility screen, you can enter any Natural system command. A system command terminates the SYSCP utility.

To terminate SYSCP

- Press PF3 or PF12.

  Or:
  From the SYSCP menu, choose **Exit**.

Code Page Maintenance of Sources

The **Code Page Maintenance of Sources** functions are used to list the code page information of source objects contained in a Natural library, change code page assignments of source objects and convert code pages for source objects.

All code page maintenance functions reference the standard IANA name (see also **Cmd** in *All Code Pages*); you cannot use a code page name other than IANA when you execute a code page maintenance function.

The results of a code page maintenance function are output on a report screen, which is described in *Function Result Report*.

When you invoke **Code Page Maintenance of Sources**, a maintenance menu similar to the example below appears:

```
07:34:21               ***** NATURAL SYSCP UTILITY *****            2009-08-27
User SAG             - Code Page Maintenance of Sources -


                     Code  Function

                       L   List Code Page Information of Sources
                       C   Check Conversion of Unassigned Sources
                       A   Assign Code Page Information to Sources
                       K   Check Conversion of Assigned Sources
                       T   Convert to Different Code Page
                       R   Remove Code Page Information from Sources
                       ?   Help
                       .   Exit

           Code ...... _

           Library ... SYSTEM__       DBID ...... _____     FNR ..... _____
                                      Password ..           Cipher ..


Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help        Exit                                                  Canc
```

The fields and functions contained in the **Code Page Maintenance of Sources** menu and the options and features provided by the functions are explained in the following section:

- Code Page Maintenance of Sources Menu
- List Code Page Information of Sources
- Check Conversion of Unassigned Sources
- Assign Code Page Information to Sources
- Check Conversion of Assigned Sources

- Convert to Different Code Page
- Remove Code Page Information from Sources
- Name Specification
- Object Selection List
- Function Result Report

Code Page Maintenance of Sources Menu

The fields contained in the **Code Page Maintenance of Sources** menu are explained in the following table:

Field	Explanation
Code	The code to be entered for the function to be executed, for example, `L` for **List Code Page Information of Sources**.
Library	The name of the Natural library that contains the source objects for which to execute a code page maintenance function. The name entered by default is the name of the current library as specified with the system variable `*LIBRARY-ID` (see the *System Variables* documentation).
DBID	The database ID (DBID) of the Natural system file where the specified library is stored. If no value (or `0`) is specified, the current FUSER or FNAT system file is used.
FNR	The file number (FNR) of the Natural system file where the specified Natural library is stored. If no value (or `0`) is specified, the file number of the current FUSER or FNAT system file is used.
Password	If the specified system file is password protected, you must supply the appropriate 8-character Adabas password.
Cipher	If the specified system file is enciphered, you must supply the appropriate 8-digit Adabas cipher code.

List Code Page Information of Sources

This function is used to list the code page information for all source objects contained in a Natural library as shown in the following example:

```
14:50:26               ***** NATURAL SYSCP UTILITY *****             2006-10-19
User SAG           - List Code Page Information of Sources -
                                                        Listed Library SAGTEST
Cmd  Name      Code Page                          Type
---  *_______  *________________________________  *_________
__   LDA1      IBM01147                           Local
__   LDA2      IBM01147                           Local
__   LDA3      IBM037                             Local
__   LDA4      IBM01147                           Local
__   MAP1      IBM01147                           Map
__   MAP2      IBM037                             Map
__   MAP3      IBM01147                           Map
__   MAP4                                         Map
__   PGM1                                         Program
__   PGM2      IBM01147                           Program
__   PGM3      IBM01147                           Program
__   PROG1     IBM01147                           Program
__   PROG2                                        Program
__   PROG3     IBM037                             Program
__   PROG4     IBM01147                           Program




Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help        Exit              --    -     +     ++                Canc
```

The fields and columns contained in the **List Code Page Information of Sources** screen are explained in the following table:

Field/Column	Explanation
Listed Library	See **Library** in *Code Page Maintenance of Sources Menu*.
Cmd	Input field for the following line command to be executed for a selected source object: `LD` Display object directory information. This line command corresponds to the command `LIST DIRECTORY` *`object-name`* described in *Displaying Directory Information* in the *System Commands* documentation.
Name	The name of the source object.
Code Page	The code page information (IANA name) of the source object. This column appears empty for a source object that is not assigned a code page.
Type	The type of Natural object such as a program or a map.

Filtering Objects

You can shorten the list of objects displayed on the **List Code Page Information of Sources** screen by specifying selection criteria.

To specify selection criteria

1. In the input fields that appear underneath the column headings **Name** and **Code Page**, replace the default asterisk (*) with any of the input values listed in *Name Specification*.
2. In the input field underneath the column heading **Type**, replace the default asterisk (*) with one or more (maximum is 11) of the following type codes without a separator character:

Code	Object Type	Code	Object Type
P	Program	A	Parameter data area
N	Subprogram	G	Global data area
S	Subroutine	L	Global data area
M	Map	C	Copycode
H	Helproutine	T	Text
M	Macro	R	Report
7	Function	Z	Recording
3	Dialog	4	Class
5	Processor		
*	All Types		

Check Conversion of Unassigned Sources

This function is used to check whether an unassigned source object can be converted to a code page.

An unassigned source object is an object without code page information which was originally saved under a Natural version where code page information was not yet supported. Since no code page information is provided, you need to decide which code page to specify for the source object to be checked for conversion. This depends on the character set used in the source.

If you invoke the **Check Conversion of Unassigned Objects** function, a screen similar to the example below appears:

```
14:56:51               ***** NATURAL SYSCP UTILITY *****             2006-10-19
User SAG           - Check Conversion of Unassigned Sources -


   Check if source objects that have no code page information can be
   converted from a given code page to a target code page.

   Use selection list .. Y

   Source code page .... IBM01147_____________________________________________

   Target code page .... IBM01140_____________________________________________

   Object name ......... *________

   Library ............. SAGTEST_     DBID ...... 10___     FNR ..... 32___
                                     Password ..           Cipher ..



Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help        Exit                                                  Canc
```

The fields contained in the **Check Conversion of Unassigned Objects** screen are explained in the following table:

Field	Explanation
Use selection list	Specifies whether selective processing or automated processing is used for the specified source objects: see *Object Selection List*.
Source code page	The name of the code page to be used to check whether the specified source objects (to which no code pages are yet assigned) can be converted from this code page to the code page entered in the **Target code page** field. If the conversion check is successful, the code page specified in **Target code page** can be used with the **Assign Code Page Information to Sources** function. The default name entered is the IANA name as returned by the `*CODEPAGE` system variable (see the *System Variables* documentation).
Target code page	The name of the code page to check for conversion of the specified unassigned source objects. The default name entered is the IANA name as returned by the `*CODEPAGE` system variable (see the *System Variables* documentation).
Object name	The name of a single source object or a range of names to be processed: see *Name Specification* for valid input values.
Library	See **Library** in *Code Page Maintenance of Sources Menu*.
DBID	See **DBID** in *Code Page Maintenance of Sources Menu*.
FNR	See **FNR** in *Code Page Maintenance of Sources Menu*.
Password	See **Password** in *Code Page Maintenance of Sources Menu*.
Cipher	See **Cipher** in *Code Page Maintenance of Sources Menu*.

Assign Code Page Information to Sources

This function is used to assign a code page to an unassigned source object. The source code of this object is *not* converted to the specified code page.

You can also use the function to change the code page information for a source object to which a code page is already assigned. In this case, only the code page name (IANA name) changes; the source code of this object is *not* converted.

The fields contained in the **Assign Code Page Information to Sources** screen are explained in the following table:

Field	Explanation
Use selection list	Specifies whether selective processing or automated processing is used for the specified source objects: see *Object Selection List*.
Forced assignment	Specifies whether to process source objects that have already code page information or source objects without code page information. Possible values are: `Y` Yes. Forced assignment is activated: the code page information changes to the specified code page for objects that have already code page information. `N` No. Forced assignment is deactivated (this is the default setting): the specified code page is only assigned to objects that have no code page information.
Code page	The name of the code page to be assigned to the specified source objects. The default name entered is the IANA name as returned by the `*CODEPAGE` system variable (see the *System Variables* documentation).
Object name	The name of a single source object or a range of names to be processed: see *Name Specification* for valid input values.
Library	See **Library** in *Code Page Maintenance of Sources Menu*.
DBID	See **DBID** in *Code Page Maintenance of Sources Menu*.
FNR	See **FNR** in *Code Page Maintenance of Sources Menu*.
Password	See **Password** in *Code Page Maintenance of Sources Menu*.
Cipher	See **Cipher** in *Code Page Maintenance of Sources Menu*.

Check Conversion of Assigned Sources

This function is used to test whether an assigned source object can be converted from its current code page (as entered in the object directory information) to another code page.

An assigned source object is an object which has code page information.

The fields contained in the **Check Conversion of Assigned Sources** screen are explained in the following table:

Field	Explanation
Use selection list	Specifies whether selective processing or automated processing is used for the selected source objects: see *Object Selection List*.
Current code page	The name of the code page or a range of names to be used as an object selection criterion: see *Name Specification* for valid input values. The default setting is asterisk (*) indicating all code pages.
New code page	The name of the code page to check for conversion of the specified assigned source objects. The default name entered is the IANA name as returned by the `*CODEPAGE` system variable (see the *System Variables* documentation).
Object name	The name of a single source object or a range of names to be processed: see *Name Specification* for valid input values.
Library	See **Library** in *Code Page Maintenance of Sources Menu*.
DBID	See **DBID** in *Code Page Maintenance of Sources Menu*.
FNR	See **FNR** in *Code Page Maintenance of Sources Menu*.
Password	See **Password** in *Code Page Maintenance of Sources Menu*.
Cipher	See **Cipher** in *Code Page Maintenance of Sources Menu*.

Convert to Different Code Page

This function is used to convert an assigned source object from its current code page (as entered in the object directory information) to another code page. You cannot convert an unassigned source object.

The fields contained in the **Convert to Different Code Page** screen are explained in the following table:

Field	Explanation
Use selection list	Specifies whether selective processing or automated processing is used for the specified source objects: see *Object Selection List*.
Current code page	The name of the code page or a range of names to be used as an object selection criterion: see *Name Specification* for valid input values. The default setting is asterisk (*) indicating all code pages.
New code page	The name of the code page into which to convert the specified source objects. The default name entered is the IANA name as returned by the `*CODEPAGE` system variable (see the *System Variables* documentation).
Object name	The name of a single source object or a range of names to be processed: see *Name Specification* for valid input values.
Library	See **Library** in *Code Page Maintenance of Sources Menu*.
DBID	See **DBID** in *Code Page Maintenance of Sources Menu*.
FNR	See **FNR** in *Code Page Maintenance of Sources Menu*.
Password	See **Password** in *Code Page Maintenance of Sources Menu*.
Cipher	See **Cipher** in *Code Page Maintenance of Sources Menu*.

Remove Code Page Information from Sources

This function is used to remove the code page information (as entered in the object directory) from an assigned source object.

Caution:
Be aware that the code page information is removed without conversion of the source code.

The fields contained in the **Remove Code Page Information from Sources** screen are explained in the following table:

Field	Explanation
Use selection list	Specifies whether selective processing or automated processing is used for the specified source objects (see *Object Selection List*).
Current code page	The name of the code page or a range of names to be used as an object selection criterion: see *Name Specification* for valid input values. The default setting is the IANA name as returned by the *CODEPAGE system variable (see the *System Variables* documentation).
Object name	The name of a single source object or a range of names to be processed: see *Name Specification* for valid input values.
Library	See **Library** in *Code Page Maintenance of Sources Menu*.
DBID	See **DBID** in *Code Page Maintenance of Sources Menu*.
FNR	See **FNR** in *Code Page Maintenance of Sources Menu*.
Password	See **Password** in *Code Page Maintenance of Sources Menu*.
Cipher	See **Cipher** in *Code Page Maintenance of Sources Menu*.

Name Specification

You can specify a name or a range of names as a selection criterion.

In the list of options below, *value* is any combination of one or more characters:

	Input	Items Selected
	value	All items with names equal to *value*.
	*	All items.
	?	All items with any single character for each question mark (?) entered.
Leading characters	*value**	All items with names that start with *value*. Example: AB* Selected: AB, AB1, ABC, ABEZ Not selected: AA1, ACB
Wildcard	*value*?	A wildcard. All items with names that start with *value* and end with any single character for each question mark (?) entered. Example: ABC? Selected: ABCA, ABCZ Not selected: AXC, ABCAA
	value? *value*?	All items that match *value* combined with asterisk (*) and question mark (?) in any order. Example: A?C*Z Selected: ABCZ, AXCBBBZ, ANCZ Not selected: ACBZ, ABDEZ, AXCBBBZA
	*value**value*?	
	value*?*value	
Start value	*value*>	All items with names greater than or equal to *value*. Example: AB> Selected: AB, AB1, BBB, ZZZZZZZ Not selected: AA1, AAB
End value	*value*<	An end value: All items with names less than or equal to *value.* Example: AX< Selected: AB, AWW, AX Not selected: AXA, AY

Object Selection List

You can set the **Use selection list** option to determine whether selective processing or automated processing is used for a maintenance function. If selective processing is used, a selection list of the specified objects is displayed on a selection screen before executing the function.

The **Use selection list** option does not apply to the **List Code Page Information of Sources** function.

Possible settings of **Use selection list** are as follows:

Y Yes.
Selective processing is activated (this is the default setting): a selection list of all source objects that meet the specified selection criteria appears. You can then select the objects to be processed from this list.

N No.
Selective processing is deactivated and the function is executed immediately for all source objects that meet the specified selection criteria.

An object selection list looks similar to the example shown below:

```
16:28:43              ***** NATURAL SYSCP UTILITY *****             2006-10-19
User SAG            - Check Conversion of Assigned Sources -
      Target code page IBM01140
Cmd  Name      Code Page                          Message
---  --------  ------------------------------ ------------------------------
__   LDA1      IBM01147
__   LDA2      IBM01147
__   LDA3      IBM01147
__   LDA4      IBM01147
__   MAP1      IBM01147
__   MAP2      IBM01147
__   MAP3      IBM01147
__   PGM2      IBM01147
__   PGM3      IBM01147
__   PROG1     IBM01147
__   PROG3     IBM01147
__   PROG4     IBM01147



Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help        Exit        All X                                    Canc
```

The fields and columns contained in an object selection screen are described in the following table:

Field/Column	Explanation
Target code page	The code page to be used to check or perform a source-object assignment or conversion.
Cmd	Input field for either of the following line commands to be executed for a selected source object: `EX` or `X` Execute the maintenance function. You can press PF5 if you want to issue the line command to all objects in one go. `LD` Display object directory information. This line command corresponds to the command `LIST DIRECTORY` *`object-name`* described in *Displaying Directory Information* in the *System Commands* documentation.
Name	The name of the source object that meets the specified selection criteria.
Code Page	The current code page information of the source object.
Message	This column only contains text when you have finished executing the maintenance function. In this case, the column contains a message that indicates the processing status of the source object. See also *Function Result Report*.

Function Result Report

After a maintenance function has finished executing, the processing results are shown on a report screen. A report screen looks similar to an object selection screen an example of which is shown in *Object Selection List*.

The fields and columns contained in a result report screen are explained in the following table:

Field/Column	Explanation
Target code page	The code page used to check or perform a source-object assignment or conversion.
Cmd	Input not possible.
Name	The name of the source object that meets the specified selection criteria.
Code Page	The current code page information of the source object.
Message	This column contains a message that indicates the processing status of the source objects selected for processing. The messages indicate successful execution of a function or possible error reasons. Possible messages are: `Assignment possible` — The source object can be assigned to the specified code page. `Conversion error, at least one code point not translated.` — The source object cannot be assigned or converted to the specified code page. `Code page assigned` — The source object has been assigned to the specified code page. `Conversion possible` — The source object can be converted to the specified code page. `Code page converted` — The source object has been converted from its current code page to another code page. `Not converted` — The source object has not been converted to the specified code page because it is already encoded in this code page.

All Code Pages

This function is used to list all code pages available in your current Natural environment as shown in the following example:

```
17:21:36               ***** NATURAL SYSCP UTILITY *****             2007-08-02
User SAG                       - All Code Pages -

Cmd Stat Name                                                            Units
--- ---- ------------------------------------------------------------- -----
 _   D   UTF-8                                                          1 - 3
 _   D   UTF-16                                                         2 - 2
 _   D   UTF-16BE                                                       2 - 2
 _   D   UTF-16LE                                                       2 - 2
 _   D   UTF-32                                                         4 - 4
 _   D   UTF-32BE                                                       4 - 4
 _   D   UTF-32LE                                                       4 - 4
 _   D   UTF16_PlatformEndian                                           2 - 2
 _   D   UTF16_OppositeEndian                                           2 - 2
 _   D   UTF32_PlatformEndian                                           4 - 4
 _   D   UTF32_OppositeEndian                                           4 - 4
 _   D   UTF-7                                                          1 - 4
 _   D   IMAP-mailbox-name                                             1 - 4
 _   D   SCSU                                                          1 - 3


Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help        Exit        Sort         -     +                     Canc
```

You can use the following PF keys:

- PF8 (or ENTER) scrolls down one page in the list.
- PF7 scrolls up one page in the list.
- PF5 sorts the list in ascending order by code page name. Depending on the size of the list, you may have to increase the size of the sort buffer by using the SORT profile parameter as described in *SORT - Control of Sort Program* in the *Parameter Reference* documentation.

The columns contained in the **All Code Pages** screen are explained in the following table:

Column	Explanation
Cmd	Input field for one of the following line commands to be executed for the selected code page: `N` Display all names used for the code page: The IANA (Internet Assigned Numbers Authority) name is the standard and unambiguous name of the code page. The IANA name is used by Natural as the default code page name (see the `CP` profile parameter described in the *Parameter Reference* documentation) for conversions to and from Unicode. The IANA name is returned by the `*CODEPAGE` system variable (see the *System Variables* documentation). CCSID (Coded Character Set Identifier) denotes the character set as identified by IBM. Alias names: one or more alternate names for the code page. `C` Display all code points of the selected code page: see *Code Point List* below. `T` Invoke a window to test code point conversion to and from Unicode: see *Test Conversion* below.
Stat	All code pages to be used during a Natural session must be predefined and enabled in the NATCONFG module. This column shows the NATCONFG status of the code page: `E` Code page is defined in the NATCONFG module and is enabled. `D` Code page is defined in NATCONFG but is disabled. `N` Code page is not defined in NATCONFG. For detailed information on the NATCONFG module, refer to *Natural Configuration Tables* in the *Operations* documentation.
Name	The internal ICU name.

Column	Explanation
Units	The code units (minimum and maximum numbers of bytes) assigned to the code points.

This section covers the following topics:

- Code Point List
- Test Conversion

Code Point List

This function is used to list all code points of the selected code page as shown in the following example:

```
13:38:33               ***** NATURAL SYSCP UTILITY *****             2007-08-06
+--------------------------- Code Points of UTF-8 ----------------------------+
! CP: 00000000  U: 0000        NULL                                           !
! CP: 00000001  U: 0001  ?     START OF HEADING                               !
! CP: 00000002  U: 0002  ?     START OF TEXT                                  !
! CP: 00000003  U: 0003  ?     END OF TEXT                                    !
! CP: 00000004  U: 0004  ?     END OF TRANSMISSION                            !
! CP: 00000005  U: 0005  ?     ENQUIRY                                        !
! CP: 00000006  U: 0006  ?     ACKNOWLEDGE                                    !
! CP: 00000007  U: 0007  ?     BELL                                           !
! CP: 00000008  U: 0008  ?     BACKSPACE                                      !
! CP: 00000009  U: 0009  ?     CHARACTER TABULATION                           !
! CP: 0000000A  U: 000A  ?     LINE FEED (LF)                                 !
! CP: 0000000B  U: 000B  ?     LINE TABULATION                                !
! CP: 0000000C  U: 000C  ?     FORM FEED (FF)                                 !
! CP: 0000000D  U: 000D  ?     CARRIAGE RETURN (CR)                           !
! CP: 0000000E  U: 000E  ?     SHIFT OUT                                      !
! CP: 0000000F  U: 000F  ?     SHIFT IN                                       !
+-----------------------------------------------------------------------------+
 _   D   ibm-912_P100-1995                                              1 - 1
 _   D   ibm-913_P100-2000                                              1 - 1
 _   N   ISCII,version=0                                                1 - 4
 _   N   ISCII,version=1                                                1 - 4


Command ===>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help        Exit  LByte Prop   --    -     +          <<    >     Canc
```

The list contains the following information:

- The byte sequence of the code page code points (CP).
- The byte sequence of the corresponding Unicode code points (U).
- The Unicode character. If the character cannot be interpreted by the current terminal emulation, the substitution character (as defined in the code page; here: ?) is displayed instead.
- The normative name of the Unicode character.

The PF keys provided for each code point list are explained in the following table:

PF Key	Function
PF4	Not applicable to a code page with a 1-byte unit as the maximum. Opens the **Leading Bytes of Code Point** window (see the relevant section) in which you can enter the byte range you want to view. Press PF3 or ENTER to confirm your current input of leading bytes and to close the window. Press PF12 to cancel your current input and to close the window.
PF5	Invokes the **Unicode Properties** screen (see the relevant section) for the list item where the cursor is placed.
PF6	Resets the first (non-leading) byte of the byte range to the hexadecimal value 0x00.
PF7	Scrolls up one page in the selected byte range (see also *Specifying Leading Bytes*). In a UTF-16 or UTF-32 code page, you can scroll through all byte ranges.
PF8 (or ENTER)	Scrolls down one page in the selected byte range (see also *Specifying Leading Bytes*). In a UTF-16 or UTF-32 code page, you can scroll through all byte ranges.
PF10	Moves to the leftmost screen position.
PF11	Moves to the right of the screen.

Specifying Leading Bytes

This function does not apply to a code page with a 1-byte unit as the maximum.

You can use the **Leading Byte of Code Point** window to view the byte range (hexadecimal values 0x00 to 0xFF) of a particular leading byte for a code point.

In the following example of a UTF-8 code page, the hexadecimal values 0x22 and 0x32 have been entered as the leading bytes:

```
+--------- Leading Bytes of Code Point ---------+
!                                                !
!    Maximum number of bytes .. 3                !
!                                                !
!                                                !
!    Enter leading bytes ...... 00 22 32 00      !
!                                                !
!                                                !
!                                                !
+------------------------------------------------+
```

After pressing PF3 (or ENTER) the code point list then displays the bytes from hexadecimal 0x00223200 to 0x002232FF.

Note:
For byte-swapped code pages such as UTF-16LE or UTF-32LE, the bytes are read and displayed in a reversed byte order.

Test Conversion

You can test code-point conversion from a selected code page to the default code page (value of `*CODEPAGE`) defined with the `CP` profile parameter:

- from an alphanumeric character string to Unicode code points and vice versa, or
- from hexadecimal values to Unicode code points and vice versa.

The example below shows the conversion window of a code page (here: `ibm-1140_P100-1997`) which contains the following information:

- the number of byte units (minimum and maximum numbers of bytes) assigned to the code points,
- an alphanumeric character string and its equivalent hexadecimal values and
- the corresponding Unicode code points.

```
+------------------- Test Conversion of ibm-1140_P100-1997 -------------------+
!                                                                             !
! Code page units .. 1 - 1   (minimum, maximum of bytes)                      !
!                                                                             !
!                                                                             !
! Code Page Characters                                                        !
! Alphanumeric .. ABC                                                         !
! Hexadecimal ... C1 C2 C3 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40 !
!                 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40 !
!                                                                             !
! Unicode                                                                     !
! Code points ... 0041 0042 0043 0020 0020 0020 0020 0020 0020 0020           !
!                 0020 0020 0020 0020 0020 0020 0020 0020 0020 0020           !
!                 0020 0020 0020 0020 0020 0020 0020 0020 0020 0020           !
!                 0020 0020 0020 0020 0020 0020 0020 0020 0020 0020           !
!                                                                             !
!                                                                             !
!                                                                             !
+-----------------------------------------------------------------------------+
```

To convert a character or code point

1. Activate the field where you want to enter the literal string or code unit sequence to be converted:

   Press PF6 to enter a literal string in the **Alphanumeric** field (default input field).

   Or:
   Press PF7 to enter hexadecimal values in the **Hexadecimal** field.

   Or:
   Press PF8 to enter Unicode code points in the **Unicode** field.

2. Press ENTER.

   The value entered in one of the fields is converted to its equivalent code points or literal string.

Unicode Properties

This function is used to display whether a Unicode character property is true (`yes`) or false (`no`) for a character contained in the default code page (value of `*CODEPAGE`) as shown in the example of the letter `A` in code page `IBM01140` below:

```
14:43:19               ***** NATURAL SYSCP UTILITY *****             2008-09-23
User SAG                     - Unicode Properties -

Default code page ... IBM01140

Alpha character ..... A     C1       hexadecimal    Substitution .. ? 3F
Unicode code point .. 0041

Unicode char. name .. LATIN CAPITAL LETTER A

Alphabetic .......... yes            Control ........ no
Alphanumeric ........ yes            Space .......... no
Lower case .......... no             Whitespace ..... no
Upper case .......... yes            Blank .......... no
Digit ............... no             Punctuation .... no
Hexadecimal ......... yes            Combining ...... no
Graphic ............. yes            Surrogate ...... no
Printable ........... yes            Right to left .. no


Command ===>


Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help        Exit        Uni                                       Canc
```

In the **Alpha character** field, you can enter the character whose properties you want to view. Press PF5 if you want to enter a Unicode code point.

For explanations of the Unicode character properties displayed on the screen, refer to Unicode Consortium's documentation *Unicode Character Database* at web site *http://www.unicode.org/Public/4.1.0/ucd/UCD.html*.