

Novell Developer Kit

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About This Guide

This guide describes Unicode, its functions, and features:

- [Chapter 1, “Concepts,” on page 13](#)
- [Chapter 2, “Tasks,” on page 31](#)
- [Chapter 3, “Examples,” on page 43](#)
- [Chapter 4, “Functions,” on page 61](#)

Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the User Comments feature at the bottom of each page of the online documentation.

Documentation Updates

For the most recent version of this guide, see [NLM and NetWare Libraries for C \(including CLIB and XPlat\)](#) (<http://developer.novell.com/ndk/clib.htm>).

Additional Information

For information about other CLib and XPlat interfaces, see the following guides:

- *[NDK: NLM Development Concepts, Tools, and Functions](#)*
- *[NDK: Program Management](#)*
- *[NDK: NLM Threads Management](#)*
- *[NDK: Connection, Message, and NCP Extensions](#)*
- *[NDK: Multiple and Inter-File Services](#)*
- *[NDK: Single and Intra-File Services](#)*
- *[NDK: Volume Management](#)*
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- *[NDK: Network Management](#)*
- *[NDK: Internationalization](#)*
- *[NDK: Sample Code](#)*
- *[NDK: Getting Started with NetWare Cross-Platform Libraries for C](#)*
- *[NDK: Bindery Management](#)*

For CLib and XPlat source code projects, visit [Forge](http://forge.novell.com) (<http://forge.novell.com>).

For help with CLib and XPlat problems or questions, visit the [NLM and NetWare Libraries for C \(including CLIB and XPlat\) Developer Support Forums](#) (<http://developer.novell.com/ndk/devforums.htm>). There are two for NLM development (XPlat and CLib) and one for Windows XPlat development.

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Concepts

1

Unicode is divided into two components:

- Unicode Converter Group

Recently released, this component is built around converters implemented as DLLs. With the "extended" functions, the component provides significantly increased control over the conversion processes. These functions are defined in `nunicode.h`.

- Unicode Table Group

Available for some time, this component is built around text files called Unicode tables that provide access to Unicode/code page conversions. The `unicode.h` file contains these functions, which automatically implement the necessary translation tables that are contained in the `uni_*.w16` and `uni_*.w32` files.

Both components are operational, and both are fully supported. In addition, both header files provide access to Unicode string utility functions, such as `unicat`, `unichr`, and `unirev`. However, Unicode Converter offers important advantages. We suggest that you begin using it for new development.

IMPORTANT: *Although both sets can be used in the same application, they cannot both be used in the same file.*

1.1 What is Unicode?

This is a very short introduction to Unicode. Complete information is published and available from standard computer information sources.

Unicode is a standard for character representation designed to accommodate every character in every language that is likely to be used in any computer application. Representation includes alphabetic, ideographic, and symbolic characters. Developed by companies that collectively constitute the Unicode Consortium, the standard uses a numbering system similar to ASCII characters, but has some fundamental differences. Most importantly, Unicode uses 16 bits for each character. That feature has several positive results, three of which follow:

- Over 65,000 characters can be represented, enough for every character of nearly every language in use today
- Each Unicode character is associated with a single, unique hexadecimal number equivalent to the 16-bit value of the character
- Unicode eliminates the need for state checks and interrupts when an application changes from one language to another or mixes characters from multiple languages

1.2 Why Use Unicode?

Several advantages make it wise to incorporate Unicode into your programming practices.

1. Because all NDS strings are stored in Unicode format, applications enabled for NDS must use Unicode strings.

NDS is increasingly being accepted as an industry standard, providing a rapidly expanding market for NDS enabled solutions. All strings and paths in NDS are stored in Unicode format, so strings in such solutions must be stored in or convertible to Unicode. This is true for all applications, whether they are designed to be used internationally or not. Using Unicode is also a requirement of applications that take advantage of present or future Novell services based on NDS, such as Novell Distributed Print Services (NDPS) and catalog services.

2. Unicode simplifies or eliminates many challenges associated with double-byte characters.

Since all Unicode characters are uniformly 16 bits long, Unicode eliminates the need to distinguish between single-byte and double-byte characters. This has at least two advantages:

- Moving from character to character is simply a matter of incrementing or decrementing.
- Unicode eliminates the need for special functions and precautions that prevent landing between bytes of a double-byte character.

3. Since all Unicode characters are in the same set, Unicode makes it possible to mix characters from widely differing languages and separate code pages.
4. As an industry standard, Unicode increases the ability of an application to run (and thus be marketed) in a variety of countries.
5. All character strings exchanged between a directory server and a workstation are in Unicode.

The directory client agent software handles the Unicode format according to the value of the `DCV_XLATE_STRINGS` flag stored in the directory context associated with the request. If this flag is set, the client agent automatically converts character strings back and forth between Unicode and the local code page so that the client application needs no awareness of Unicode. This is the default setting.

Once the flag is cleared, the client agent no longer performs the conversions, and the client application receives and must submit character strings in Unicode.

6. The size of buffers required to handle directory results varies depending on whether the client agent is converting Unicode to a local code page. (Unicode buffers should be measured in bytes, not characters.)

1.3 Unicode Converter and Unicode Table Header Files

We recommend using the new Unicode Converter functions in for new development efforts. For more information see [Section 1.6, “Unicode Converter,” on page 16](#) and [“Tasks” on page 31](#).

The header file `nunicode.h` replaces `unicode.h` to define the function prototypes, return codes, and so forth. The Unicode utility functions (such as `unicpy` and `unicat`) are defined in both headers. Therefore, use `nunicode.h` for files using the Unicode Converter functions, and `unicode.h` for files using the old Unicode functions.

NOTE: Do not mix Unicode Table and Unicode Converter in the same file, although they may be mixed in different files of the same process or thread.

1.4 Supported Code Pages

The following shows the code pages supported by Novell.

Country or Language	OEM CP	ANSI CP
U.S., parts of South America and parts of Europe	437	1252
Canada, South America, Western Europe, U. S.	850	1252
Slavic	852	1250
Cyrillic	855	1251
Turkish	857	1254
Portuguese	860	1252
Icelandic	861	1252
Hebrew	862	1255
Canadian French	863	1252
Arabic	864	1256
Scandinavia	865	1252
Russia	866	1251
Greek	869	1253
Thai	874	874
Japan	897	
Japan	932	932
PRC	936	936
Korea	949	949
Taiwan, Hong Kong	950	950

1.5 Unicode String Functions

These functions operate on Unicode character strings. They provide the functional equivalent of the `string.h` functions.

Function	Header File	Equivalent Function
<code>unicat</code>	<code>unicode.h</code>	Corresponds to the standard <code>strcat</code> .
<code>unichr</code>	<code>unicode.h</code>	Corresponds to the standard <code>strchr</code> .
<code>unicpy</code>	<code>unicode.h</code>	Corresponds to the standard <code>strcpy</code> .
<code>unicspn</code>	<code>unicode.h</code>	Corresponds to the standard <code>strcspn</code> .
<code>uniicmp</code>	<code>unicode.h</code>	Compares two strings for differences.
<code>unilen</code>	<code>unicode.h</code>	Corresponds to the standard <code>strlen</code> .
<code>unincat</code>	<code>unicode.h</code>	Corresponds to the standard <code>strncat</code> .
<code>unincpy</code>	<code>unicode.h</code>	Corresponds to the standard <code>strncpy</code> .

Function	Header File	Equivalent Function
unicmp	unicode.h	Corresponds to the standard strnicmp.
uninset	unicode.h	Corresponds to the standard strnset.
unipbrk	unicode.h	Corresponds to the standard strpbrk.
unipcpy	unicode.h	Corresponds to the standard strpcpy.
unirchr	unicode.h	Corresponds to the standard strrchr.
unirev	unicode.h	Corresponds to the standard strrev.
uniset	unicode.h	Corresponds to the standard strset.
unysize	unicode.h	Corresponds to sizeof.
unispn	unicode.h	Corresponds to the standard strspn.
unistr	unicode.h	Corresponds to the standard strstr.
unitok	unicode.h	Corresponds to the standard strtok.

1.6 Unicode Converter

The Unicode converter supports the following features:

- [Section 1.6.1, “Standard and Extended Unicode Converter Functions,” on page 16](#)
- [Section 1.6.2, “Unicode Converter Implementation,” on page 19](#)
- [Section 1.6.3, “Conversion Operations,” on page 21](#)
- [Section 1.6.4, “Byte/Unicode Conversions,” on page 23](#)
- [Section 1.6.5, “Case, Collation, and Normalization Conversion,” on page 26](#)

1.6.1 Standard and Extended Unicode Converter Functions

The newer Unicode contains two sets of functions- "standard" and "extended" functions.

"Standard" functions, which begin with NWUS*, provide a simple interface using the platform's native country and code page. They follow standard conversion behavior options, such as how to handle an unmappable character. Standard functions follow a default conversion behavior that is not subject to adjustment by the developer.

"Extended" functions, which begin with NWUX*, allow the country code and code page to be specified, and allow extensive control over conversion options.

Standard Unicode Converter Functions

These functions allow for conversions between byte and Unicode strings and between different kinds of Unicode strings. These standard functions use only the converters supplied by Novell, and do not allow for other than default behavior.

Function	Header File	Description
NWUSByteToUnicode	nunicode.h	Converts a NULL-terminated byte string into a Unicode string.
NWUSByteToUnicodePath	nunicode.h	Converts a NULL-terminated file path bytestring into a Unicode string.
NWUSGetCodePage	nunicode.h	Returns the code page used to specify which converters are loaded.
NWUSLenByteToUnicode	nunicode.h	Converts a length-specified byte string into a NULL-terminated Unicode string.
NWUSLenUnicodeToByte	nunicode.h	Converts a length-specified Unicode string into a NULL-terminated byte string.
NWUSStandardUnicodeInit	nunicode.h	Loads the converters needed for the standard Unicode functions.
NWUSStandardUnicodeRelease	nunicode.h	Releases all resources allocated by the standard converter
NWUSUnicodeToByte	nunicode.h	Converts a Unicode string into a NULL-terminated byte string.
NWUSUnicodeToBytePath	nunicode.h	Converts a file path Unicode string into a NULL-terminated byte string.
NWUSUnicodeToUntermByte	nunicode.h	Converts a Unicode string into an unterminated byte string.
NWUSUnicodeToUntermBytePath	nunicode.h	Converts a file path Unicode string into an unterminated byte string.
NWUSUnicodeToLowerCase	nunicode.h	Converts a NULL-terminated Unicode string to Unicode lower case characters.
NWUSUnicodeToUpperCase	nunicode.h	Converts a NULL-terminated Unicode string to Unicode upper case characters.

Extended Unicode Converter Functions

The following functions offer more flexibility and choices that the standard Unicode functions offer.

Function	Header File	Description
NWUXByteToUnicode	nunicode.h	Converts a NULL-terminated byte string into a Unicode string.
NWUXByteToUnicodePath	nunicode.h	Converts a NULL-terminated file path byte string into a Unicode string.
NWUXGetByteFunctions	nunicode.h	Returns the functions used for handling unmappable bytes and special byte sequences during byte-to-Unicode conversion.
NWUXGetCharSize	nunicode.h	Returns the character size (1 or 2) of the next character in the byte string.

Function	Header File	Description
NWUXGetNoMapAction	nunicode.h	Returns the actions to follow when an unmappable byte sequence and an unmappable Unicode character are found.
NWUXGetScanAction	nunicode.h	Gets the status of current scan/parse functions.
NWUXGetUniFunctions	nunicode.h	Returns the functions used for handling unmappable Unicode characters and special Unicode sequences during Unicode-to-byte conversion.
NWUXGetSubByte	nunicode.h	Returns the substitution byte for the converter pointed to.
NWUXGetSubUni	nunicode.h	Returns the current substitution Unicode character for the converter.
NWUXLenByteToUnicode	nunicode.h	Converts a length-specified byte string into a NULL-terminated Unicode string.
NWUXLenUnicodeToByte	nunicode.h	Converts a length-specified Unicode string into a NULL-terminated byte string.
NWUXLoadByteUnicodeConverter	nunicode.h	Locates and loads a converter to convert between Unicode and the specified code page.
NWUXLoadCaseConverter	nunicode.h	Locates and loads a converter to convert Unicode to upper, lower, or title case (upper case for initial letter only).
NWUXResetConverter	nunicode.h	Resets the converter to a default state.
NWUXSetNoMapAction	nunicode.h	Sets the actions to follow when an unmappable byte or an unmappable Unicode character is found.
NWUXSetByteFunctions	nunicode.h	Specifies the functions to be used to handle unmappable bytes and special byte sequences during byte-to-Unicode conversion.
NWUXSetScanAction	nunicode.h	Enables or disables the current scan/parse functions.
NWUXSetSubByte	nunicode.h	Specifies the substitution byte for the converter.
NWUXSetSubUni	nunicode.h	Specifies the substitution character for the converter.
NWUXSetUniFunctions	nunicode.h	Specifies the functions to be used to handle unmappable Unicode characters and special Unicode sequences during Unicode-to-byte conversion.
NWUXUnicodeToByte	nunicode.h	Converts a Unicode string into a NULL-terminated byte string.

Function	Header File	Description
NWUXUnicodeToBytePath	nunicode.h	Converts a Unicode file path string into a NULL-terminated byte string.
NWUXUnicodeToUntermBytePath	nunicode.h	Converts a Unicode string into a an unterminated byte string.
NWUXUnicodeToUntermBytePath	nunicode.h	Converts a Unicode file path string into an unterminated byte string.
NWUXUnicodeToCase	nunicode.h	Converts a NULL-terminated Unicode string to upper case, lower case, or title case, depending on the converter pointed to.
NWUXUnloadConverter	nunicode.h	Unloads a converter and releases all associated resources.

1.6.2 Unicode Converter Implementation

Unicode Converter is based on a set of converters implemented as DLLs. These converter files may be placed in any directory where the system searches for DLLs (for example, C:\WINDOWS\SYSTEM).

Converter files follow a naming convention that designates both the converter type and the supported platform. The format of that convention is UNI_[TYP].[PLT], where [TYP] is the converter type and [PLT] is the supported platform. Extensions to designate supported platforms are as follows:

- .W32-Windows 95 and NT
- .NLM- NLM platform

There are 4 types of converters. All illustrations that follow use ".W32," the extension for Windows 95 and NT.

- *Byte/Unicode converters* convert both from byte to Unicode and from Unicode to byte. The [TYP] component of the converter file name is the number specifying the desired code page.

For example, UNI_1252.W32 is the converter for code page 1252 (W95/NT).

- *Case converters* convert cases in one Unicode string to different cases in another Unicode string. The [TYP] component of the converter file name is MON for lowercasing, UPR for uppercasing, and TTL for titlecasing (first letter of each word capitalized). For example
 - UNI_MON.W32-Lowercasing
 - UNI_UPR.W32-Uppercasing
 - UNI_TTL.W32-Titlecasing
- *Collation converters* collate Unicode strings according to the collation conventions of a specified country. The [TYP] component of the converter file name is the letter "C" followed by the country code of the specified country.

For example, UNI_C1.W32 is the collation converter for country code 1 (US).

- *Normalization converters* convert to precomposed or decomposed Unicode characters. The [TYP] component of the converter file name is PRE for converting to precomposed characters and DEC for converting to decomposed characters:
 - UNI_PRE.W32-Precomposing converter
 - UNI_DEC.W32-Decomposing converter

When an "extended" converter is opened, a handle is returned which is used in subsequent calls to extended converter functions. The developer may change various options for a particular converter without affecting other extended converters.

In contrast, once the standard converter is opened, it may be used by any number of programs. The developer cannot change preset standard converter options.

Default Conversion Behavior

For Unicode-to-byte and byte-to-Unicode conversion, the following behavior is automatic for standard functions and is default for extended functions. Standard functions provide for this behavior only, but extended functions allow extensive modification.

Unicode-to-byte Conversion

Unmappable Unicode characters result in a call to a function handler, which forms the basis of lossless round trip conversion. The handler converts each unmappable Unicode character into a string of six byte characters as follows:

- Unmappable Unicode character U+NNNN becomes byte string "[NNNN]".

For example, if the character "#" is an unmappable Unicode "skull and crossbones" character (U+2620),

- the Unicode input string "abc#def"
- converts to the local byte output string "abc[2620]def".

Scan/parse functions are disabled.

Byte-to-Unicode Conversion

Unmappable byte characters result in a substitution by the standard Unicode REPLACEMENT CHARACTER-0xFFFD.

The *scan/parse* functions are enabled, reversing the Unicode-to-byte function handler behavior. These scan/parse functions scan for the byte sequence "[NNNN]", where NNNN is a string of four hexadecimal digits. Scan/parse convert each such sequence to a single Unicode character whose value is U+NNNN. For example, if the character "#" were again the Unicode "skull and crossbones" character (U+2620),

- the local byte input string "abc[2620]def"
- converts to the Unicode output string "abc#def".

Conversion Control

The standard converter allows only for [Default Conversion Behavior \(page 20\)](#), and the byte/Unicode converters uses that behavior as a starting default. However, the extended functions allow you the following choices:

- action for [“Unmappable Characters” on page 24](#)
- specification of [“Substitution Characters” on page 24](#)
- specification of [“Scan/Parse Action” on page 25](#)

You can set options other than the system defaults by calling [NWUXSetByteFunctions \(page 152\)](#), [NWUXSetUniFunctions \(page 162\)](#), and [NWUXSetNoMapAction \(page 154\)](#).

For more information, see:

- [“Handling Unmappable Characters with an Extended Converter” on page 39](#)
- [“Setting Scan/Parse Functions with an Extended Converter” on page 41](#)
- [“Setting Substitution Characters with an Extended Converter” on page 40](#)

Lossless Conversion

Many Unicode characters cannot be represented in a given local code page. However, situations arise when a Unicode string is converted to a local byte string, then converted back to Unicode. With the former Unicode API, any unmappable characters were lost in this process. The unicode Converter API functions provide the capability to convert from Unicode to local and back to Unicode without losing any information.

Supported Code Pages

[Section 1.4, “Supported Code Pages,” on page 14](#) shows the code pages supported by Novell.

1.6.3 Conversion Operations

Although a standard Unicode converter behaves in fundamentally the same way on every platform this API supports, access to converters by any specific application can vary.

NetWare-global variables are global to the entire system. A standard converter initialized with [NWUSStandardUnicodeInit \(page 105\)](#) or [NWUSStandardUnicodeOverride \(page 107\)](#) is the only standard converter available to any application on the platform. If the converter is changed through a call to [NWUSStandardUnicodeOverride](#), the change also affects any application requesting standard conversions.

Windows 95, Windows 98, and Windows NT-global variables are global only to a single process. Each process in which a thread calls [NWUSStandardUnicodeInit \(page 105\)](#) or [NWUSStandardUnicodeOverride \(page 107\)](#) gets its own copy of the global variables associated with the standard converter. It is therefore possible for one process to perform Unicode conversions with the system default codepage converter and for another process to perform conversions with an explicitly specified converter. Each process that calls a standard converter must also release the converter and its associated resources with a corresponding call to [NWUSStandardUnicodeRelease \(page 109\)](#).

For related information, see [“Unicode Converter Implementation” on page 19](#).

Location of Converter DLLs

Converters in the Unicode Converter API set are installed during the installation process.

NWUSStandardUnicodeInit automatically loads a byte/Unicode converter for the native system code page, an uppercase converter, and a lower case converter.

One of the NWUXLoad... functions must be called to load an extended converter. The load functions return a separate handle to each converter loaded. That handle must be passed to any other extended converter functions involving the respective converter. Each NWUXLoad... function called should be followed with a corresponding call to NUWXUnloadConverter when the converter is no longer needed.

For related information, see:

- [“Initializing a Standard Unicode Converter” on page 33](#)
- [“Loading an Extended Unicode Converter” on page 33](#)
- [“Unloading Converters” on page 34](#)

Initializing/Loading Unicode Converters

NWUSStandardUnicodeInit must be called before using any of the standard converter functions. Each call to NWUSStandardUnicodeInit should have a corresponding call to NWUSStandardUnicodeRelease when the conversion operations are complete.

NWUSStandardUnicodeInit automatically loads converters for the following kinds of conversions:

- Byte-to-Unicode and Unicode-to-byte conversions between the Unicode set and the native system code page
- Conversions of Unicode strings to all upper case
- Conversions of Unicode strings to all lower case

Other kinds of conversions require one or more extended converters and the functions in the extended (NWUX...) set.

Each of the extended converters is called with a separate NWUXLoad... function, and each such call returns a handle that is specific to the converter loaded. That handle is then passed to any other extended functions that require the respective converter. When an extended converter is no longer needed, it should be unloaded with a call to NUWXUnloadConverter.

For related information, see:

- [“Initializing a Standard Unicode Converter” on page 33](#)
- [“Loading an Extended Unicode Converter” on page 33](#)
- [“Unloading Converters” on page 34](#)

Unterminated Byte Strings from Unicode Conversion

Four functions in this Unicode API conversion set provide for unterminated byte string output from Unicode input- NWUSUnicodeToUntermByte, NWUSUnicodeToUntermBytePath, NWUXUnicodeToUntermByte, and NWUXUnicodeToUntermBytePath.

These functions are identical to NWUSUnicodeToByte, NWUSUnicodeToBytePath, NWUXUnicodeToByte, and NWUXUnicodeToBytePath with one exception-the output byte string is unterminated. A trailing zero is not appended to the converted byte string.

In all other details-kinds of values that can be passed, operations performed, and numeric values returned-the above two sets of functions are identical.

For related information, see:

- [“Converting Bytes to Unicode with a Standard Converter” on page 35](#)
- [“Converting Bytes to Unicode with an Extended Converter” on page 37](#)
- [“Length-Specified Byte String Conversion” on page 26](#)

NWU_CONVERTER_NOT_FOUND Error

If the NWU_CONVERTER_NOT_FOUND error is returned when a standard converter is being initialized or an extended converter is being loaded, the converter DLL was not found in any of the expected locations. The system looks for the converter DLL (or NLM) in the usual system DLL/ NLM search path. Where the system searches depends upon the operating system under which the application operates.

For example, in Windows 32 applications, the search order is

1. The directory from which the application was loaded
2. The current directory
3. Varies between Windows 95 and Windows NT:
 - For Windows 95, the Windows system directory
 - For Windows NT

The 32-bit Windows system directory

The 16-bit Windows system directory

4. The Windows directory
5. Each component in the PATH variable

For NLM applications, the search order is

1. The NLM search paths
2. C: \NWSERVER
3. C: \

1.6.4 Byte/Unicode Conversions

Differences between Novell and Microsoft Unicode translations tables in different languages have sometimes caused Unicode path strings to be stored with different path separators. Novell Unicode path conversion API functions called from any language recognize these differences and correctly convert any Unicode path separator back to the local path separator character.

Extended Byte/Unicode Converter Options

Extended byte/Unicode converters can convert either from Unicode to bytes or from bytes to Unicode, depending on the function called after the converter is loaded. Variable converter options include the code page and the country code, specified in the parameters of [NWUXLoadByteUnicodeConverter \(page 147\)](#).

Extended Actions for Unmappable Characters

With the extended Unicode API functions, you can select any of three actions when an unmappable character is encountered:

- Return an error
- Convert unmappable characters into a substitution character (default or user-defined)
- Call a handler function (default or user-defined)

For example, if a Unicode string is being converted to local code page in order to be displayed, a user-defined handler function could convert an unmappable character into a red blinking question mark. The default handler inserts the hex value of the unmappable character enclosed in square brackets in place of the character, as explained in [“Default Conversion Behavior” on page 20](#).

Multiple Code Page Converters

Previously, an open code page had to be closed before a new code page could be opened. Using the new extended API functions, you can have multiple byte/Unicode converters loaded and active simultaneously, each with a different code page. For each converter, a handle is returned when the load function completes.

It is important to unload each converter when it is no longer needed, as explained in [“Unloading Converters” on page 34](#). This helps avoid the possibility of tying up system resources needlessly.

Unmappable Characters

This option defines what action to take when an unmappable Unicode character or (less likely) an unmappable byte is encountered during conversion. The options are to

- return an error,
- use a substitution character,
- or call a handler function.

These options are set for individually for Unicode-to-byte conversion and byte-to-Unicode conversion. [NWUXGetNoMapAction \(page 132\)](#) and [NWUXSetNoMapAction \(page 154\)](#) specify both options. Refer to the function reference for details.

It is important to note that the default for Unicode-to-byte conversion is to call the handler function. That handler is described in [“Default Conversion Behavior” on page 20](#).

Substitution Characters

If the NoMapAction is set to `NWU_SUBSTITUTE`, a substitute byte or Unicode character is output when an unmappable character is encountered. By default, `NWU_SUBSTITUTE` is set for Unicode-to-byte conversion and not set for byte-to-Unicode conversion.

The default substitution byte or Unicode character is determined by the converter, since different countries often have different preferences on what to display for undefined characters. For byte-to-Unicode conversion, the substitution character is U+FFFD, designated as the Unicode REPLACEMENT character. For Unicode-to-byte conversions, the converters generally set the default substitution byte to 0x03.

You can find out what the substitution characters is through [NWUXGetSubByte \(page 136\)](#) or [NWUXGetSubUni \(page 138\)](#). You can set a new substituting character through [NWUXSetSubByte \(page 158\)](#) or [NWUXSetSubUni \(page 160\)](#).

Fore related information, see:

- [“Unmappable Characters” on page 24](#)
- [“Setting Substitution Characters with an Extended Converter” on page 40](#)

Scan/Parse Action

Two scan action options are defined, one for converting Unicode-to-byte, and one for converting byte-to-Unicode. In the extended API, options are enabled or disabled through [NWUXSetScanAction \(page 156\)](#). By default, the scanAction is disabled for Unicode-to-byte and enabled byte-to-Unicode.

Enabling the option causes an automatic prescan of the input string for any special sequences and calls a parse function to replace such sequences with something else in the output string.

When the scanAction option is enabled, a Scan function is called internally to scan the input string before the conversion. If it finds a special sequence, the conversion is performed up to that point and then the Parse function is called internally. The functions are never called directly by the developer. Rather, they are set as explained in [“NoMap, Scan, and Parse Functions” on page 25](#).

The system supplies default scan and parse functions for both byte-to-Unicode and Unicode-to-byte conversions. The byte-to-Unicode scan/parse functions operate as described in [“Default Conversion Behavior” on page 20](#)—where # is the Unicode "skull and crossbones character" (U+2620), the byte input string "abc[2620]def" becomes the Unicode output string "abc#def".

By default, scan/parse action is disabled for Unicode-to-byte conversion because the need for such action is very rare. If it is enabled, it operates in a similar way to byte-to-Unicode conversion. It scans for two hexadecimal digits surrounded by square brackets in a Unicode input string and converts them into a byte character of the same hexadecimal value in the byte output string.

For related information, see [“Setting Scan/Parse Functions with an Extended Converter” on page 41](#)

NoMap, Scan, and Parse Functions

[NWUXSetByteFunctions \(page 152\)](#) and [NWUXSetUniFunctions \(page 162\)](#) set the NoMap, Scan, and Parse functions for the extended converter. The NoMap function is enabled if the NoMapAction is set to `NWU_CALL_HANDLER`, and the Scan and Parse functions are enabled if the ScanAction option is set to `NWU_ENABLED`.

The default behavior (the only behavior available for the standard converter) is to use the system supplied UniNoMap function and the ByteScan/Parse functions as described in [“Default Conversion Behavior” on page 20](#). These functions implement round-trip conversion from Unicode to byte to Unicode. The developer may replace any of these functions with custom versions.

For related information, see [“Setting Scan/Parse Functions with an Extended Converter” on page 41](#)

Length-Specified Byte String Conversion

Unicode provides functions for converting a specified number of bytes from a byte string into Unicode characters.

For the standard converter, the functions are `NWUSLenByteToUnicode` and `NWUSLenByteToUnicodePath`.

For extended converters, the functions are `NWUXLenByteToUnicode` and `NWUXLenByteToUnicodePath`.

These functions behave exactly like their "Len" counterparts: `NWUSByteToUnicode`, `NWUSByteToUnicodePath`, `NWUXByteToUnicode`, and `NWUXByteToUnicodePath`, with the following exceptions:

- Each "Len" functions allows a developer to specify the exact number of bytes to be converted.
- Each of the "Len" functions can have an unterminated string for the input buffer.

If the length-specified function encounters a NULL before the specified number of bytes have been converted, it stops converting and returns `NWU_EMBEDDED_NULL`. However, it converts the bytes prior to the NULL, and returns the number of Unicode characters converted.

For example, consider the byte string `abcdefgh` for the following example:

```
ccode = NWUSLenByteToUnicode (&outbuf, MAX_LEN, inbuf, 5, &outlen);
```

On return `ccode` is zero, `outbuf` contains the Unicode string `abcde`, and `outlen` contains 5.

In contrast, given the byte string `abc\0defg`, the `NWUSLenByteToUnicode` function returns `NWU_EMBEDDED_NULL`. On return `outbuf` contains the Unicode string `abc` and `outlen` contains 3.

For related information, see

- [“Converting Bytes to Unicode with a Standard Converter” on page 35](#)
- [“Converting Bytes to Unicode with an Extended Converter” on page 37](#)
- [“Unterminated Byte Strings from Unicode Conversion” on page 22](#)

1.6.5 Case, Collation, and Normalization Conversion

Case converter options are set with the `caseFlag` parameter of include the following possibilities:

Constant	Result
<code>NWU_LOWER_CASE</code>	Converts a Unicode string to all lower case
<code>NWU_UPPER_CASE</code>	Converts a Unicode string to all upper case
<code>NWU_TITLE_CASE</code>	Converts the first letter of each word in a Unicode string to upper case

For related information, see: [“Converting Unicode String Case with an Extended Converter” on page 42](#)

Previous versions of the Novell Unicode API converted code page strings only into lower case Unicode strings. This limitation is now removed so that Unicode strings are no longer limited to lower case. Unicode strings now be converted to upper case or lower case with standard functions, and upper, lower, or title case (first letter of each word is capitalized) with the extended functions.

For related information, see

- [“Converting Unicode String Case with a Standard Converter” on page 41](#)
- [“Converting Unicode String Case with an Extended Converter” on page 42](#)

1.7 Unicode Table Concepts

We recommend using the new Unicode Converter API functions in for new development efforts. For more information see [Section 1.6, “Unicode Converter,” on page 16](#) and [“Tasks” on page 31](#).

1.7.1 Unicode Tables

At the workstation, conversions between Unicode and the local code page are supported by a set of conversion tables. The Unicode Filenames table shows the conventions for assigning file names to the tables.

Filename	Comment
UNI_<CP>.CTY	Unicode to code page conversion table
<CP>_UNI.CTY	Code page to Unicode conversion table
UNI_COL.CTY	Unicode collation table for country
UNI_MON.CTY	Unicode monocasing table for country

The filenames reflect both a code page (CP) and a country code (CTY). The code page can be 3 or 4 digits. The country code is the country’s 3-digit code for long distance telephone numbers. For example, to represent the English character set (CP=437) using U.S. conventions (CTY=001) the following files are required:

```
UNI_437.001
437_UNI.001
UNI_COL.001
UNI_MON.001
```

[Section 1.4, “Supported Code Pages,” on page 14](#) shows the code pages supported by Novell.

1.7.2 Unicode Operations

Unicode operations fall into two groups: those specific to managing Unicode tables and conversions, and those that perform operations on Unicode strings. This latter group is the Unicode equivalent of standard string.h functions.

A client application must load Unicode tables for the client agent to perform the conversions. Loading the Unicode tables is typically one of the first steps an application takes in accessing Directory Services. Two functions load and unload the tables:

- `NWInitUnicodeTables`
- `NWFreeUnicodeTables`

As input, `NWInitUnicodeTables` requires a specific code page and country code. You can use Internationalization services to read these parameters from the locale. When you no longer need the tables, call `NWFreeUnicodeTables`.

For many applications, `NWInitUnicodeTables` and `NWFreeUnicodeTables` are the only Unicode functions needed. Other Unicode table requests include the following:

- Return a handle to any of the Unicode table files
- Load and unload one of the Unicode tables
- Compare Unicode characters
- Convert between Unicode and the local code page
- Collate or monospace a Unicode buffer

For more details about specific functions, see the specific function reference.

1.7.3 Unicode Table Search Precedence

`NWInitUnicodeTables` searches for the tables in the following directories in the order they are listed.

1. The current working directory.
2. The directory the application was loaded from.
3. A directory named `\nls` immediately subordinate to the directory the application was loaded from. (An `nls` directory is created by the NetWare installation process under `sys:system`.)
4. A directory named `\nls` (which is a sibling of the directory from which the application was loaded).
5. A directory in the local search path.

Note that the search path is the last place searched. Consequently, storing the tables in a search path could noticeably increase the amount of time it takes for the tables to load.

1.7.4 Unicode Table Functions

These functions manipulate Unicode tables.

Function	Header	Comment
<code>NWInitUnicodeTables</code>	<code>unicode.h</code>	Initializes Unicode tables.
<code>NWLoadRuleTable</code>	<code>unicode.h</code>	Loads the specified Unicode table.
<code>NWFreeUnicodeTables</code>	<code>unicode.h</code>	Frees Unicode tables after they have been initialized with <code>NWInitUnicodeTables</code> .

Function	Header	Comment
NWGetUnicodeToLocalHandle	unicode.h	Returns a handle to the current Unicode to Code Page conversion table.
NWGetLocalToUnicodeHandle	unicode.h	Returns a handle to the current Code Page to Unicode conversion table.
NWGetMonocaseHandle	unicode.h	Returns a handle to the current Unicode Monocasing table.
NWGetCollationHandle	unicode.h	Returns a handle to the current Unicode Collation table.
NWUnloadRuleTable	unicode.h	Deallocates memory for a rule table set up and allocated by NWLoadRuleTable.

1.7.5 Unicode Buffer and Character Functions

These functions perform conversion and comparison operations.

Function	Header	Comment
NWUnicodeCompare	unicode.h	Compares a pair of unicode characters.
NWLocalToUnicode	unicode.h	Converts data in the local code page to Unicode.
NWUnicodeToLocal	unicode.h	Converts Unicode data to the local code page.
NWUnicodeToCollation	unicode.h	Converts Unicode to collation.
NWUnicodeToMonocase	unicode.h	Converts Unicode to monocase.

This documentation describes common tasks associated with Unicode Converter.

2.1 Migrating from Unicode Table to Unicode Converter

- 1 Include the Unicode Converter header file instead of the Unicode Table header file.

Unicode Table API	Unicode Converter API
<code>#include <unicode.h></code>	<code>#include <nunicode.h></code>

NOTE: The Unicode Table API and the Unicode Converter API can be mixed in the same application, but not in the same file.

- 2 For the majority of conversions, replace Unicode Table functions with Standard Unicode Converter functions.

Unicode Table API	Unicode Converter API
<code>NWInitUnicodeTables</code>	<code>NWUSStandardUnicodeInit</code>
<code>NWFreeUnicodeTables</code>	<code>NWUSStandardUnicodeRelease</code>
<code>NWGetCollationHandle</code>	No longer needed. No handle argument is required for the Standard Unicode API functions.
<code>NWGetLocalToUnicodeHandle</code>	
<code>NWGetMonocasehandle</code>	
<code>NWGetUnicodeToLocalHandle</code>	
<code>NWLocalToUnicode</code>	One of the following, depending on whether the input string is a path or not, and whether the input is null-terminated or length-specified: <code>NWUSByteToUnicode</code> <code>NWUSByteToUnicodePath</code> <code>NWUSLenByteToUnicode</code> <code>NWUSLenByteToUnicodePath</code>

Unicode Table API	Unicode Converter API
NWUnicodeToLocal	One of the following, depending on whether the input string is a path or not, and whether the output string should be null-terminated or unterminated: NWUSUnicodeToByte NWUSUnicodeToBytePath NWUSUnicodeToUntermByte NWUSUnicodeToUntermBytePath
NWUnicodeToMonocase	NWUSUnicodeToLowerCase NWUSUnicodeToUpperCase

- 3** For the more complex conversions, replace Unicode Table functions with Extended Unicode Converter functions.

Unicode Table API	Unicode Converter API
NWLoadRuleTable	One of the following, depending on what type of conversion is needed: NWUXLoadByteUnicodeConverter NWUXLoadCaseConverter
NWUnloadRuleTable	NWUXUnloadConverter

- 4** To change the default substitution character, or the default behavior for handling unmappable characters or round-trip conversion, use Extended Converter instead of Standard Converter.
- 5** Use the same unicode string manipulation functions as before (for example, unicat, unicpy, etc.). Note that uniicmp and uninicmp (case insensitive comparison routines) automatically use the new lowercase converters when nunicode.h is specified.

For related information, see

- [“Initializing a Standard Unicode Converter” on page 33](#)
- [“Loading an Extended Unicode Converter” on page 33](#)
- [“Converting Bytes to Unicode with a Standard Converter” on page 35](#)
- [“Converting Unicode to Bytes with a Standard Converter” on page 35](#)
- [“Converting Bytes to Unicode with an Extended Converter” on page 37](#)
- [“Converting Unicode to Bytes with an Extended Converter” on page 37](#)
- [“Handling Unmappable Characters with an Extended Converter” on page 39](#)
- [“Unloading Converters” on page 34](#)

2.2 Setting Up for Conversions

Conversion setup consists of the following tasks:

- [Section 2.2.1, “Initializing a Standard Unicode Converter,” on page 33](#)
- [Section 2.2.2, “Loading an Extended Unicode Converter,” on page 33](#)
- [Section 2.2.3, “Changing Standard Unicode Converters,” on page 34](#)
- [Section 2.2.4, “Unloading Converters,” on page 34](#)

2.2.1 Initializing a Standard Unicode Converter

- 1 Call [NWUSStandardUnicodeInit \(page 105\)](#).

On completion, the local system code page converter is set up to convert byte strings to Unicode or Unicode strings to bytes, or to convert the case of Unicode strings.

- 2 To initialize a standard converter for a code page other than the system default, call [NWUSStandardUnicodeOverride \(page 107\)](#) and pass the numeric value of the desired code page for the `codepage` parameter.

NOTE: Access to global variables initialized with a standard converter can vary according to platform, as explained in [“Conversion Operations” on page 21](#).

When standard conversions are completed, call to `NWUSStandardUnicodeRelease` to free resources associated with `NWUSStandardUnicodeInit` or `NWUSStandardUnicodeOverride`.

For related information, see:

- [“Finding Out Which Code Page a Standard Converter Uses” on page 36](#)
- [“Standard Unicode Converter Functions” on page 16](#)

2.2.2 Loading an Extended Unicode Converter

- 1 Choose the converter needed for your current task. Choices include the following:
 - Byte/Unicode Converter (Converts byte strings to Unicode and Unicode strings to bytes)
 - Unicode Case Converter (Converts Unicode strings to upper, lower, or title case)
 - Unicode Collation Converter (Assigns collation weights to Unicode strings)
 - Unicode Normalization Converter (Converts Unicode strings between precomposed and decomposed forms)
- 2 Choose the options needed for the current operation.
 - [“Extended Byte/Unicode Converter Options” on page 24](#)
 - [“Case, Collation, and Normalization Conversion” on page 26](#)
- 3 Call the appropriate load function.
 - [NWUXLoadByteUnicodeConverter \(page 147\)](#)
 - [NWUXLoadCaseConverter \(page 149\)](#)
- 4 Use the converter for the needed operations.
- 5 When the converter is no longer needed, free it by calling [NWUXUnloadConverter \(page 174\)](#).

For related information, see:

- [“Converting Bytes to Unicode with an Extended Converter” on page 37](#)
- [“Converting Unicode to Bytes with an Extended Converter” on page 37](#)
- [“Converting Unicode String Case with an Extended Converter” on page 42](#)

2.2.3 Changing Standard Unicode Converters

- 1 Call [NWUSStandardUnicodeOverride \(page 107\)](#), passing the numeric value of the desired code page for the `codepage`. If a standard converter is not currently loaded, `NWUSStandardUnicodeOverride` initializes the specified code page converter and sets up the global variables for standard Unicode conversions.

NOTE: Access to global variables initialized with a standard converter can vary according to platform, as explained in [“Conversion Operations” on page 21](#).

For related information, see:

- [“Converting Bytes to Unicode with a Standard Converter” on page 35](#)
- [“Converting Unicode to Bytes with a Standard Converter” on page 35](#)
- [“Finding Out Which Code Page a Standard Converter Uses” on page 36](#)
- [“Initializing a Standard Unicode Converter” on page 33](#)

2.2.4 Unloading Converters

Standard converters can be initiated multiple times by one or more applications. Each time a converter is initiated, it should be released when conversion operations are complete.

- 1 To release a standard converter, call [NWUSStandardUnicodeRelease \(page 109\)](#). The function has no parameters.

Extended converters perform a variety of conversions, but each is unloaded in the same way.

- 1 To unload an extended converter, call [NWUXUnloadConverter \(page 174\)](#) and pass the handle of the converter to be unloaded.

For related information, see [“Initializing/Loading Unicode Converters” on page 22](#)

2.3 Standard Conversion Tasks

The following are some common tasks you need to perform when using a standard converter:

- [Section 2.3.1, “Converting Bytes to Unicode with a Standard Converter,” on page 35](#)
- [Section 2.3.2, “Converting Unicode to Bytes with a Standard Converter,” on page 35](#)
- [Section 2.3.3, “Converting Path Strings with a Standard Converter,” on page 35](#)
- [Section 2.3.4, “Performing a Standard Conversion on a String of Unknown Size,” on page 36](#)
- [Section 2.3.5, “Finding Out Which Code Page a Standard Converter Uses,” on page 36](#)

2.3.1 Converting Bytes to Unicode with a Standard Converter

NOTE: If the minimum size of the output buffer for the Unicode string is important to your application but is not known, see [“Performing a Standard Conversion on a String of Unknown Size” on page 36](#).

- 1 If you have not already done so, call `NWUSStandardUnicodeInit`.
- 2 Supply an output buffer of sufficient size to hold the output Unicode string.
- 3 Call `NWUSByteToUnicode` (page 95) or `NWUSLenByteToUnicode` (page 101) unless the string is a path. For path strings, call `NWUSByteToUnicodePath` (page 97) or `NWUSLenByteToUnicodePath` (page 103).
 - For the `unicodeOutput` parameter, pass a pointer to the output buffer.
 - For `outputBufferLen`, pass the length of the output buffer in bytes.
 - For `byteInput`, pass a pointer to the input buffer.
 - For `inLength` of the `*Len*` functions, pass the length of the input string in bytes (might not include a NULL terminator).
- 4 Use the Unicode string pointed to by `unicodeOutput` as needed when the function returns.
- 5 After all standard Unicode conversion operations are completed, call `NWUSStandardUnicodeRelease`.
 - [“Converting Unicode to Bytes with a Standard Converter” on page 35](#)

2.3.2 Converting Unicode to Bytes with a Standard Converter

NOTE: If the required size for the output byte string buffer is not known, see [“Performing a Standard Conversion on a String of Unknown Size” on page 36](#).

- 1 If you have not already done so, call `NWUSStandardUnicodeInit`.
- 2 Supply an output buffer of sufficient size to hold the output byte string.
- 3 Call `NWUSUnicodeToByte` (page 110) or `NWUSUnicodeToUntermByte` (page 116) unless the string is a path. For path strings, call `NWUSUnicodeToBytePath` (page 112) or `NWUSUnicodeToUntermBytePath` (page 118).
 - For `byteOutput`, pass a pointer to the output buffer.
 - For `outputBufferLen`, pass the length of the output buffer in bytes.
 - For `unicodeInput`, pass a pointer to the input buffer.
- 4 When the function returns, use the Unicode string pointed to by `unicodeOutput` as needed.
- 5 After all standard Unicode conversion operations are completed, call `NWUSStandardUnicodeRelease`.

For related information, see [“Converting Bytes to Unicode with a Standard Converter” on page 35](#)

2.3.3 Converting Path Strings with a Standard Converter

- 1 If you have not done so already, call `NWUSStandardUnicodeInit`.

2 Convert as explained in “[Converting Bytes to Unicode with a Standard Converter](#)” on page 35 or “[Converting Unicode to Bytes with a Standard Converter](#)” on page 35, but call one of the following path-specific functions:

- [NWUSByteToUnicodePath](#) (page 97)
- [NWUSLenByteToUnicodePath](#) (page 103)
- [NWUSUnicodeToBytePath](#) (page 112)
- [NWUSUnicodeToUntermBytePath](#) (page 118)

2.3.4 Performing a Standard Conversion on a String of Unknown Size

1 If you have not already done so, call `NWUSStandardUnicodeInit`.

2 Call the appropriate conversion function, but set the output buffer to `NULL`. The `outputBufferLen` parameter is then ignored.

```
NWUSByteToUnicode(NULL, 0, byteInput, &actualLength);
```

3 Add one to the returned `actualLength` for the `NULL` terminator. If the output is to be a Unicode string, multiply `actualLength` by `sizeof(unicode)` to get the required number of bytes. Then allocate memory.

```
bufsiz=actualLength+1;
```

```
outbuf=(punicode)malloc(bufsize*sizeof(unicode));
```

4 Do the real conversion.

```
NWUSByteToUnicode(outbuf, bufsize, byteInput, NULL);
```

5 After all standard Unicode conversion operations are completed, call `NWUSStandardUnicodeRelease`.

2.3.5 Finding Out Which Code Page a Standard Converter Uses

1 Call [NWUSGetCodePage](#) (page 99). On return, the `pCodePage` parameter points to the code page and the `pCountry` parameter points to the country code used by the standard converter currently loaded. If a standard converter is not currently loaded, `NWUSGetCodePage` returns the code page and country code that will be used when `NWUXStandardUnicodeInit` is called.

For related information, see:

- “[Initializing a Standard Unicode Converter](#)” on page 33
- “[Converting Bytes to Unicode with a Standard Converter](#)” on page 35
- “[Converting Unicode to Bytes with a Standard Converter](#)” on page 35

2.4 Extended Conversion Tasks

The following are some common tasks you need to perform when using an extended converter:

- [Section 2.4.1, “Converting Bytes to Unicode with an Extended Converter,”](#) on page 37
- [Section 2.4.2, “Converting Unicode to Bytes with an Extended Converter,”](#) on page 37
- [Section 2.4.3, “Converting Path Strings with an Extended Converter,”](#) on page 38

- [Section 2.4.4, “Determining Output String Length with an Extended Converter,” on page 38](#)
- [Section 2.4.5, “Handling Unmappable Characters with an Extended Converter,” on page 39](#)
- [Section 2.4.6, “Setting Substitution Characters with an Extended Converter,” on page 40](#)
- [Section 2.4.7, “Setting Scan/Parse Functions with an Extended Converter,” on page 41](#)

2.4.1 Converting Bytes to Unicode with an Extended Converter

- 1 If you have not already done so, call `NWUXLoadByteUnicodeConverter`. Specify the relevant code page for the `codepage` parameter.
- 2 Supply a buffer of sufficient length to hold the Unicode output string. If length is important to your application and is not known follow the steps in
- 3 Call [NWUXByteToUnicode \(page 122\)](#) or [NWUXLenByteToUnicode \(page 142\)](#) unless the string is a path. For path strings, call [NWUXByteToUnicodePath \(page 124\)](#) or [NWUXLenByteToUnicodePath \(page 144\)](#)
 - For the `byteUniHandle` parameter, pass the handle returned from the appropriate call to `NWUXLoadByteUnicodeConverter`. Note that it is possible to have called the function more than once to make conversions for separate code pages.
 - For the `unicodeOutput` parameter, pass a pointer to the Unicode output string buffer.
 - For the `outputBufferLen` parameter, pass the maximum length of the output buffer, including the NULL terminator.
 - For the `byteInput` parameter, pass a pointer to the input byte buffer.
 - For `inLength` of the `*Len*` functions, pass the length of the input string in bytes (might not include a NULL terminator).
 - For the `actualLength` parameter, pass the address of the pointer to the output length. Note that the length pointed to on return does not include the NULL terminator.
- 4 If you have called `NWUXByteToUnicode` to determine the required length of the output buffer, call `NWUXByteToUnicode` a second time. This time use `outLength` from the returned previous call to determine the required length for the output buffer.
- 5 Use the returned Unicode string as needed.
- 6 When you no longer need the converter, free it by calling `NWUXUnicodeRelease` and passing the relevant converter handle.

For related information, see [“Converting Unicode to Bytes with an Extended Converter” on page 37](#)

2.4.2 Converting Unicode to Bytes with an Extended Converter

- 1 If you have not already done so, call `NWUXLoadByteUnicodeConverter`. Specify the relevant code page for the `codepage` parameter.
- 2 Supply a buffer of sufficient length to hold the byte output string. If you don’t know that length, see [“Determining Output String Length with an Extended Converter” on page 38](#).
- 3 Call [NWUXUnicodeToByte \(page 164\)](#) with the following parameter specifications:
 - For the `byteUniHandle` parameter, pass the handle returned from the appropriate call to `NWUXLoadByteUnicodeConverter`. Note that it is possible to have called the function more than once to make conversions for separate code pages.
 - For the `byteOutput` parameter, pass a pointer to the byte output string buffer.

- For the `outputBufferLen` parameter, pass the maximum length of the output buffer, including the NULL terminator.
 - For the `unicodeInput` parameter, pass a pointer to the input Unicode buffer.
 - For the `outLength` parameter, pass the address of the pointer to the output length. Note that the length pointed to on return does not include the NULL terminator.
- 4 If you have called `NWUXUnicodeToByte` to determine the required length of the output buffer, call `NWUXUnicodeToByte` a second time. This time use `outLength` from the returned previous call to determine the required length for the output buffer.
 - 5 Use the returned byte string as needed.
 - 6 When you no longer need the converter, free it by calling `NWUXUnicodeRelease` and passing the relevant converter handle.

For related information, see [“Converting Bytes to Unicode with an Extended Converter” on page 37](#)

2.4.3 Converting Path Strings with an Extended Converter

- 1 If you have not done so already, call `NWUXLoadByteUnicodeConverter`.
- 2 Convert as explained in [“Converting Bytes to Unicode with an Extended Converter” on page 37](#) or [“Converting Unicode to Bytes with an Extended Converter” on page 37](#), but call one of the following path-specific functions:
 - [NWUXByteToUnicodePath \(page 124\)](#)
 - [NWUXLenByteToUnicodePath \(page 144\)](#)
 - [NWUXUnicodeToBytePath \(page 166\)](#)
 - [NWUXUnicodeToUntermBytePath \(page 172\)](#)

2.4.4 Determining Output String Length with an Extended Converter

NOTE: Although the example in this task is written to convert from byte to Unicode, the same general procedure can be used for determining output string length for any extended conversion.

- 1 If you have not done so already, call the appropriate function to load the required converter:
 - `NWUXLoadByteUnicodeConverter`
 - `NWUXLoadCaseConverter`

- 2 With the converter loaded, call the appropriate conversion function once to determine the required length of the output buffer. Pass a NULL for the output buffer parameter.

`NWUXByteToUnicode(converter, NULL, 0, inbuf, &actualLength);`

When the function returns, the `actualLength` parameter points to the output string length.

NOTE: The length pointed to is only the number of characters in the string. *It does not include a NULL terminator.*

- 3 Add one to the returned `actualLength` for the NULL terminator. If the output is to be a Unicode string, multiply `actualLength` by `sizeof(unicode)` to get the required number of bytes. Then allocate memory.

```
bufsiz=acutalLen+1;
outbuf=(punicode)malloc(bufsize*sizeof(unicode));
```

4 Do the real conversion.

```
NWUXByteToUnicode(converter, outbuf, bufsize, inbuf, NULL);
```

5 When the converter is no longer needed, free the output buffer and call `NWUXUnloadConverter` as explained in [“Unloading Converters” on page 34](#).

For related information, see:

- [“Converting Bytes to Unicode with an Extended Converter” on page 37](#)
- [“Converting Unicode to Bytes with an Extended Converter” on page 37](#)

2.4.5 Handling Unmappable Characters with an Extended Converter

By default, the extended Unicode API uses the Default Conversion Behavior. However, the developer can change that process in several ways:

Change the NoMap action

Change the Substitution character

Change the handler function

Change scan/parse functions

- 1 To make a change, then reset functions to pre-change behavior:
 - Before making the change, call the `NWUXGet..` version of the relevant function (identified in steps 2 through 5 below), and save the return.
 - Call the `NWUXSet..` version to make the change.
 - After performing conversions with the changed setting, restore pre-change settings by calling the `NWUXSet..` version again and passing the values returned from the call to `NWUXGet..`
- 2 To change the NoMap action, call [NWUXSetNoMapAction \(page 154\)](#), and set the `noMapByteAction` or `noMapUniAction` to
 - `NWU_RETURN_ERROR`
 - `NWU_SUBSTITUTE` or
 - `NWU_CALL_HANDLER`Set either of these parameters to `NWU_UNCHANGED_ACTION` if no change is needed.
- 3 To change the substitution character, call [NWUXSetSubByte \(page 158\)](#) or [NWUXSetSubUni \(page 160\)](#) and set the `substituteByte` or `substituteUni` parameter to the new substitution character.
- 4 To change the function handler, call [NWUXSetByteFunctions \(page 152\)](#) or [NWUXSetUniFunctions \(page 162\)](#) and set the `noMapByteFunc` or `noMapUniFunc` parameter to point to the new function.
- 5 To return all settings to the system defaults, call [NWUXResetConverter \(page 151\)](#) and pass the handle of the converter.

For related information, see:

- [“Converting Bytes to Unicode with an Extended Converter” on page 37](#)
- [“Converting Unicode to Bytes with an Extended Converter” on page 37](#)
- [“Setting Substitution Characters with an Extended Converter” on page 40](#)
- [“Setting Scan/Parse Functions with an Extended Converter” on page 41](#)
- [“Unmappable Characters” on page 24](#)
- [“Substitution Characters” on page 24](#)
- [“Scan/Parse Action” on page 25](#)
- [“NoMap, Scan, and Parse Functions” on page 25](#)

2.4.6 Setting Substitution Characters with an Extended Converter

Substitution characters can be used as one option to replace unmappable characters in either Unicode-to-byte or byte-to-Unicode conversions. The other options are to return an error or to call a handler function.

- 1 If you have not already done so, call `NWUXLoadByteUnicodeConverter` to initialize the converter and obtain a converter handle.
- 2 If you need to save and restore the original substitution character, call the appropriate function to obtain current substitution character information:
 - For Unicode-to-byte conversions, call [NWUXGetSubByte \(page 136\)](#).
 - For byte-to-Unicode conversions, call [NWUXGetSubUni \(page 138\)](#).
 - Save the returned character for later restoration.
- 3 Call the appropriate function to set a new substitution character:
 - For Unicode-to-byte conversions, call [NWUXSetSubByte \(page 158\)](#).
 - For byte-to-Unicode conversions, call [NWUXSetSubUni \(page 160\)](#).
 - For either function, pass the converter handle and the new substitution character.
- 4 Convert the strings as needed.
- 5 When the most recently set substitution characters are no longer needed, reset as appropriate:
 - To reset the previous substitution character values, call [NWUXSetSubByte \(page 158\)](#) or [NWUXSetSubUni \(page 160\)](#), passing the values returned from Step 2 above.
 - To reset default values, call [NWUXResetConverter \(page 151\)](#), and pass the converter handle.
- 6 When the converter is no longer needed, call `NWUXUnloadConverter`, passing the appropriate converter handle.

For related information, see:

- [“Substitution Characters” on page 24](#)
- [“Conversion Control” on page 21](#)

2.4.7 Setting Scan/Parse Functions with an Extended Converter

- 1 If you have not already done so, call `NWUXLoadByteUnicodeConverter`. Specify the relevant code page for the `codepage` parameter.
- 2 If you want to return to the current settings after a change, call the Get version of the relevant function and save the return before calling the Set function to make the change.
- 3 The enable or disable scan/parse functions, call `NWUXSetScanAction` (page 156) and set either the `scanByteAction` or the `scanUniAction` parameter to
 - `NWU_ENABLED` or
 - `NWU_DISABLED`

Pass `NWU_UNCHANGED` to either parameter that requires no change.

The default is disabled for Unicode-to-byte conversion and enabled for byte-to-Unicode conversion.

- 4 To set either a scan or parse (or both) function other than the default system functions, call `NWUXSetByteFunctions` (page 152) or `NWUXSetUniFunctions` (page 162) and pass a pointer to the new function(s). Pass `NWU_UNCHANGED_FUNCTION` to pointers in these functions for which not change is needed.

For related information, see:

- “Scan/Parse Action” on page 25
- “NoMap, Scan, and Parse Functions” on page 25

2.5 Case, Collation, and Normalization Conversion

The following sections explain how to convert the case of the Unicode string:

- Section 2.5.1, “Converting Unicode String Case with a Standard Converter,” on page 41
- Section 2.5.2, “Converting Unicode String Case with an Extended Converter,” on page 42

2.5.1 Converting Unicode String Case with a Standard Converter

- 1 If you have not already done so, call `NWUSStandardUnicodeInit`.
- 2 Supply a buffer of sufficient length to receive the lower or upper case Unicode string.
- 3 Call `NWUSUnicodeToLowerCase` (page 114) or `NWUSUnicodeToUpperCase` (page 120) for the actual conversion.
 - For the `lowerCaseOutput` or `upperCaseOutput` parameter, pass a pointer to the output buffer.
 - For the `outputBufferLen` parameter, pass a pointer to the length of the output buffer.
 - For the `unicodeInput` parameter, pass a pointer to the Unicode string input buffer.
- 4 After all standard Unicode conversion operations are completed, call `NWUSStandardUnicodeRelease`.

2.5.2 Converting Unicode String Case with an Extended Converter

- 1 If you have not already done so, call `NWUXLoadCaseConverter` to initialize the converter and obtain a converter handle.

NOTE: You must specify the case to which the converter is to convert in the `caseFlag` parameter of `NWUXLoadCaseConverter`. If an initialized converter is not set to the desired case, initialize another case converter. It is possible to have multiple converters, each set to a different option (upper case, lower case, title case).

- 2 Supply a buffer of sufficient size to hold the output moncased Unicode string. In some languages, changing the case of a string may change the string length.
- 3 Call `NWUXUnicodeToCase` (page 168) with the following parameter stipulations:
 - For the `caseHandle` parameter, pass the handle returned from appropriate call to `NWUXLoadCaseConverter`.
 - For the `monocaseOutput` parameter, pass the address of the output buffer for the Unicode monospace string.
 - For the `outputBufferLen` parameter, pass the length of the output buffer.
 - For the `unicodeInput` parameter, pass a pointer to the input string buffer.
- 4 Use the moncased output string as needed.
- 5 When the converter is no longer needed, call `NWUXUnloadConverter`, passing the handle returned when the converter was loaded.

For related information, see “[Standard and Extended Unicode Converter Functions](#)” on page 16.

Examples

3

This documentation provides an example of how to use Unicode Table functions.

3.1 Unicode Operations

The following code uses Internationalization services to find a country ID and code page. The example illustrates how NDS operations are wedged between the two functions to initialize and free the Unicode tables.

Find Country ID and Code Page

```
/******  
 *  
 * Name      : Initializing the Unicode tables  
 *  
 *  
 * Abstract  : Demonstrate what an application must do to initialize  
 *            the unicode tables before using NDS.  
 *  
 * Notes    :  
*****/  
  
#include <stdio.h>  
#include <time.h>  
#include <nwlocale.h>  
#include <nwdsdc.h>  
#include <stdlib.h>  
#include <string.h>  
  
void main(void)  
{  
  
    NWDSCCODE    ccode;  
    char NWFAR   *countryPtr;  
    LCONV        lconvInfo;  
  
    countryPtr = NWLsetlocale(LC_ALL, NULL);  
  
/* Read values from current locale */  
    NWLlocaleconv(&lconvInfo);  
    ccode = NWInitUnicodeTables(lconvInfo.country_id,  
                                lconvInfo.code_page);  
    printf("\nReturn code from NWInitUnicodeTables is %X\n", ccode);  
  
/*  
    Call directory service functions here.  
*/
```

```

        NWFreeUnicodeTables( );
    }

```

3.2 Example: NWGetLocalToUnicodeHandle

```

/* exul2u.c - NWGetLocalToUnicodeHandle / NWLocalToUnicode example
*/
#define NWL_EXCLUDE_TIME
#define NWL_EXCLUDE_FILE
#include <nwlocale.h>
#include <unicode.h>
#include <string.h>
#include <assert.h>
void main()
{
    LCONV lconv;
    nint err;
    nptr h = NULL;
    nuint8 src[5] = {'a', 'b', 'c', 'd', 0}; /* Local input string */
    unicode dest[5];
    nuint8 noMap = 0; /* Use the default replacement char. */
    nuint len;

    /* Get the country ID and code page from the operating system. */
    NWLlocaleconv(&lconv);
    err = NWInitUnicodeTables(lconv.country_id, lconv.code_page);
    assert (err == 0);
    err = NWGetLocalToUnicodeHandle(&h);
    assert (err == 0);
    err = NWLocalToUnicode(h, dest, sizeof(dest), src, noMap, &len);
    assert (err == 0);
    assert (unicmp(dest, L"abcd") == 0); /* Unicode output string */
    assert (len == 5); /* Output size includes null */
    NWFreeUnicodeTables();
}

```

3.3 Example: NWGetUnicodeToCollationHandle

```

/* exucoll.c - NWGetUnicodeToCollationHandle / NWUnicodeToCollation
*/
#define NWL_EXCLUDE_TIME
#define NWL_EXCLUDE_FILE
#include <nwlocale.h>
#include <unicode.h>
#include <assert.h>
void main()
{
    LCONV lconv;
    nint err;
    nptr h = NULL;
    unicode src[5] = {'A', 'a', '1', '*', 0}; /* Unicode input string */
    unicode dest[5];
    unicode noMap = 0; /* Use the default replacement char. */

```

```

    nuint len;

/* On Win32, it calls wcsxfrm and converts to the same character value.
   The return value does not include the null terminator.

   On other platforms, it uses the Novell collation tables,
   which converts to:
   - the uppercase value of the character for letters
   - zero for NULL
   - 0xFFFF for all other characters
   The return value includes the null terminator.
*/

#ifdef WIN32
    unicode cmp[5] = { 'A', 'a', '1', '*', 0 };
    nuint cmplen = 4;
#else
    unicode cmp[5] = { 'A', 'A', 0xFFFF, 0xFFFF, 0 };
    nuint cmplen = 5;
#endif

    /* Get the country ID and code page from the operating system. */
    NWLlocaleconv(&lconv);
    err = NWInitUnicodeTables(lconv.country_id, lconv.code_page);
    assert (err == 0);
    err = NWGetCollationHandle(&h);
    assert (err == 0);
    err = NWUnicodeToCollation(h, dest, sizeof(dest)/sizeof(unicode),
                               src, noMap, &len);

    assert (err == 0);
    assert (unicmp(dest, cmp) == 0); /* Unicode output string */
    assert (len == cmplen);
    NWFreeUnicodeTables();
}

```

3.4 Example: NWGetUnicodeToLocalHandle

```

/* exuu21.c - NWGetUnicodeToLocalHandle / NWUnicodeToLocal example
*/
#define NWL_EXCLUDE_TIME
#define NWL_EXCLUDE_FILE
#include <nwlocale.h>
#include <unicode.h>
#include <string.h>
#include <assert.h>
void main()
{
    LCONV lconv;
    nint err;
    nptr h = NULL;
    unicode src[5] = {'a', 'b', 'c', 'd', 0}; /* Unicode input string */
    nuint8 dest[5];
    nuint8 noMap = 0; /* Use the default replacement char. */
}

```

```

nuint len;

/* Get the country ID and code page from the operating system. */
NWLocaleconv(&lconv);
err = NWInitUnicodeTables(lconv.country_id, lconv.code_page);
assert (err == 0);
err = NWGetUnicodeToLocalHandle(&h);
assert (err == 0);
err = NWUnicodeToLocal(h, dest, sizeof(dest), src, noMap, &len);
assert (err == 0);
assert (strcmp(dest, "abcd") == 0); /* Local output string */
assert (len == 5); /* Output size includes null */
NWFreeUnicodeTables();
}

```

3.5 Example: NWGetUnicodeToMonocaseHandle

```

/* exumono.c - NWGetUnicodeToMonocaseHandle / NWUnicodeToMonocase */
#define NWL_EXCLUDE_TIME
#define NWL_EXCLUDE_FILE
#include <nwlocale.h>
#include <unicode.h>
#include <string.h>
#include <assert.h>
void main()
{
    LCONV lconv;
    nint err;
    nptr h = NULL;
    unicode src[5] = {'A', 'B', 'c', 'd', 0}; /* Unicode input string */
    unicode dest[5];
    nuint len;

    /* Get the country ID and code page from the operating system. */
    NWLocaleconv(&lconv);
    err = NWInitUnicodeTables(lconv.country_id, lconv.code_page);
    assert (err == 0);
    err = NWGetMonocaseHandle(&h);
    assert (err == 0);
    err = NWUnicodeToMonocase(h, dest, sizeof(dest)/sizeof(unicode),
                               src, &len);

    assert (err == 0);
    assert (unicmp(dest, L"abcd") == 0); /* Unicode output string */
    assert (len == 5); /* Output size includes null */
    NWFreeUnicodeTables();
}

```

3.6 Example: NWInitUnicodeTables

```

/* exuinit.c - NWInitUnicodeTables / NWFreeUnicodeTables example */
#define NWL_EXCLUDE_TIME
#define NWL_EXCLUDE_FILE
#include <nwlocale.h>

```

```

#include <unicode.h>
#include <assert.h>
void main()
{
    LCONV lconv;
    nint err;

    /* Get the country ID and code page from the operating system. */
    NWLocaleconv(&lconv);
    err = NWInitUnicodeTables(lconv.country_id, lconv.code_page);

    /* Be sure to check return value before proceeding. */
    assert (err == 0);

    /*
     *
     */
    NWFreeUnicodeTables();
}

```

3.7 Example: NWLocalToUnicode with Buffer Overflow

```

/* exul2u_1.c - NWLocalToUnicode with buffer overflow example */
#define NWL_EXCLUDE_TIME
#define NWL_EXCLUDE_FILE
#include <nwlocale.h>
#include <unicode.h>
#include <string.h>
#include <assert.h>
void main()
{
    LCONV lconv;
    nint err;
    nptr h = NULL;
    nuint8 src[5] = {'a', 'b', 'c', 'd', 0}; /* Local input string */
    unicode dest[3]; /* This size is too small to hold the result! */
    nuint8 noMap = 0; /* Use the default replacement char. */
    nuint len;

    /* Get the country ID and code page from the operating system. */
    NWLocaleconv(&lconv);
    err = NWInitUnicodeTables(lconv.country_id, lconv.code_page);
    assert (err == 0);
    err = NWGetLocalToUnicodeHandle(&h);
    assert (err == 0);
    err = NWLocalToUnicode(h, dest, sizeof(dest)/sizeof(unicode), src,
                           noMap, &len);
    assert (err == 0);

    /* Win32 clients call Windows MultiByteToWideChar.

```

```

        If buffer overflows, it does not terminate the output string,
        and returns zero length.
        It ignores noMap and uses the windows default replacement char.
    */

#ifdef WIN32
    assert (unicmp(dest, L"abc", 3) == 0);
    assert (len == 0);

    /* Other platforms terminate the string and return the
       number of chars written. */

#else
    assert (unicmp(dest, L"ab") == 0);
    assert (len == 3);          /* 2 uni chars and a null were written
    */
#endif
    NWFreeUnicodeTables();
}

```

3.8 Example: NWUnicodeCompare

```

/* exucomp.c - NWUnicodeCompare example.
   Compare 2 unicode characters in collation sequence.
*/
#define NWL_EXCLUDE_TIME
#define NWL_EXCLUDE_FILE
#include <nwlocale.h>
#include <unicode.h>
#include <assert.h>
void main()
{
    LCONV lconv;
    nint ret;
    nptr h = NULL;

    /* Get the country ID and code page from the operating system. */
    NWLlocaleconv(&lconv);
    ret = NWInitUnicodeTables(lconv.country_id, lconv.code_page);
    assert (ret == 0);
    ret = NWGetCollationHandle(&h);
    assert (ret == 0);
    ret = NWUnicodeCompare(h, 'A', 'B');
    assert (ret == -1);          /* A < B */

    /* On WNT, it calls StringCompareW, which considers a < A.
       The collation order is ...aA..bB..cC...
    */

#ifdef N_PLAT_WNT
    ret = NWUnicodeCompare(h, 'A', 'a');
    assert (ret == 1);          /* A > a */
    ret = NWUnicodeCompare(h, 'a', 'B');

```

```

    assert (ret == -1);
    ret = NWUnicodeCompare(h, 'B', 'a');
    assert (ret == 1);

/* On W95, it calls wcsxfrm, which considers A < a.
   The collation order is the same as the character value:
   ...ABC...Z...abc...z...
*/

#elif defined WIN32
    ret = NWUnicodeCompare(h, 'A', 'a');
    assert (ret == -1);           /* A < a */
    ret = NWUnicodeCompare(h, 'a', 'B');
    assert (ret == 1);
    ret = NWUnicodeCompare(h, 'B', 'a');
    assert (ret ==-1);

/* On NLM it uses the Novell collation tables.
   Upper and lowercase letters are considered equal.
*/

#else
    ret = NWUnicodeCompare(h, 'A', 'a');
    assert (ret == 0);           /* A < a */
    ret = NWUnicodeCompare(h, 'a', 'B');
    assert (ret == -1);
    ret = NWUnicodeCompare(h, 'B', 'a');
    assert (ret ==1);
#endif
    NWFreeUnicodeTables();
}

```

3.9 Example: NWUnicodeToLocal with Buffer Overflow

```

/* exuu2l_1.c - NWUnicodeToLocal with buffer overflow example */
#define NWL_EXCLUDE_TIME
#define NWL_EXCLUDE_FILE
#include <nwlocale.h>
#include <unicode.h>
#include <string.h>
#include <assert.h>
void main()
{
    LCONV lconv;
    nint err;
    nptr h = NULL;
    unicode src[5] = {'a', 'b', 'c', 'd', 0}; /* Unicode input string */
    nuint8 dest[3]; /* This size is too small to hold the result! */
    nuint8 noMap = 0; /* Use the default replacement char. */
    nuint len;

    /* Get the country ID and code page from the operating system. */

```

```

    NWLocaleConv(&lconv);
    err = NWInitUnicodeTables(lconv.country_id, lconv.code_page);
    assert (err == 0);
    err = NWGetUnicodeToLocalHandle(&h);
    assert (err == 0);
    err = NWUnicodeToLocal(h, dest, sizeof(dest), src, noMap, &len);
    assert (err == 0);

/* Win32 clients call Windows WideCharToMultiByte.
   If buffer overflows, it does not terminate the output string,
   and returns zero length.
   It ignores noMap and uses the windows default replacement char.
*/

#ifdef WIN32
    assert (strncmp(dest, "abc", 3) == 0);
    assert (len == 0);

/* Other platforms terminate the string and return the
   number of chars written.
*/

#else
    assert (strcmp(dest, "ab") == 0);
    assert (len == 3);          /* 2 bytes and a null were written */
#endif
    NWFreeUnicodeTables();
}

```

3.10 Example: NWUnicodeToLocal with Unmappable Character

```

/* exuu2l_2.c - NWUnicodeToLocal example with unmappable character */
#define NWL_EXCLUDE_TIME
#define NWL_EXCLUDE_FILE
#include <nwlocale.h>
#include <unicode.h>
#include <string.h>
#include <assert.h>
void main()
{
    LCONV lconv;
    nint err;
    nptr h = NULL;
    unicode src[5] = {'a', 0xFFFFD, 'c', 'd', 0}; /* Unmappable char */
    nuint8 dest[5];
    nuint8 noMap = 0; /* Use the default replacement char. */
    nuint len;

/* Win32 platforms ignore noMap and use the Windows default char ('?').
   Non-win32 platforms use the given noMap character, or if it is zero,
   uses the default nomap character from the Novell rules table,
   which for US English, is 0xFD on NLM
*/

```

```

*/

#ifdef WIN32
    nuint8 expect[5] = {'a', '?', 'c', 'd', 0}; /* Win32 output */
#elif defined NWWIN
    nuint8 expect[5] = {'a', 0x03, 'c', 'd', 0}; /* NLM output */
#endif

    /* Get the country ID and code page from the operating system. */
    NWLlocaleconv(&lconv);
    err = NWInitUnicodeTables(lconv.country_id, lconv.code_page);
    assert (err == 0);
    err = NWGetUnicodeToLocalHandle(&h);
    assert (err == 0);
    err = NWUnicodeToLocal(h, dest, sizeof(dest), src, noMap, &len);
    assert (err == 0);
    assert (strcmp(dest, expect) == 0); /* Local output string */
    assert (len == 5); /* Output size includes null */
    NWFreeUnicodeTables();
}

```

3.11 Example: unicat

```

/* excat.c - Sample code for unicat function */
#include <nunicode.h>
#include <assert.h>
void main(void)
{
    unicode str[10];
    punicode ret;
    unicpy(str, L"Star");
    ret = unicat(str, L"fish"); /* Append "fish" onto the end of str */
    assert(unicmp(str, L"Starfish") == 0);
    assert(ret==str);
}

```

3.12 Example: unichr

```

/* exchr.c - unichr sample. Find the first occurrence of a character.
*/
#include <nunicode.h>
#include <assert.h>
void main(void)
{
    punicode puni = L"banana";
    punicode ptr;
    ptr = unichr(puni, 'a'); /* Returns ptr to the first 'a' */
    assert(unicmp(ptr, L"anana") == 0);
    ptr = unichr(puni, 'Z'); /* If not found, return NULL. */
    assert (ptr == NULL);
}

```

3.13 Example: unicmp

```
/* excmp.c - Sample code for unicmp. Case sensitive comparison. */

#include <nunicode.h>
#include <assert.h>
void main(void)
{
    nint result;

    result = unicmp(L"Cat", L"Cat"); /* zero - strings match exactly */
    assert (result == 0);
    result = unicmp(L"cat", L"catch"); /* non-zero - no match */
    assert (result != 0);
    result = unicmp(L"CAT", L"cat"); /* Case-sensitive. No match */
    assert (result != 0);
    result = unicmp(L"cat", L"dog"); /* Negative - cat < dog */
    assert (result < 0);
    result = unicmp(L"dog", L"cat"); /* Positive - dog > cat */
    assert (result > 0);
}
```

3.14 Example: unicpy

```
/* excpy.c - Sample code for unicpy function.
A bug in earlier versions of the library caused unicpy to return a
pointer to the end of the destination string instead of the beginning.
*/
```

```
#include <nunicode.h>
#include <assert.h>
void main(void)
{
    unicode str[11];
    punicode ret;
    ret = unicpy(str, L"New string");
    assert(unicmp(str, L"New string") == 0);
    assert(ret==str);
}
```

3.15 Example: unicspn

```
/* excspn.c - Sample code for unicspn.

Return initial length of first string not containing any
characters of the second string.
*/

#include <nunicode.h>
#include <assert.h>
void main(void)
{
    nint result;
```

```

    result = unicspn(L"testfile.dat", L".");
    assert (result == 8);
    result = unicspn(L"server\\vol:file.ext", L".:\\");
    assert (result == 6);
}

```

3.16 Example: uniicmp

```

/*  exicmp.c - Sample code for uniicmp.  Case insensitive comparison.
*/

#include <nunicode.h>
#include <assert.h>
void main(void)
{
    nint result;
    result = uniicmp(L"CAT", L"cat");      /* zero - strings match */
    assert (result == 0);
    result = uniicmp(L"cat", L"catch");   /* non-zero - no match */
    assert (result != 0);
    result = uniicmp(L"cat", L"dog");     /* Negative - cat < dog */
    assert (result < 0);
    result = uniicmp(L"dog", L"cat");     /* Positive - dog > cat */
    assert (result > 0);
}

```

3.17 Example: unilen

```

/*  exlen.c - Sample code for unilen function.
    Returns the length of the string in unicode characters,
    excluding the terminating NULL.
*/

#include <nunicode.h>
#include <assert.h>

void main(void)
{
    nint i;
    i = unilen(L"cat");
    assert (i==3);
    i = unilen(L"kitten");
    assert (i==6);
}

```

3.18 Example: unincat

```

/*  exncat.c - Sample code for unincat.
    Append n characters of second string onto first string.
*/

```

```

#include <nunicode.h>
#include <assert.h>

void main(void)
{
    unicode s1[20];
    punicode ret;

    unicpy(s1, L"Star");

    ret = unincat(s1, L"Fisherman", 4);          /* Result is "StarFish" */

    assert (unicmp(ret, L"StarFish") == 0);
    assert (ret == s1);
}

```

3.19 Example: unincmp

```

/*  exncmp.c - Sample code for unincmp.
    Case sensitive comparison of n chars.
*/

#include <nunicode.h>
#include <assert.h>

void main(void)
{
    nint result;

    result = unincmp(L"cat", L"catch", 3);    /* Match in first 3 chars */
    assert (result == 0);
    result = unincmp(L"cat", L"catch", 4);    /* Not a match in 4 chars */
    assert (result != 0);

    result = unincmp(L"CAT", L"cat", 2);     /* Case-sensitive. No match */
    assert (result != 0);
}

```

3.20 Example: uninicmp

```

/*  exnicmp.c - Sample code for uninicmp. Case insensitive length
    comparison.
*/

#include <nunicode.h>
#include <assert.h>

void main(void)
{
    nint result;
    result = uninicmp(L"CAT", L"cat", 3);    /* Case-insensitive. Match */
    assert (result == 0);
    result = uninicmp(L"Cat", L"catch", 3); /* Match in first 3 chars */
}

```

```

    assert (result == 0);
    result = unicmp(L"cat", L"catch", 4); /* Not a match in 4 chars */
    assert (result != 0);
}

```

3.21 Example: uninset

```

/*  exnset.c - Sample code for uninset.
    Fill up to n characters of existing string.
*/

#include <nunicode.h>
#include <assert.h>

void main(void)
{
    unicode  s1[20];
    punicode ret;
    unicode  fill = '.';

    unicpy(s1, L"StarFish");

    ret = uninset(s1, fill, 4);

    assert (unicmp(s1, L"....Fish") == 0);
    assert (ret == s1);

    /* Fill stops after 8 chars when it hits a NULL in the destination. */
    ret = uninset(s1, fill, 20);
    assert (unicmp(s1, L".....") == 0);
}

```

3.22 Example: unipcpy

```

/*  expcpy.c - Sample code for unipcpy function.
    Copy string and return pointer to the end of the destination string
*/

#include <nunicode.h>
#include <assert.h>

void main(void)
{
    unicode str[50];
    punicode p ;
    p = unipcpy(str, L"xx");
    p = unipcpy(p, L"yy");
    p = unipcpy(p, L"zz");
    assert(unicmp(str, L"xyyzz") == 0);
    assert( *p == 0); /* Return value points to the terminating null */
}

```

3.23 Example: unipbrk

```
/* expbrk.c - Sample code for unipbrk.

   Returns a pointer to the first occurrence in s1
   of any character in s2.
*/

#include <nunicode.h>
#include <assert.h>

void main(void)
{
    punicode ret;

    /* Search for the first dot, colon, or backslash character. */
    ret = unipbrk(L"server\\vol:file.ext", L".:\\");

    /* ret points to the backslash character. */
    assert (*ret == '\\');
}

```

3.24 Example: unirchr

```
/* exrchr.c - unirchr sample. Find the last occurrence of a
character.
*/

#include <nunicode.h>
#include <assert.h>

void main(void)
{
    punicode puni = L"bananas";
    punicode ptr;
    ptr = unirchr(puni, 'a');          /* Returns ptr to the last 'a' */
    assert(unicmp(ptr, L"as") == 0);
    ptr = unirchr(puni, 'Z');        /* If not found, return NULL. */
    assert (ptr == NULL);
}

```

3.25 Example: unirev

```
/* exrev.c - Sample code for unirev function.
   Reverse string in place.
*/

#include <nunicode.h>
#include <assert.h>

void main(void)
{
    unicode str[5];
}

```

```

    punicode ret;
    unicpy(str,L"abcd");
    ret = unirev(str);
    assert(unicmp(str, L"dcba") == 0);
    assert(ret==str);
}

```

3.26 Example: uniset

```

/*  exset.c - Sample code for uniset.
    Replace all characters in a string.
*/

#include <nunicode.h>
#include <assert.h>

void main(void)
{
    unicode  s1[20];
    punicode ret;
    unicode  fill = '.';

    unicpy(s1, L"abcd");

    /* Fill stops when it hits a NULL in the destination. */
    ret = uniset(s1, fill);
    assert (unicmp(s1, L"....") == 0);
    assert (ret == s1);
}

```

3.27 Example: unisize

```

/*  exsize.c - Sample code for unisize function.
    Returns the length of the string in bytes,
    including the terminating NULL.
*/

#include <nunicode.h>
#include <assert.h>

void main(void)
{
    nint i;
    i = unisize(L"cat");
    assert (i==8);
    i = unisize(L"");
    assert (i==2);
}

```

3.28 Example: unispn

```
/*  exspn.c - Sample code for unispn.

    Return initial length of first string containing only
    characters of the second string.
*/

#include <nunicode.h>
#include <assert.h>

void main(void)
{
    nint result;

    result = unispn(L"abcabcxx", L"bac");
    assert (result == 6);
}
```

3.29 Example: unistr

```
/*  exstr.c - Sample code for unistr.

    Search for a substring of a string.
*/

#include <nunicode.h>
#include <assert.h>

void main(void)
{
    punicode ret;

    ret = unistr(L"aa bb cc dd", L"cc");
    assert (unicmp(ret, L"cc dd") == 0);
    ret = unistr(L"aa bb cc dd", L"xx");    /* "xx" does not occur */
    assert (ret == NULL);
}
```

3.30 Example: unitok

```
/*  extok.c - Sample code for unitok.

    Returns next component of string as defined by tokens.
*/

#include <nunicode.h>
#include <assert.h>

void main(void)
{
    unicode str[30];
    unicode tokens[4] = { '.', ':', '\\', 0 };
}
```

```
punicode ret;
unicpy(str, L"server\\vol:file.ext");
ret = unitok(str, tokens);
assert (unicmp(ret, L"server") == 0);

ret = unitok(NULL, tokens);
assert (unicmp(ret, L"vol") == 0);
ret = unitok(NULL, tokens);
assert (unicmp(ret, L"file") == 0);
ret = unitok(NULL, tokens);
assert (unicmp(ret, L"ext") == 0);
ret = unitok(NULL, tokens);
assert (ret == NULL);
}
```


Functions

4

This documentation alphabetically lists the Unicode functions and describes their purpose, syntax, parameters, and return values.

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- “[NWGetCollationHandle](#)” on page 65
- “[NWGetLocalToUnicodeHandle](#)” on page 66
- “[NWGetMonocaseHandle](#)” on page 67
- “[NWGetUnicodeToLocalHandle](#)” on page 69
- “[NWInitUnicodeTables](#)” on page 71
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NWFreeUnicodeTables

Frees up the memory used by the four Unicode rule tables created when NWInitUnicodeTables was called

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(nint) NWFreeUnicodeTables (
    void);
```

Pascal Syntax

```
uses netwin32

Function NWFreeUnicodeTables
: nint;
```

Return Values

0x0000	Successful is always returned
--------	-------------------------------

Remarks

Example: NWFreeUnicodeTables

See [Section 3.6, “Example: NWInitUnicodeTables,” on page 46](#)

See Also

[NWInitUnicodeTables \(page 71\)](#)

NWGetCollationHandle

Sets a handle to the Unicode-to-collation rule table

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(nint) NWGetCollationHandle (
    pnptr handle);
```

Pascal Syntax

```
uses netwin32

Function NWGetCollationHandle
    (handle : pnptr
) : nint;
```

Parameters

handle

(OUT) Points to the rule handle.

Return Values

These are common return values; see [Return Values](#) (*Return Values for C*) for more information.

0x0000	Successful
0xFE10	UNI_HANDLE_BAD

Remarks

If the rule table has not been loaded, the pointer is set to NULL.

See Also

[NWInitUnicodeTables](#) (page 71), [NWLoadRuleTable](#) (page 73), [NWUnicodeCompare](#) (page 85)

NWGetLocalToUnicodeHandle

Sets rule handle to the local-to-Unicode rule table

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>
```

```
N_EXTERN_LIBRARY(nint) NWGetLocalToUnicodeHandle (
    pnptr    handle);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWGetLocalToUnicodeHandle
    (handle : pnptr
) : nint;
```

Parameters

handle

(OUT) Points to the rule handle which should be set to NULL before you call this function.

Return Values

These are common return values; see [Return Values](#) (*Return Values for C*) for more information.

0x0000	Successful
0xFE10	UNI_HANDLE_BAD

Remarks

If the rule table has not been loaded, the pointer is set to NULL.

See Also

[NWInitUnicodeTables](#) (page 71), [NWLoadRuleTable](#) (page 73), [NWLocalToUnicode](#) (page 75)

NWGetMonocaseHandle

Sets a rule handle to the Unicode-to-monocase rule table

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(nint) NWGetMonocaseHandle (
    pnptr handle);
```

Pascal Syntax

```
uses netwin32

Function NWGetMonocaseHandle
    (handle : pnptr
) : nint;
```

Parameters

handle

(OUT) Points to the rule handle which should be set to NULL before you call this function.

Return Values

These are common return values; see [Return Values \(Return Values for C\)](#) for more information.

0x0000	Successful
0xFE10	UNI_HANDLE_BAD

Remarks

If the rule table has not been loaded, the pointer is set to NULL. See [Section 3.5, “Example: NWGetUnicodeToMonocaseHandle,”](#) on page 46.

See Also

[NWInitUnicodeTables \(page 71\)](#), [NWLoadRuleTable \(page 73\)](#), [NWUnicodeToMonocase \(page 92\)](#)

NWGetUnicodeToLocalHandle

Sets a rule handle to the Unicode-to-local rule table

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>
```

```
N_EXTERN_LIBRARY(nint) NWGetUnicodeToLocalHandle (
    pnptr handle);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWGetUnicodeToLocalHandle
    (handle : pnptr
) : nint;
```

Parameters

handle

(OUT) Points to the rule handle which should be set to NULL before you call this function.

Return Values

These are common return values; see [Return Values \(Return Values for C\)](#) for more information.

0x0000	Successful
0xFE10	UNI_HANDLE_BAD

Remarks

If the rule table has not been loaded, the pointer is set to NULL. See [Section 3.4, “Example: NWGetUnicodeToLocalHandle,”](#) on page 45.

See Also

[NWInitUnicodeTables \(page 71\)](#), [NWLoadRuleTable \(page 73\)](#), [NWUnicodeToLocal \(page 89\)](#)

NWInitUnicodeTables

Sets up and initializes four conversion tables necessary to support Unicode

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(nint) NWInitUnicodeTables (
    nint    countryCode,
    nint    codePage);
```

Pascal Syntax

```
uses netwin32

Function NWInitUnicodeTables
    (countryCode : nint;
    codePage     : nint
) : nint;
```

Parameters

countryCode

(IN) Specifies the country or nation identification number.

codePage

(IN) Specifies the Character Encoding Scheme (CES) ID number.

Return Values

These are common return values; see [Return Values](#) (*Return Values for C*) for more information.

0x0000	Successful
0xFE11	UNI_LOAD_FAILED
0xFE12	UNI_NO_MEMORY
0xFE13	UNI_NO_PERMISSION

0xFE14	UNI_TOO_MANY_FILES
0xFE15	UNI_NO_SUCH_FILE
0xFE16	UNI_FUTURE_OPCODE
0xFE0B	UNI_OPEN_FAILED
0xFE0E	UNI_RULES_CORRUPT

Remarks

`countryCode` and `codePage` can be found by calling `NWLlocaleconv`.

`NWInitUnicodeTables` or `NWLoadRuleTable` must be successfully called before these functions can be called:

`NWGetUnicodeToLocalHandle`

`NWGetLocalToUnicodeHandle`

`NWGetMonocaseHandle`

`NWGetCollationHandle`

See [Section 3.6, “Example: NWInitUnicodeTables,” on page 46](#).

See Also

[NWFreeUnicodeTables \(page 64\)](#), [NWLlocaleconv \(Internationalization\)](#), [NWLoadRuleTable \(page 73\)](#)

NWLoadRuleTable

Loads a single rule table when all four conversion or rule tables are not needed

NetWare Server: 4.x, 5.x, 6.x

Platform: Windows 95, Windows 98, Windows NT

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(nint)  NWLoadRuleTable (
    pnstr  ruleTableName,
    pnptr  ruleHandle);
```

Pascal Syntax

```
uses netwin32

Function NWLoadRuleTable
    (ruleTableName : PChar;
    ruleHandle     : pnptr
) : nint;
```

Parameters

ruleTableName

(IN) Points to the full path of the rule table.

ruleHandle

(OUT) Points to the handle to the loaded rule table.

Return Values

These are common return values; see [Return Values](#) (*Return Values for C*) for more information.

0x0000	Successful
0xFE11	UNI_LOAD_FAILED
0xFE12	UNI_NO_MEMORY
0xFE13	UNI_NO_PERMISSION
0xFE14	UNI_TOO_MANY_FILES
0xFE15	UNI_NO_SUCH_FILE
0xFE16	UNI_FUTURE_OPCODE

0xFE0B	UNI_OPEN_FAILED
0xFE0E	UNI_RULES_CORRUPT

Remarks

NWLoadRuleTable replaces NWInitUnicodeTables and the following calls:

NWGetUnicodeToLocalHandle
NWGetLocalToUnicodeHandle
NWGetMonocaseHandle
NWGetCollationHandle

Win32 platforms do not use the Novell unicode tables and just return success. NLM platforms do not support these routines.

For information about rule tables, see [NWInitUnicodeTables \(page 71\)](#).

See Also

[NWInitUnicodeTables \(page 71\)](#), [NWUnloadRuleTable \(page 94\)](#)

NWLocalToUnicode

Converts a local (code page based) character string to a Unicode character string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(nint) NWLocalToUnicode (
    nptr                ruleHandle,
    punicode            dest,
    nuint32             maxlen,
    const void N_FAR   *src,
    unicode             noMap,
    pnuint              len,
    nuint32             allowNoMapFlag);
```

Pascal Syntax

uses netwin32

```
Function NWLocalToUnicode
(ruleHandle : nptr;
 dest : punicode;
 maxlen : nuint32;
 src : nptr;
 noMap : unicode;
 len : pnuint;
 allowNoMapFlag : nuint32 (*optional, available on NLM only*) );
```

Parameters

ruleHandle

(IN) Points to the rule table handle for local to Unicode conversion as initialized by NWGetLocalToUnicodeHandle.

dest

(OUT) Points to the buffer for storing the resulting Unicode string.

maxLen

(IN) Specifies the maximum number of Unicode characters in the `dest` parameter (each unicode character is 2 bytes).

src

(IN) Points to the source-local character string.

noMap

(IN) Specifies the no map character.

len

(OUT) Points to the number of characters copied into the `dest` parameter (including the 2-byte null termination character).

allowNoMapFlag

(IN) (Optional, available only on NLM) Specifies whether to replace an unmappable character or simply return an error. (See explanation in "Remarks" below.)

Return Values

These are common return values; see [Return Values](#) (*Return Values for C*) for more information.

0x0000	Successful
0xFE10	UNI_HANDLE_BAD
0xFE0D	UNI_NO_DEFAULT
0xFE0E	UNI_RULES_CORRUPT
0xFE0F	UNI_HANDLE_MISMATCH

Remarks

For cross-platform operations, `NWLocalToUnicode` uses only the first six parameters. The seventh parameter is optionally available only for NLM applications.

On Win32 clients, this routine calls `MultiByteToWideChar` which results in some differences from other platforms. If there is insufficient space in the output buffer, Win32 clients set `len` to zero, and do not null terminate the buffer. Non-Win32 clients always return the number of unicode characters written into the output buffer and always null terminate.

If an input character is unmappable, Win32 clients use a default substitute character, not the `noMap` character. On non-Win32 clients, an unmappable character is replaced by the `noMap` character. If the `noMap` character is zero, it uses the default character contained in the rule table. If the rule table has no default, `UNI_NO_DEFAULT` is returned.

The `allowNoMapFlag` parameter provides another optional behavior, but only for the NLM platform (`N_PLAT_NLM` must be defined). By default, on NLM applications `NWLocalToUnicode` handles unmappable characters in the same way as non-Win32 clients described above. To specify

behavior explicitly, define `EXCLUDE_UNICODE_NLM_COMPATIBILITY_MACROS` and pass one of the following values for `allowNoMapFlag`:

- `DONT_USE_NOMAP_CHAR`-`NWLocalToUnicode` returns `UNI_NO_DEFAULT` any time an unmappable character is encountered.
- `USE_NOMAP_CHAR`-`NWLocalToUnicode` provides the default behavior of non-Win32 clients described above.

For examples, see

- [Section 3.2, “Example: NWGetLocalToUnicodeHandle,” on page 44](#)
- [Section 3.7, “Example: NWLocalToUnicode with Buffer Overflow,” on page 47](#)

See Also

[NWGetLocalToUnicodeHandle \(page 66\)](#), [NWUnicodeToLocal \(page 89\)](#)

NWLUnicodeToUTF8

Converts a Unicode string to UTF-8 format.

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
N_GLOBAL_LIBRARY(nint) NWLUnicodeToUTF8 (  
    punicode    uniStr,  
    nuint       maxSize,  
    pnuint8     utf8Str,  
    pnuint      utf8Size);
```

Pascal Syntax

uses netwin32

```
Function NWLUnicodeToUTF8  
    (uniStr : punicode;  
    maxSize : nuint;  
    utf8Str : pnuint8;  
    utf8Size : pnuint  
): nint;
```

Parameters

uniStr

(IN) Points to the Unicode-formatted string.

maxSize

(IN) Specifies the number of bytes allocated for `utf8Str`.

utf8Str

(OUT) Points to a buffer that holds the new UTF-8 string.

utf8Size

(OUT) Points to the length (in bytes) of the string contained in `utf8Str`, including the string termination character (optional).

Return Values

These are common return values; see [Return Values \(*Return Values for C*\)](#) for more information.

0	N_SUCCESS
-500	UNI_INSUFFICIENT_BUFFER

Remarks

For sample code, see [utf8.c \(../../../../samplecode/clib_sample/intl/utf8/utf8.c.html\)](#).

See Also

[NWLUnicodeToUTF8Size \(page 80\)](#), [NWLUTF8ToUnicode \(page 81\)](#), [NWLUTF8ToUnicodeSize \(page 83\)](#)

NWLUnicodeToUTF8Size

Computes the number of bytes that must be allocated to store a Unicode string in UTF-8 format.

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
N_GLOBAL_(nuint) NWLUnicodeToUTF8Size (  
    punicode    uniStr);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWLUnicodeToUTF8Size  
    (uniStr : punicode  
): nint;
```

Parameters

uniStr

(IN) Points to a Unicode string.

Return Values

Returns the size (in bytes) required to store a Unicode string (including the string termination character) in UTF-8 format.

Remarks

For sample code, see [utf8.c \(../../../../samplecode/clib_sample/intl/utf8/utf8.c.html\)](#).

See Also

[NWLUnicodeToUTF8 \(page 78\)](#), [NWLUTF8ToUnicode \(page 81\)](#), [NWLUTF8ToUnicodeSize \(page 83\)](#)

NWLUTF8ToUnicode

Converts a UTF-8 string to Unicode.

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
N_GLOBAL_LIBRARY(nint) NWLUTF8ToUnicode (  
    puint8    utf8Str,  
    nuint     maxSize,  
    punicode  uniStr,  
    puint     uniSize,  
    ppnstr    badSequence);
```

Pascal Syntax

uses netwin32

```
Function NWLUTF8ToUnicode  
    (utf8Str : puint8;  
    maxSize : nuint;  
    uniStr : punicode;  
    uniSize : puint;  
    badSequence : ppnstr  
): nint;
```

Parameters

utf8Str

(IN) Points to the UTF-8 string to be converted.

maxSize

(IN) Specifies the size (in bytes) allocated for uniStr.

uniStr

(OUT) Points to a buffer to hold the converted Unicode string.

uniSize

(OUT) Points to the length (in bytes) of the converted string contained in uniStr, including the string termination character (optional).

badSequence

(OUT) Points to a bad UTF-8 sequence if an error occurs (optional).

Return Values

These are common return values; see [Return Values](#) (*Return Values for C*) for more information.

0	N_SUCCESS
-500	UNI_INSUFFICIENT_BUFFER
-506	UNI_ILLEGAL_UTF8_CHARACTER

Remarks

For sample code, see [utf8.c](#) ([../../samplecode/clip_sample/intl/utf8/utf8.c.html](#)).

See Also

[NWLUnicodeToUTF8](#) (page 78), [NWLUnicodeToUTF8Size](#) (page 80), [NWLUTF8ToUnicodeSize](#) (page 83)

NWLUTF8ToUnicodeSize

Computes the number of bytes that must be allocated to convert a UTF-8 string to Unicode.

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
N_GLOBAL_LIBRARY(nint) NWLUTF8ToUnicodeSize (  
    puint8  utf8Str,  
    puint   size);
```

Pascal Syntax

uses netwin32

```
Function NWLUTF8ToUnicodeSize  
    (utf8Str : puint8;  
    size : puint  
): nint;
```

Parameters

utf8Str

(IN) Points to a UTF-8 string.

size

(OUT) Points to the number of bytes necessary to represent the Unicode string, including the string termination character.

Return Values

These are common return values; see [Return Values \(Return Values for C\)](#) for more information.

0	N_SUCCESS
-506	UNI_ILLEGAL_UTF8_CHARACTER

Remarks

For sample code, see [utf8.c \(../../../../samplecode/clib_sample/intl/utf8/utf8.c.html\)](#).

See Also

[NWLUnicodeToUTF8 \(page 78\)](#), [NWLUnicodeToUTF8Size \(page 80\)](#), [NWLUTF8ToUnicode \(page 81\)](#)

NWUnicodeCompare

Compares one Unicode character to another after having converted them using the unicode-to-collation rule table

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(nint) NWUnicodeCompare (
    nptr      ruleHandle,
    unicode   chr1,
    unicode   chr2);
```

Pascal Syntax

```
uses netwin32

Function NWUnicodeCompare
  (ruleHandle : nptr;
   char1 : unicode;
   char2 : unicode
  ) : nint;
```

Parameters

ruleHandle

(IN) Points to the rule table handle for unicode-to-collation conversion.

chr1

(IN) Specifies the 1st character.

chr2

(IN) Specifies the 2nd character.

Return Values

<0	If chr1 < chr2
----	----------------

=0	If chr1 = chr2
>0	If chr1 > chr2

Remarks

For sample code, see [Section 3.8, “Example: NWUnicodeCompare,”](#) on page 48.

See Also

[NWGetCollationHandle](#) (page 65), [NWUnicodeToCollation](#) (page 87)

NWUnicodeToCollation

Converts a Unicode string to an array of collation weights for use in comparison operations to provide proper sorting for the current country

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(nint) NWUnicodeToCollation (
    nptr                ruleHandle,
    punicode            dest,
    nuint32             maxLen,
    const unicode N_FAR *src,
    unicode             noMap,
    pnuint32            len);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWUnicodeToCollation
  (ruleHandle : nptr;
  dest : punicode;
  maxLen : nuint32;
  src : punicode;
  noMap : unicode;
  len : pnuint32
) : nint;
```

Parameters

ruleHandle

(IN) Points to the rule table handle for unicode-to-collation conversion.

dest

(OUT) Points to the buffer for resulting Unicode collation weights.

maxLen

(IN) Specifies the maximum number of Unicode characters in the `dest` parameter. The buffer is null terminated.

src

(IN) Points to the buffer with source Unicode.

noMap

(IN) Specifies no map character.

len

(OUT) Points to the number of characters copied into the `dest` parameter, including the 2-byte null termination character.

Return Values

These are common return values; see [Return Values \(Return Values for C\)](#) for more information.

0x0000	Successful
0xFE10	UNI_HANDLE_BAD
0xFE0D	UNI_NO_DEFAULT
0xFE0E	UNI_RULES_CORRUPT
0xFE0F	UNI_HANDLE_MISMATCH

Remarks

On Win32 clients, this routine calls `wcsxfrm` which results in some differences from other platforms. If there is insufficient space in the output buffer, Win32 clients set `len = maxLen`, do not null terminate the output buffer, and return status -1. Non-Win32 clients always return the number of unicode characters written into the output buffer and always null terminate.

`NWUnicodeToCollation` is similar to the C `strxfrm`.

For sample code, see [Section 3.3, “Example: NWGetUnicodeToCollationHandle,”](#) on page 44.

See Also

[NWGetCollationHandle](#) (page 65), [NWUnicodeCompare](#) (page 85)

NWUnicodeToLocal

Converts a Unicode character string to local (code page based) character string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY (nint) NWUnicodeToLocal (
    nptr                ruleHandle,
    puint8              dest,
    size_t              maxLen,
    const unicode N_FAR *src,
    nuint8              noMap,
    size_t N_FAR        *len,
    nuint32             allowNoMapFlag);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWUnicodeToLocal
(ruleHandle : nptr;
 dest : nptr;
 maxLen : nuint32;
 src : punicode;
 noMap : nuint8;
 len : puint;
 allowNoMapFlag : nuint32 (*optional, available on NLM only*) );
```

Parameters

ruleHandle

(IN) Points to the rule table handle for Unicode-to-local conversion.

dest

(OUT) Points to the buffer for resulting character string.

maxLen

(IN) Specifies the maximum number of bytes in dest.

src

(IN) Points to the buffer containing the source Unicode.

noMap

(IN) Specifies the no map character.

len

(OUT) Points to the number of characters copied into the `dest` parameter (including the null byte).

allowNoMapFlag

(IN) (Optional, available only on NLM) Specifies whether to replace an unmappable character or simply return an error. (See explanation in "Remarks" below.)

Return Values

These are common return values; see [Return Values \(Return Values for C\)](#) for more information.

0x0000	Successful
0xFE10	UNI_HANDLE_BAD
0xFE0D	UNI_NO_DEFAULT
0xFE0E	UNI_RULES_CORRUPT
0xFE0F	UNI_HANDLE_MISMATCH

Remarks

For cross-platform operations, `NWUnicodeToLocal` uses only the first six parameters. The seventh parameter is optionally available only for NLM applications.

On Win32 clients, this routine calls `WideCharToMultiByte` which results in some differences from other platforms. If there is insufficient space in the output buffer, Win32 clients set `len` to zero and do not null terminate the buffer. Non-Win32 clients always return the number of bytes written into the output buffer and always null terminate.

If the `noMap` character is zero and an unmappable character is encountered, Win32 clients use the system default substitution character. Non-Win32 clients use the default character contained in the rule table. If the rule table has no default, then error code `UNI_NO_DEFAULT` is returned.

The `allowNoMapFlag` parameter provides another optional behavior, but only for the NLM platform (`N_PLAT_NLM` must be defined). By default, on NLM applications `NWUnicodeToLocal` handles unmappable characters in the same way as non-Win32 clients described above. To specify behavior explicitly, define `EXCLUDE_UNICODE_NLM_COMPATIBILITY_MACROS` and pass one of the following values for `allowNoMapFlag`:

- `DONT_USE_NOMAP_CHAR`-`NWUnicodeToLocal` returns `UNI_NO_DEFAULT` any time an unmappable character is encountered.
- `USE_NOMAP_CHAR`-`NWUnicodeToLocal` provides the default behavior of non-Win32 clients described above.

For sample code, see

- [Section 3.4, “Example: NWGetUnicodeToLocalHandle,” on page 45](#)
- [Section 3.9, “Example: NWUnicodeToLocal with Buffer Overflow,” on page 49](#)
- [Section 3.10, “Example: NWUnicodeToLocal with Unmappable Character,” on page 50](#)

See Also

[NWGetUnicodeToLocalHandle \(page 69\)](#), [NWLocalToUnicode \(page 75\)](#)

NWUnicodeToMonocase

Converts a mixed upper/lower case Unicode string to a monocase Unicode string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(nint) NWUnicodeToMonocase (
    nptr                ruleHandle,
    punicode            dest,
    nuint32             maxLen,
    const unicode N_FAR *src,
    pnuint32            len);
```

Pascal Syntax

```
uses netwin32

Function NWUnicodeToMonocase
  (ruleHandle : nptr;
  dest : punicode;
  maxLen : size_t;
  src : punicode;
  len : psize_t
) : nint;
```

Parameters

ruleHandle

(IN) Points to the rule table handle for unicode-to-monocase conversion.

dest

(OUT) Points to the buffer for the resulting monocase Unicode string.

maxLen

(IN) Specifies the maximum number of Unicode characters in the `dest` parameter, including the NULL terminator.

src

(IN) Points to the buffer with source Unicode.

len

(OUT) Points to the number of characters copied to the `dest` parameter including the NULL terminator.

Return Values

These are common return values; see [Return Values \(Return Values for C\)](#) for more information.

0x0000	Successful
0xFE10	UNI_HANDLE_BAD
0xFE0E	UNI_RULES_CORRUPT
0xFE0F	UNI_HANDLE_MISMATCH

Remarks

NWUnicodeToMonocase converts a Unicode string having a mixture of upper/lower case characters to a Unicode string consistently having only one case, according to the monocase rule table.

For Windows 95, NWUnicodeToMonocase is limited to a 256-character string.

For sample code, see [Section 3.5, “Example: NWGetUnicodeToMonocaseHandle,”](#) on page 46.

See Also

[NWGetMonocaseHandle \(page 67\)](#)

NWUnloadRuleTable

Deallocates memory for a rule table set up and allocated by NWLoadRuleTable

NetWare Server: 4.x, 5.x, 6.x

Platform: Windows 95, Windows 98, Windows NT

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>
```

```
N_EXTERN_LIBRARY(nint) NWUnloadRuleTable (
    nptr ruleHandle);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWUnloadRuleTable
    (ruleHandle : nptr
) : nint;
```

Parameters

ruleHandle

(IN) Points to the rule table handle.

Return Values

These are common return values; see [Return Values](#) (*Return Values for C*) for more information.

0x0000	Successful
0xFE10	UNI_HANDLE_BAD

See Also

[NWLoadRuleTable](#) (page 73)

NWUSByteToUnicode

Converts a NULL-terminated byte string into a Unicode string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUSByteToUnicode (
    punicode          unicodeOutput,
    nuint             outputBufferLen,
    const nuint8 N_FAR *byteInput,
    pnuint           actualLength);
```

Pascal Syntax

uses netwin32

```
Function NWUSByteToUnicode
  (unicodeOutput : punicode;
   outputBufferLen : nuint;
   byteInput : const nuint8;
   actualLength : pnuint
  ): nint;
```

Parameters

unicodeOutput

(OUT) Points to the output buffer to receive the resulting Unicode string (optional).

outputBufferLen

(IN) Specifies the maximum size of the output buffer in Unicode characters.

byteInput

(IN) Points to the input buffer containing the byte text to be converted.

actualLength

(OUT) Points to the returned length (in Unicode characters) of the converted string (optional). Does not include the NULL terminator.

Return Values

0x0000	SUCCESSFUL
0xFDEE	NWU_BUFFER_FULL
0xFDE0	NWU_NO_CONVERTER

Remarks

Call `NWUSByteToUnicodePath` whenever the byte string to be converted is a file path.

`NWUSByteToUnicode` converts an unmappable byte into the substitute Unicode character.

`NWUSByteToUnicode` converts a special byte sequence into a Unicode character. For example, "[2620]" is converted to the single Unicode character, 0x2620.

Call `NWUSByteToUnicode` to determine the size of the string before it is converted by setting the `unicodeOutput` parameter to `NULL`. The `outputBufferLen` parameter will be ignored, a converted string will not be returned, and the length of the string if it were converted will be returned in the `actualLength` parameter.

See [esbuni.c \(../../samplecode/clib_sample/intl/esbuni/esbuni.c.html\)](#) for sample code.

See Also

[NWUSByteToUnicodePath \(page 97\)](#)

NWUSByteToUnicodePath

Converts a NULL-terminated file path byte string into a Unicode string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUSByteToUnicodePath (
    punicode                unicodeOutput,
    nuint                   outputBufferLen,
    const nuint8 N_FAR     *byteInput,
    pnuint                  actualLength);
```

Pascal Syntax

uses netwin32

```
Function NWUSByteToUnicodePath
    (unicodeOutput : punicode;
    outputBufferLen : nuint;
    byteInput : const nuint8;
    actualLength : pnuint
): nint;
```

Parameters

unicodeOutput

(OUT) Points to the output buffer to receive the resulting Unicode string (optional).

outputBufferLen

(IN) Specifies the maximum size of the output buffer in Unicode characters.

byteInput

(IN) Points to the input buffer containing the byte string to be converted.

actualLength

(OUT) Points to the returned length (in Unicode characters) of the converted string (optional). Does not include the NULL terminator.

Return Values

0x0000	SUCCESSFUL
0xFDEE	NWU_BUFFER_FULL
0xFDE0	NWU_NO_CONVERTER

Remarks

Call `NWUSByteToUnicodePath` whenever the byte string to be converted is a file path.

`NWUSByteToUnicodePath` converts an unmappable byte into the substitute Unicode character.

`NWUSByteToUnicodePath` converts a special byte sequence into a Unicode character. For example, "[2620]" is converted to the single Unicode character, 0x2620.

Call `NWUSByteToUnicodePath` to determine the size of the string before it is converted by setting the `unicodeOutput` parameter to `NULL`. The `outputBufferLen` parameter will be ignored, a converted string will not be returned, and the length of the string if it were converted will be returned in the `actualLength` parameter.

See [esbunip.c \(../../samplecode/clib_sample/intl/esbunip/esbunip.c.html\)](#) for sample code.

See Also

[NWUSByteToUnicode \(page 95\)](#)

NWUSGetCodePage

Returns the codepage and country of the standard converter

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUSGetCodePage (
    puint    pCodePage,
    puint    pCountry);
```

Pascal Syntax

```
uses netwin32

Function NWUSGetCodePage
    (pCodePage : puint;
    pCountry : puint
): nint;
```

Parameters

pCodePage

(OUT) Points to the local code page used for the Unicode/byte converter.

pCountry

(OUT) Points to the local country code.

Return Values

NWUSGetCodePage always returns zero.

Remarks

NWUSGetCodePage returns the codepage of the standard byte/Unicode converter. It also returns the country ID of the system. If NWUSStandardUnicodeInit has not yet been called, NWUSGetCodePage returns the codepage and country ID that will be used when NWUSStandardUnicodeInit is called.

If an error occurs when `NWUSStandardUnicodeInit` is called, `NWUSGetCodePage` might be useful for printing an error message to tell the user which converters are needed.

See [esgetcp.c \(../../../../samplecode/clib_sample/intl/esgetcp/esgetcp.c.html\)](#) for sample code.

See Also

[NWUSStandardUnicodeInit \(page 105\)](#)

NWUSLenByteToUnicode

Converts a length-specified byte string into a Unicode string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUSLenByteToUnicode (
    punicode          unicodeOutput,
    nuint             outputBufferLen,
    const nuint8 N_FAR *byteInput,
    nuint             inLength,
    pnuint            actualLength);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWUSLenByteToUnicode
    (unicodeOutput : punicode;
    outputBufferLen : nuint;
    byteInput : const nuint8;
    inLength : nuint;
    actualLength : pnuint
): nint;
```

Parameters

unicodeOutput

(OUT) Points to the output buffer to receive the resulting Unicode string (optional).

outputBufferLen

(IN) Specifies the maximum size of the output buffer in Unicode characters.

byteInput

(IN) Points to the input buffer containing the byte text to be converted.

inLength

(IN) Specifies the length of the input string in bytes (might not be NULL-terminated).

actualLength

(OUT) Points to the returned length (in Unicode characters) of the converted string (optional). Does not include the NULL terminator.

Return Values

0x0000	SUCCESSFUL
0xFDEE	NWU_BUFFER_FULL
0xFDE0	NWU_NO_CONVERTER

Remarks

If NULL is encountered in the input string, it is treated as the end of the string and the remaining characters are ignored.

Call `NWUSLenByteToUnicodePath` whenever the byte string to be converted is a file path.

`NWUSLenByteToUnicode` converts an unmappable byte into the substitute Unicode character.

`NWUSLenByteToUnicode` converts a special byte sequence into a Unicode character. For example, "[2620]" is converted to the single Unicode character, 0x2620.

Call `NWUSLenByteToUnicode` to determine the size of the string before it is converted by setting the `unicodeOutput` parameter to NULL. The `outputBufferLen` parameter will be ignored, a converted string will not be returned, and the length of the string if it were converted will be returned in the `actualLength` parameter.

To determine the behavior of `NWUSLenByteToUnicode` when an embedded NULL is encountered, see [“Length-Specified Byte String Conversion” on page 26](#).

See [eslbuni.c \(../../samplecode/clib_sample/intl/eslbuni/eslbuni.c.html\)](#) for sample code.

See Also

[NWUSLenByteToUnicodePath \(page 103\)](#), [NWUSUnicodeToUntermByte \(page 116\)](#)

NWUSLenByteToUnicodePath

Converts a length-specified file path byte string into a Unicode string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>
```

```
N_EXTERN_LIBRARY(nint) NWUSLenByteToUnicodePath (  
    punicode                unicodeOutput,  
    nuint                   outputBufferLen,  
    const nuint8 N_FAR      *byteInput,  
    nuint                   inLength,  
    pnuint                  actualLength);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWUSLenByteToUnicodePath  
    (unicodeOutput : punicode;  
    outputBufferLen : nuint;  
    byteInput : const nuint8;  
    inLength : nuint;  
    actualLength : pnuint  
): nint;
```

Parameters

unicodeOutput

(OUT) Points to the output buffer to receive the resulting Unicode string (optional).

outputBufferLen

(IN) Specifies the maximum size of the output buffer in Unicode characters.

byteInput

(IN) Points to the input buffer containing the byte string to be converted.

inLength

(IN) Specifies the length of the input string in bytes (might not be NULL-terminated).

actualLength

(OUT) Points to the returned length (in Unicode characters) of the converted string (optional). Does not include the NULL terminator.

Return Values

0x0000	SUCCESSFUL
0xFDEE	NWU_BUFFER_FULL
0xFDE0	NWU_NO_CONVERTER

Remarks

Call `NWUSLenByteToUnicodePath` whenever the byte string to be converted is a file path.

`NWUSLenByteToUnicodePath` converts an unmappable byte into the substitute Unicode character.

`NWUSLenByteToUnicodePath` converts a special byte sequence into a Unicode character. For example, "[2620]" is converted to the single Unicode character, 0x2620.

Call `NWUSLenByteToUnicodePath` to determine the size of the string before it is converted by setting the `unicodeOutput` parameter to NULL. The `outputBufferLen` parameter will be ignored, a converted string will not be returned, and the length of the string if it were converted will be returned in the `actualLength` parameter.

To determine the behavior of `NWUSLenByteToUnicodePath` when an embedded NULL is encountered, see [“Length-Specified Byte String Conversion” on page 26](#).

See [eslbunip.c \(../../samplecode/clib_sample/intl/eslbunip/eslbunip.c.html\)](#) for sample code.

See Also

[NWUSLenByteToUnicode \(page 101\)](#), [NWUSUnicodeToUntermBytePath \(page 118\)](#)

NWUSStandardUnicodeInit

Loads both the lower and upper case converters needed for the standard Unicode functions

Local Servers: blocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>
```

```
N_EXTERN_LIBRARY(nint) NWUSStandardUnicodeInit (
    void);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWUSStandardUnicodeInit
    (void
): nint;
```

Return Values

0x0000	SUCCESSFUL
0xFDE8	NWU_CONVERTER_CORRUPT
0xFDE6	NWU_OUT_OF_MEMORY
0xFDE5	NWU_READ_FAILED (NIOS only)
0xFDE4	NWU_OPEN_FAILED (NIOS only)
0xFDE3	NWU_NO_PERMISSION (NIOS only)
0xFDE2	NWU_TOO_MANY_FILES (NIOS only)
0xFDE1	NWU_CONVERTER_NOT_FOUND

For an explanation of the NWU_CONVERTER_NOT_FOUND error, see [“NWU_CONVERTER_NOT_FOUND Error” on page 23](#)

Remarks

The `NWUSStandardUnicodeInit` function is equivalent to:

- loading the appropriate Unicode to byte converter for the current code page
- loading a lower case and an upper case converter
- setting the converter to use the default substitution character for unmappable bytes
- enabling the default no map and scan/parse Unicode handlers

`NWUSStandardUnicodeInit` can be nested. However, each time `NWUSStandardUnicodeInit` is called, the `NWUSStandardUnicodeRelease` function must be called to release associated resources.

On the NLM platform, the standard converter is initialized when the `LOCNLM32.NLM` file is loaded. It is still recommended that your applications call `NWUSStandardUnicodeInit` and the `NWUSStandardUnicodeRelease` function explicitly.

See [esinit.c \(../../samplecode/clib_sample/intl/esinit/esinit.c.html\)](#) for sample code.

NOTE: Access to global variables initialized with a standard converter can vary according to platform, as explained in [“Conversion Operations” on page 21](#).

See Also

[NWUSStandardUnicodeRelease \(page 109\)](#)

NWUSStandardUnicodeOverride

Replaces the current standard converter with a converter for the specified codepage

Local Servers: blocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>
```

```
N_EXTERN_LIBRARY(nint) NWUSStandardUnicodeOverride (  
    nuint    codepage);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWUSStandardUnicodeOverride  
    (codepage : nuint  
): nint;
```

Parameters

codepage

(IN) Specifies the codepage of the replacement standard converter.

Return Values

0x0000	SUCCESSFUL
0xFDE8	NWU_CONVERTER_CORRUPT
0xFDE6	NWU_OUT_OF_MEMORY
0xFDE5	NWU_READ_FAILED (NIOS only)
0xFDE4	NWU_OPEN_FAILED (NIOS only)
0xFDE3	NWU_NO_PERMISSION (NIOS only)
0xFDE2	NWU_TOO_MANY_FILES (NIOS only)
0xFDE1	NWU_CONVERTER_NOT_FOUND

For an explanation of the `NWU_CONVERTER_NOT_FOUND` error, see [“NWU_CONVERTER_NOT_FOUND Error” on page 23](#)

Remarks

`NWUSStandardUnicodeOverride` replaces the current standard Unicode converter with the converter specified in the `codepage` parameter. The specified converter performs all standard Unicode conversions until it is changed with another call to `NWUSStandardUnicodeOverride` or is released with a call to `NWUSStandardUnicodeRelease`.

If a standard converter has not been loaded with a call to `NWUSStandardUnicodeInit`, a call to `NWUSStandardUnicodeOverride` initializes the specified standard converter and sets up global variables needed for standard Unicode conversions.

`NWUSStandardUnicodeOverride` cannot be nested as can `NWUSStandardUnicodeInit`. However, `NWUSStandardUnicodeOverride` can be called multiple times to change standard converters.

When conversion operations are completed, release the current converter and associated resources by calling `NWUSStandardUnicodeRelease`.

NOTE: Access to global variables initialized with a standard converter can vary according to platform, as explained in [“Conversion Operations” on page 21](#).

See Also

[NWUSStandardUnicodeInit \(page 105\)](#), [NWUSStandardUnicodeRelease \(page 109\)](#)

NWUSStandardUnicodeRelease

Releases all resources allocated by the NWUSStandardUnicodeInit function

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>
```

```
N_EXTERN_LIBRARY(void) NWUSStandardUnicodeRelease (
    void);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWUSStandardUnicodeRelease
    (void
): void;
```

Remarks

Call the NWUSStandardUnicodeRelease function only after calling the NWUSStandardUnicodeInit function. Otherwise, resources required by another application could be released.

See [esrel.c \(../../samplecode/clib_sample/intl/esrel/esrel.c.html\)](#) for sample code.

See Also

[NWUSStandardUnicodeInit \(page 105\)](#)

NWUSUnicodeToByte

Converts a NULL-terminated Unicode string into a byte string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUSUnicodeToByte (
    puint8          byteOutput,
    nuint           outputBufferLen,
    const unicode N_FAR *unicodeInput,
    puint           actualLength);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWUSUnicodeToByte
  (byteOutput : puint8;
   outputBufferLen : nuint;
   unicodeInput : punicode;
   actualLength : puint
  ): nint;
```

Parameters

byteOutput

(OUT) Points to the output buffer to receive the resulting byte string (optional).

outputBufferLen

(IN) Specifies the maximum size of the output buffer in bytes.

unicodeInput

(IN) Points to the input buffer containing the Unicode string to be converted.

actualLength

(OUT) Points to the returned length (in bytes) of the converted string (optional). Does not include the NULL terminator.

Return Values

0x0000	SUCCESSFUL
0xFDEE	NWU_BUFFER_FULL
0xFDE0	NWU_NO_CONVERTER

Remarks

Call `NWUSUnicodeToBytePath` whenever the Unicode string to be converted is a file path.

The `NWU_BUFFER_FULL` error can occur because the output buffer has been allocated with insufficient space. Because of the default conversion behavior described above, byte strings can be as much as six times longer than the number of characters in the input string (or three times longer than the number of bytes in the input string).

`NWUSUnicodeToByte` converts an unmappable Unicode character into a special 6-byte sequence. For example, `0x2620` is converted to `"[2620]"`.

`NWUSUnicodeToByte` does not recognize any special Unicode sequences for conversion. For example, the Unicode string `"ab[81]cd"` will be returned as the byte string `"ab[81]cd"`.

Call `NWUSUnicodeToByte` to determine the size of the string before it is converted by setting the `byteOutput` parameter to `NULL`. The `outputBufferLen` parameter will be ignored, a converted string will not be returned, and the length of the string if it were converted will be returned in the `actualLength` parameter.

See [`esunib.c \(.../samplecode/clib_sample/intl/esunib/esunib.c.html\)`](http://esunib.c (.../samplecode/clib_sample/intl/esunib/esunib.c.html)) for sample code.

NWUSUnicodeToBytePath

Converts a NULL-terminated file path Unicode string into a byte string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUSUnicodeToBytePath (
    puint8          byteOutput,
    nuint           outputBufferLen,
    const unicode N_FAR *unicodeInput,
    puint           actualLength);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWUSUnicodeToBytePath
  (byteOutput : nuint8;
  outputBufferLen : nuint;
  unicodeInput : const unicode;
  actualLength : puint
): nint;
```

Parameters

byteOutput

(OUT) Points to the output buffer to receive the resulting byte string (optional).

outputBufferLen

(IN) Specifies the maximum size of the output buffer in bytes.

unicodeInput

(IN) Points to the input buffer containing the Unicode string to be converted.

actualLength

(OUT) Points to the returned length (in bytes) of the converted string (optional). Does not include the NULL terminator.

Return Values

0x0000	SUCCESSFUL
0xFDEE	NWU_BUFFER_FULL
0xFDE0	NWU_NO_CONVERTER

Remarks

Call `NWUSUnicodeToBytePath` whenever the Unicode string to be converted is a file path.

The `NWU_BUFFER_FULL` error can occur because the output buffer has been allocated with insufficient space. Because of the default conversion behavior described above, byte strings can be as much as six times longer than the number of characters in the input string (or three times longer than the number of bytes in the input string).

Regardless of the language being converted, `NWUSUnicodeToBytePath` interprets Unicode yen (00A5), won (20A9), backslash (005C), and the Novell defined path separator (F8F7) all as path separators and converts each to the byte backslash character (5C).

`NWUSUnicodeToBytePath` converts an unmappable Unicode character into a special 6-byte sequence. For example, 0x2620 is converted to "[2620]".

`NWUSUnicodeToBytePath` does not recognize any special Unicode sequences for conversion. For example, the Unicode string "ab[81]cd" will be returned as the byte string "ab[81]cd".

Call `NWUSUnicodeToBytePath` to determine the size of the string before it is converted by setting the `byteOutput` parameter to `NULL`. The `outputBufferLen` parameter will be ignored, a converted string will not be returned, and the length of the string if it were converted will be returned in the `actualLength` parameter.

See [esunibp.c \(../../samplecode/clib_sample/intl/esunibp/esunibp.c.html\)](#) for sample code.

See Also

[NWUSUnicodeToByte \(page 110\)](#)

NWUSUnicodeToLowerCase

Converts a NULL-terminated Unicode string to Unicode lower case characters

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUSUnicodeToLowerCase (
    punicode           lowerCaseOutput,
    nuint              outputBufferLen,
    const unicode N_FAR *unicodeInput,
    pnuint             actualLength);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWUSUnicodeToLowerCase
  (lowerCaseOutput : punicode;
  outputBufferLen : nuint;
  unicodeInput : const unicode;
  actualLength : pnuint
): nint;
```

Parameters

lowerCaseOutput

(OUT) Points to the output buffer to receive the resulting lower case string (optional).

outputBufferLen

(IN) Specifies the maximum size of the output buffer in Unicode characters.

unicodeInput

(IN) Points to the input buffer containing the Unicode string to convert.

actualLength

(OUT) Points to the returned length (in Unicode characters) of the converted string (optional). Does not include the NULL terminator.

Return Values

0x0000	SUCCESSFUL
0xFDEE	NWU_BUFFER_FULL
0xFDE0	NWU_NO_CONVERTER

Remarks

Lower case conversions are preferred for most operations since there are more lower case characters than upper case characters in the Unicode environment.

Call `NWUSUnicodeToLowerCase` to determine the size of the string before it is converted by setting the `lowerCaseOutput` parameter to `NULL`. The `outputBufferLen` parameter will be ignored, a converted string will not be returned, and the length of the string if it were converted will be returned in the `actualLength` parameter.

See [esunilow.c \(../../samplecode/clib_sample/intl/esunilow/esunilow.c.html\)](#) for sample code.

NWUSUnicodeToUntermByte

Converts a NULL-terminated Unicode string into an unterminated byte string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUSUnicodeToUntermByte (
    puint8          byteOutput,
    nuint           outputBufferLen,
    const unicode N_FAR *unicodeInput,
    puint           actualLength);
```

Pascal Syntax

```
uses netwin32

Function NWUSUnicodeToUntermByte
  (byteOutput : puint8;
  outputBufferLen : nuint;
  unicodeInput : const unicode;
  actualLength : puint
): nint;
```

Parameters

byteOutput

(OUT) Points to the output buffer to receive the resulting unterminated byte string (optional).

outputBufferLen

(IN) Specifies the maximum size of the output buffer in bytes.

unicodeInput

(IN) Points to the input buffer containing the Unicode string to be converted.

actualLength

(OUT) Points to the returned length (in bytes) of the converted string (optional). Does not include the NULL terminator.

Return Values

0x0000	SUCCESSFUL
0xFDEE	NWU_BUFFER_FULL
0xFDE0	NWU_NO_CONVERTER

Remarks

The `NWU_BUFFER_FULL` error can occur because the output buffer has been allocated with insufficient space. Because of the default conversion behavior described above, byte strings can be as much as six times longer than the number of characters in the input string (or three times longer than the number of bytes in the input string).

`NWUSUnicodeToUntermByte` converts an unmappable Unicode character into a special unterminated 6-byte sequence. For example, `0x2620` is converted to `"[2620]"`.

`NWUSUnicodeToUntermByte` does not recognize any special Unicode sequences for conversion. For example, the Unicode string `"ab[81]cd"` will be returned as the byte string `"ab[81]cd"`.

Call `NWUSUnicodeToUntermByte` to determine the size of the string before it is converted by setting the `byteOutput` parameter to `NULL`. The `outputBufferLen` parameter will be ignored, a converted string will not be returned, and the length of the string if it were converted will be returned in the `actualLength` parameter.

See [esuniub.c \(../../samplecode/clib_sample/intl/esuniub/esuniub.c.html\)](#) for sample code.

See Also

[NWUSLenByteToUnicode \(page 101\)](#), [NWUSUnicodeToUntermBytePath \(page 118\)](#)

NWUSUnicodeToUntermBytePath

Converts a NULL-terminated file path Unicode string into an unterminated byte string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUSUnicodeToUntermBytePath (
    puint8          byteOutput,
    nuint           outputBufferLen,
    const unicode N_FAR *unicodeInput,
    puint           actualLength);
```

Pascal Syntax

```
uses netwin32

Function NWUSUnicodeToUntermBytePath
    (byteOutput : puint8;
    outputBufferLen : nuint;
    unicodeInput : const unicode;
    actualLength : puint
    ): nint;
```

Parameters

byteOutput

(OUT) Points to the output buffer to receive the resulting unterminated byte string (optional).

outputBufferLen

(IN) Specifies the maximum size of the output buffer in bytes.

unicodeInput

(IN) Points to the input buffer containing the Unicode string to be converted.

actualLength

(OUT) Points to the returned length (in bytes) of the converted string (optional). Does not include the NULL terminator.

Return Values

0x0000	SUCCESSFUL
0xFDEE	NWU_BUFFER_FULL
0xFDE0	NWU_NO_CONVERTER

Remarks

Call `NWUSUnicodeToUntermBytePath` whenever the Unicode string to be converted is a file path.

The `NWU_BUFFER_FULL` error can occur because the output buffer has been allocated with insufficient space. Because of the default conversion behavior described above, byte strings can be as much as six times longer than the number of characters in the input string (or three times longer than the number of bytes in the input string).

Regardless of the language being converted, `NWUSUnicodeToUntermBytePath` interprets Unicode yen (00A5), won (20A9), backslash (005C), and the Novell defined path separator (F8F7) all as path separators and converts each to the byte backslash character (5C).

`NWUSUnicodeToUntermBytePath` converts an unmappable Unicode character into a special unterminated 6-byte sequence. For example, 0x2620 is converted to "[2620]".

`NWUSUnicodeToUntermBytePath` does not recognize any special Unicode sequences for conversion. For example, the Unicode string "ab[81]cd" will be returned as the byte string "ab[81]cd".

Call `NWUSUnicodeToUntermBytePath` to determine the size of the string before it is converted by setting the `byteOutput` parameter to `NULL`. The `outputBufferLen` parameter will be ignored, a converted string will not be returned, and the length of the string if it were converted will be returned in the `actualLength` parameter.

See [esuniubp.c](#) ([../../samplecode/clib_sample/intl/esuniubp/esuniubp.c.html](#)) for sample code.

See Also

[NWUSLenByteToUnicodePath](#) (page 103), [NWUSUnicodeToUntermByte](#) (page 116)

NWUSUnicodeToUpperCase

Converts a NULL-terminated Unicode string to Unicode upper case characters

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUSUnicodeToUpperCase (
    punicode           upperCaseOutput,
    nuint              outputBufferLen,
    const unicode N_FAR *unicodeInput,
    pnuint             actualLength);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWUSUnicodeToUpperCase
  (upperCaseOutput : punicode;
  outputBufferLen : nuint;
  unicodeInput : const unicode;
  actualLength : pnuint
): nint;
```

Parameters

upperCaseOutput

(OUT) Points to the output buffer to receive the resulting upper case string (optional).

outputBufferLen

(IN) Specifies the maximum size of the output buffer in Unicode characters.

unicodeInput

(IN) Points to the input buffer containing the Unicode string to convert.

actualLength

(OUT) Points to the returned length (in Unicode characters) of the converted string (optional). Does not include the NULL terminator.

Return Values

0x0000	SUCCESSFUL
0xFDEE	NWU_BUFFER_FULL
0xFDE0	NWU_NO_CONVERTER

Remarks

Lower case conversions are preferred for most operations since there are more lower case characters than upper case characters in the Unicode environment.

Call `NWUSUnicodeToUpperCase` to determine the size of the string before it is converted by setting the `upperCaseOutput` parameter to `NULL`. The `outputBufferLen` parameter will be ignored, a converted string will not be returned, and the length of the string if it were converted will be returned in the `actualLength` parameter.

See [esuniup.c \(../../samplecode/clib_sample/intl/esuniup/esuniup.c.html\)](#) for sample code.

NWUXByteToUnicode

Converts a NULL-terminated byte string into a Unicode string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXByteToUnicode (
    pCONVERT          byteUniHandle,
    punicode          unicodeOutput,
    nuint             outputBufferLen,
    const nuint8 N_FAR *byteInput,
    pnuint            actualLength);
```

Pascal Syntax

```
uses netwin32

Function NWUXByteToUnicode
  (byteUniHandle : pCONVERT;
   unicodeOutput : punicode;
   outputBufferLen : nuint
   byteInput : const nuint8;
   actualLength : pnuint
  ): nint;
```

Parameters

byteUniHandle

(IN) Points to the converter handle.

unicodeOutput

(OUT) Points to the buffer to receive the converted Unicode string (optional).

outputBufferLen

(IN) Specifies the maximum size of the output buffer in bytes (0 specifies that the buffer size is not checked).

byteInput

(IN) Points to the input buffer containing the byte string to be converted.

actualLength

(OUT) Points to the returned length (in Unicode characters) of the converted string (optional). Does not include the NULL terminator.

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH
0xFDEC	NWU_UNMAPPABLE_CHAR
0xFDEE	NWU_BUFFER_FULL

Remarks

Passing a zero to the `outputBufferLen` parameter specifies that the size of the output buffer is not checked. It is the responsibility of the caller to assure a sufficient output buffer size.

If `NWU_UNMAPPABLE_CHAR` is returned, the buffer is not filled past the unmappable character, but is valid up to that character.

By default, `NWUXByteToUnicode` converts an unmappable byte into the substitute Unicode character.

By default, `NWUXByteToUnicode` converts a special byte sequence into a Unicode character. For example, "[2620]" is converted to the single Unicode character, 0x2620.

Call `NWUXByteToUnicode` to determine the size of the string before it is converted by setting the `unicodeOutput` parameter to `NULL`. The `outputBufferLen` parameter will be ignored, a converted string will not be returned, and the length of the string if it were converted will be returned in the `actualLength` parameter.

See [exbuni.c \(../../samplecode/clib_sample/intl/exbuni/exbuni.c.html\)](#) for sample code.

See Also

[NWUXByteToUnicodePath \(page 124\)](#)

NWUXByteToUnicodePath

Converts a NULL-terminated file path byte string into a Unicode string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXByteToUnicode (
    pCONVERT          byteUniHandle,
    punicode          unicodeOutput,
    nuint             outputBufferLen,
    const nuint8 N_FAR *byteInput,
    pnuint            actualLength);
```

Pascal Syntax

```
uses netwin32

Function NWUXByteToUnicode
    (byteUniHandle : pCONVERT;
    unicodeOutput : punicode;
    outputBufferLen : nuint
    byteInput : const nuint8;
    actualLength : pnuint
    ): nint;
```

Parameters

byteUniHandle

(IN) Points to the converter handle.

unicodeOutput

(OUT) Points to the buffer to receive the converted Unicode string (optional).

outputBufferLen

(IN) Specifies the maximum size of the output buffer in bytes (0 specifies that the buffer size is not checked).

byteInput

(IN) Points to the input buffer containing the byte file path string to be converted.

actualLength

(OUT) Points to the returned length (in Unicode characters) of the converted string (optional). Does not include the NULL terminator.

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH
0xFDEC	NWU_UNMAPPABLE_CHAR
0xFDEE	NWU_BUFFER_FULL

Remarks

When you want to convert a file path, call the `NWUXByteToUnicodePath` function rather than the `NWUXByteToUnicode` function.

Passing a zero to the `outputBufferLen` parameter specifies that the size of the output buffer is not checked. It is the responsibility of the caller to assure a sufficient output buffer size.

If `NWU_UNMAPPABLE_CHAR` is returned, the buffer is not filled past the unmappable character, but is valid up to that character.

By default, `NWUXByteToUnicodePath` converts an unmappable byte into the substitute Unicode character.

By default, `NWUXByteToUnicodePath` converts a special byte sequence into a Unicode character. For example, "[2620]" is converted to the single Unicode character, 0x2620.

Call `NWUXByteToUnicodePath` to determine the size of the string before it is converted by setting the `unicodeOutput` parameter to `NULL`. The `outputBufferLen` parameter will be ignored, a converted string will not be returned, and the length of the string if it were converted will be returned in the `actualLength` parameter.

See [exbunip.c \(../../samplecode/clib_sample/intl/exbunip/exbunip.c.html\)](#) for sample code.

See Also

[NWUXByteToUnicode \(page 122\)](#)

NWUXEnableOemEuro

Enables a Unicode converter to map the Unicode Euro Currency Symbol character to OEM codepages.

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
N_GLOBAL_LIBRARY(nint) NWUXEnableOemEuro (  
    pCONVERT    convert);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWUXEnableOemEuro  
    (convert : pCONVERT  
): nint;
```

Parameters

convert

(IN) Points to the Unicode converter handle.

Return Values

0	N_SUCCESS
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH
0xFDED	NWU_RANGE_ERROR

Remarks

The NetWare client converts file and directory names from ANSI to OEM codepages before sending them to the server. The client performs this conversion only for Windows applications, Windows Explorer, NWAdmin, etc.; there is no conversion for DOS applications.

Since the Euro character is not supported in any of the OEM codepages and it is supported in the ANSI codepages, Novell chose 0xCC to represent the character on the server. The line-drawing character that previously occupied that space is essentially removed from the character set, since line-drawing characters cannot be used in file names. (The line-drawing characters can be used to create files in DOS, but not in Windows.)

See Also

See [oemeuro.c \(../../samplecode/clib_sample/intl/oemeuro/oemeuro.c.html\)](#) for sample code.

NWUXGetByteFunctions

Returns the functions used for handling unmappable bytes

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXGetByteFunctions (
    pCONVERT    byteUniHandle,
    NMBYTE      *noMapByteFunc,
    SCBYTE      *scanByteFunc,
    PRBYTE      *parseByteFunc);
```

Pascal Syntax

```
uses netwin32

Function NWUXGetByteFunctions
  (byteUniHandle : pCONVERT;
   noMapByteFunc : NMBYTE;
   scanByteFunc  : SCBYTE
   parseByteFunc : PRBYTE
  ): nint;
```

Parameters

byteUniHandle

(IN) Points to the converter handle.

noMapByteFunc

(OUT) Points to the function to be called when an unmappable byte sequence is found (or set to NULL).

scanByteFunc

(OUT) Points to the function to scan for special data (or set to NULL).

parseByteFunc

(OUT) Points to the function to parse special data (or set to NULL).

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH

Remarks

The system-supplied NoMap byte function, which is not enabled by default, converts an unmappable byte 0xNN into the unicode string "[NN]".

The system-supplied scan/parse byte functions, which are enabled by default, scan for occurrences of the byte string "[NNNN]" (NNNN being any four hexadecimal digits) and converts the string to the single Unicode character 0xNNNN.

See [exgbfunc.c \(../../samplecode/clib_sample/intl/exgbfunc/exgbfunc.c.html\)](#) for sample code.

See Also

[NWUXGetNoMapAction \(page 132\)](#), [NWUXGetUniFunctions \(page 140\)](#), [NWUXGetSubByte \(page 136\)](#), [NWUXGetSubUni \(page 138\)](#), [NWUXSetNoMapAction \(page 154\)](#), [NWUXSetByteFunctions \(page 152\)](#), [NWUXSetUniFunctions \(page 162\)](#), [NWUXSetSubByte \(page 158\)](#), [NWUXSetSubUni \(page 160\)](#)

NWUXGetCharSize

Returns the character size (1 or 2) of the next character in the specified byte string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>
```

```
N_EXTERN_LIBRARY(nint) NWUXGetCharSize (
    pCONVERT          byteUniHandle,
    const unicode N_FAR *byteInput,
    pnuint             charSize);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWUXGetCharSize
    (byteUniHandle : pCONVERT;
    byteInput : const unicode;
    charSize : pnuint
): nint;
```

Parameters

byteUniHandle

(IN) Points to the converter handle.

byteInput

(IN) Points to a single or double-byte character in a byte string.

charSize

(OUT) Points to the returned character size.

Return Values

0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE

0xFDEB NWU_HANDLE_MISMATCH

Remarks

NWUXGetCharSize is provided so that user-written Scan and Parse functions are able to examine a byte string.

NOTE: **NWCharType** (Internationalization) interprets the specified character according to the native system codepage. NWUXGetCharSize uses the codepage of the specified converter.

See [excharsz.c \(../../samplecode/clip_sample/intl/excharsz/excharsz.c.html\)](http://samplecode/clip_sample/intl/excharsz/excharsz.c.html) for sample code.

NWUXGetNoMapAction

Returns the actions to follow when an unmappable byte sequence and an unmappable Unicode character are found

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXGetNoMapAction (
    pCONVERT    byteUniHandle,
    pnint       noMapByteAction,
    pnint       noMapUniAction);
```

Pascal Syntax

```
uses netwin32

Function NWUXGetNoMapAction
    (byteUniHandle : pCONVERT;
    noMapByteAction : pnint;
    noMapUniAction : pnint
    ): nint;
```

Parameters

byteUniHandle

(IN) Points to the converter handle.

noMapByteAction

(OUT) Points to the action to follow for unmappable bytes (optional, set to NULL if not needed).

noMapUniAction

(OUT) Points to the action to follow for unmappable Unicode characters (optional, set to NULL if not needed).

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH

Remarks

The `noMapByteAction` and `noMapUniAction` parameters return one of the following values:

NWU_RETURN_ERROR	
NWU_SUBSTITUTE	(Default for <code>noMapByteAction</code>)
NWU_CALL_HANDLER	(Default for <code>noMapUniAction</code>)

See [exgnomap.c \(../../../../samplecode/clib_sample/intl/exgnomap/exgnomap.c.html\)](#) for sample code.

See Also

[NWUXGetByteFunctions \(page 128\)](#), [NWUXGetUniFunctions \(page 140\)](#), [NWUXGetSubByte \(page 136\)](#), [NWUXGetSubUni \(page 138\)](#), [NWUXSetNoMapAction \(page 154\)](#), [NWUXSetByteFunctions \(page 152\)](#), [NWUXSetUniFunctions \(page 162\)](#), [NWUXSetSubByte \(page 158\)](#), [NWUXSetSubUni \(page 160\)](#)

NWUXGetScanAction

Returns the status of current scan/parse functions

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXGetScanAction (
    pCONVERT    byteUniHandle,
    pnint       scanByteAction,
    pnint       scanUniAction);
```

Pascal Syntax

```
uses netwin32

Function NWUXGetScanAction
  (byteUniHandle : pCONVERT;
   scanByteAction : pnint;
   scanUniAction : pnint
  ): nint;
```

Parameters

byteUniHandle

(IN) Points to the converter handle.

scanByteAction

(OUT) Points to the status of current byte scan/parse functions (optional, set to NULL if not needed).

scanUniAction

(OUT) Points to the status for current Unicode scan/parse functions (optional, set to NULL if not needed).

Return Values

0x0000	SUCCESSFUL
--------	------------

0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH
0xFDED	NWU_RANGE_ERROR

Remarks

The `scanByteAction` and `scanUniAction` parameters return one of the following values:

NWU_ENABLED	Scan/parse functions are enabled
NWU_DISABLED	Scan/parse functions are disabled

The default state of the `scanByteAction` parameter is `NWU_DISABLED` after a converter is initialized.

The default state of the `scanUniAction` parameter is `NWU_ENABLED`.

See [exgscan.c](#) ([../../samplecode/club_sample/intl_exgscan/exgscan/exgscan.c.html](#)) for sample code.

See Also

[NWUXSetScanAction](#) (page 156), [NWUXGetByteFunctions](#) (page 128), [NWUXGetUniFunctions](#) (page 140)

NWUXGetSubByte

Returns the substitution byte for the specified converter

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXGetSubByte (
    pCONVERT    byteUniHandle,
    puint8      substituteByte);
```

Pascal Syntax

```
uses netwin32

Function NWUXGetSubByte
    (byteUniHandle : pCONVERT;
    substituteByte : puint8
    ): nint;
```

Parameters

byteUniHandle

(IN) Points to the handle of the converter to be used.

substituteByte

(OUT) Points to the current substitution byte (see [“Substitution Characters” on page 24](#)).

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH

Remarks

See [exgsubb.c \(../../samplecode/clib_sample/intl/exgsubb/exgsubb.c.html\)](#) for sample code.

See Also

[NWUXGetNoMapAction \(page 132\)](#), [NWUXGetByteFunctions \(page 128\)](#), [NWUXGetSubUni \(page 138\)](#), [NWUXGetUniFunctions \(page 140\)](#), [NWUXSetNoMapAction \(page 154\)](#), [NWUXSetByteFunctions \(page 152\)](#), [NWUXSetUniFunctions \(page 162\)](#), [NWUXSetSubByte \(page 158\)](#), [NWUXSetSubUni \(page 160\)](#)

NWUXGetSubUni

Returns the current substitution Unicode character for the converter

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUGetSubUni (
    pCONVERT    byteUniHandle,
    punicode    substituteUni);
```

Pascal Syntax

```
uses netwin32

Function NWUGetSubUni
  (byteUniHandle : pCONVERT;
   substituteUni : punicode
  ): nint;
```

Parameters

byteUniHandle

(IN) Points to the converter handle.

substituteUni

(OUT) Points to the current substitution character (see [“Substitution Characters” on page 24](#)).

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH

Remarks

See [exgsubu.c \(../../../../samplecode/clib_sample/intl/exgsubu/exgsubu.c.html\)](#) for sample code.

See Also

[NWUXGetByteFunctions \(page 128\)](#), [NWUXGetNoMapAction \(page 132\)](#), [NWUXGetSubByte \(page 136\)](#), [NWUXGetUniFunctions \(page 140\)](#), [NWUXSetByteFunctions \(page 152\)](#), [NWUXSetNoMapAction \(page 154\)](#), [NWUXSetSubByte \(page 158\)](#), [NWUXSetSubUni \(page 160\)](#), [NWUXSetUniFunctions \(page 162\)](#)

NWUXGetUniFunctions

Returns the functions used for handling unmappable Unicode characters

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXGetUniFunctions (
    pCONVERT    byteUniHandle,
    NMUNI       *noMapUniFunc,
    SCUNI       *scanUniFunc,
    PRUNI       *parseUniFunc);
```

Pascal Syntax

```
uses netwin32

Function NWUXGetUniFunctions
  (byteUniHandle : pCONVERT;
   noMapUniFunc : NMUNI;
   scanUniFunc : SCUNI;
   parseUniFunc : PRUNI
  ): nint;
```

Parameters

byteUniHandle

(IN) Points to the converter handle.

noMapByteFunc

(OUT) Points to the Unicode function to be called when unmappable Unicode characters are found.

scanByteFunc

(OUT) Points to the Unicode function to scan for special data.

parseByteFunc

(OUT) Points to the Unicode function to parse special data.

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH

Remarks

The system-supplied NoMap Unicode function, which is enabled by default, converts an unmappable Unicode character 0xNNNN into the byte string "[NNNN]".

The system-supplied scan/parse Unicode functions, which are not enabled by default, scan for occurrences of the Unicode string "[NN]" (NN being any two hexadecimal digits) and converts the string to the single byte character 0xNN.

See [exgufunc.c](#) ([../../samplecode/clib_sample/intl/exgufunc/exgufunc.c.html](#)) for sample code.

See Also

[NWUXGetByteFunctions](#) (page 128), [NWUXGetNoMapAction](#) (page 132), [NWUXGetSubByte](#) (page 136), [NWUXGetSubUni](#) (page 138), [NWUXSetByteFunctions](#) (page 152), [NWUXSetNoMapAction](#) (page 154), [NWUXSetSubByte](#) (page 158), [NWUXSetSubUni](#) (page 160), [NWUXSetUniFunctions](#) (page 162)

NWUXLenByteToUnicode

Converts a length-specified byte string into a Unicode string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXLenByteToUnicode (
    pCONVERT          byteUniHandle,
    punicode           unicodeOutput,
    nuint              outputBufferLen,
    const nuint8 N_FAR *byteInput,
    nuint              inLength,
    pnuint             actualLength);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWUXLenByteToUnicode
  (byteUniHandle : pCONVERT;
   unicodeOutput : punicode;
   byteInput : const nuint8;
   inLength : nuint;
   actualLength : pnuint
  ): nint;
```

Parameters

byteUniHandle

(IN) Points to the converter handle.

unicodeOutput

(OUT) Points to the buffer to receive the converted Unicode string (optional).

outputBufferLen

(IN) Specifies the maximum size of the output buffer in bytes (0 specifies that the buffer size is not checked).

byteInput

(IN) Points to the input buffer containing the byte string to be converted.

inLength

(IN) Specifies the length of the input string in bytes (might not be NULL-terminated).

actualLength

(OUT) Points to the returned length (in Unicode characters) of the converted string not including the NULL terminator (optional).

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH
0xFDEC	NWU_UNMAPPABLE_CHAR
0xFDEE	NWU_BUFFER_FULL

Remarks

Passing a zero to the `outputBufferLen` parameter specifies that the size of the output buffer is not checked. It is the responsibility of the caller to assure a sufficient output buffer size.

If `NWU_UNMAPPABLE_CHAR` is returned, the buffer is not filled past the unmappable character, but is valid up to that character.

By default, `NWUXLenByteToUnicode` converts an unmappable byte into the substitute Unicode character.

By default, `NWUXLenByteToUnicode` converts a special byte sequence into a Unicode character. For example, "[2620]" is converted to the single Unicode character, 0x2620.

Call `NWUXLenByteToUnicode` to determine the size of the string before it is converted by setting the `unicodeOutput` parameter to `NULL`. The `outputBufferLen` parameter will be ignored, a converted string will not be returned, and the length of the string if it were converted will be returned in the `actualLength` parameter.

To determine the behavior of `NWUXLenByteToUnicode` when an embedded `NULL` is encountered, see [“Length-Specified Byte String Conversion” on page 26](#).

See [exlbuni.c \(../../samplecode/clib_sample/intl/exlbuni/exlbuni.c.html\)](#) for sample code.

See Also

[NWUXLenByteToUnicodePath \(page 144\)](#), [NWUXUnicodeToUntermByte \(page 170\)](#)

NWUXLenByteToUnicodePath

Converts a length-specified file path byte string into a Unicode string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXLenByteToUnicode (
    pCONVERT          byteUniHandle,
    punicode          unicodeOutput,
    nuint             outputBufferLen,
    const nuint8 N_FAR *byteInput,
    nuint             inLength,
    pnuint            actualLength);
```

Pascal Syntax

```
uses netwin32

Function NWUXLenByteToUnicode
  (byteUniHandle : pCONVERT;
   unicodeOutput : punicode;
   outputBufferLen : nuint;
   byteInput : const nuint8;
   inLength : nuint;
   actualLength : pnuint
  ): nint;
```

Parameters

byteUniHandle

(IN) Points to the converter handle.

unicodeOutput

(OUT) Points to the buffer to receive the converted Unicode string (optional).

outputBufferLen

(IN) Specifies the maximum size of the output buffer in bytes (0 specifies that the buffer size is not checked).

byteInput

(IN) Points to the input buffer containing the byte file path string to be converted.

inLength

(IN) Specifies the length of the input string in bytes (might not be NULL-terminated).

actualLength

(OUT) Points to the returned length (in Unicode characters) of the converted string (optional). Does not include the NULL terminator.

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH
0xFDEC	NWU_UNMAPPABLE_CHAR
0xFDEE	NWU_BUFFER_FULL

Remarks

When you want to convert a file path, call `NWUXLenByteToUnicodePath` rather than the `NWUXLenByteToUnicode` function.

Passing a zero to the `outputBufferLen` parameter specifies that the size of the output buffer is not checked. It is the responsibility of the caller to assure a sufficient output buffer size.

If `NWU_UNMAPPABLE_CHAR` is returned, the buffer is not filled past the unmappable character, but is valid up to that character.

By default, `NWUXLenByteToUnicodePath` converts an unmappable byte into the substitute Unicode character.

By default, `NWUXLenByteToUnicodePath` converts a special byte sequence into a Unicode character. For example, "[2620]" is converted to the single Unicode character, 0x2620.

Call `NWUXLenByteToUnicodePath` to determine the size of the string before it is converted by setting the `unicodeOutput` parameter to `NULL`. The `outputBufferLen` parameter will be ignored, a converted string will not be returned, and the length of the string if it were converted will be returned in the `actualLength` parameter.

To determine the behavior of `NWUXLenByteToUnicodePath` when an embedded `NULL` is encountered, see [“Length-Specified Byte String Conversion” on page 26](#).

See [exlbunip.c \(../../samplecode/clib_sample/intl/exlbunip/exlbunip.c.html\)](#) for sample code.

See Also

[NWUXLenByteToUnicode \(page 142\)](#), [NWUXUnicodeToUntermBytePath \(page 172\)](#)

NWUXLoadByteUnicodeConverter

Locates and loads a converter to convert between Unicode and the specified code page

Local Servers: blocking

Remote Servers: blocking

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXLoadByteUnicodeConverter (
    nuint          codepage,
    pCONVERT N_FAR *byteUniHandle);
```

Pascal Syntax

```
uses netwin32

Function NWUXLoadByteUnicodeConverter
  (codepage : nuint;
   byteUniHandle : pCONVERT
  ): nint;
```

Parameters

codepage

(IN) Specifies the code page to use. Pass zero to use the system code page.

byteUniHandle

(OUT) Points to the Unicode/byte converter handle. If an error occurs, the handle is set to NULL.

Return Values

0x0000	SUCCESSFUL
0xFDE1	NWU_CONVERTER_NOT_FOUND
0xFDE2	NWU_TOO_MANY_FILES (NIOS only)
0xFDE3	NWU_NO_PERMISSION (NIOS only)

0xFDE4	NWU_OPEN_FAILED (NIOS only)
0xFDE5	NWU_READ_FAILED (NIOS only)
0xFDE6	NWU_OUT_OF_MEMORY
0xFDE7	NWU_CANT_LOAD_CONVERTER
0xFDE8	NWU_CONVERTER_CORRUPT

For an explanation of the NWU_CONVERTER_NOT_FOUND error, see [“NWU_CONVERTER_NOT_FOUND Error” on page 23](#)

Remarks

NWUXLoadByteUnicodeConverter can be called multiple times with different code pages. This functionality allows you to perform operations involving multiple code pages. A different handle will be returned for each separate call.

Each call to NWUXLoadByteUnicodeConverter should have a corresponding call to NWUXUnloadConverter to release converter resources when they are no longer needed. To unload the appropriate converter, pass in the handle returned from the corresponding call to NWUXLoadByteUnicodeConverter.

If `codepage` is set to zero, the system code page will be used.

Conversions are performed according to standard Novell default behavior unless another behavior is specified through other functions.

See [exldbu.c \(../../samplecode/clib_sample/intl/exldbu/exldbu.c.html\)](#) for sample code.

See Also

[NWUXLoadCaseConverter \(page 149\)](#), [NWUXUnloadConverter \(page 174\)](#)

NWUXLoadCaseConverter

Locates and loads a converter to convert Unicode to upper, lower, or title case (upper case for initial letter only)

Local Servers: blocking

Remote Servers: blocking

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXLoadCaseConverter (
    nuint          caseFlag,
    pCONVERT N_FAR *caseHandle);
```

Pascal Syntax

```
uses netwin32

Function NWUXLoadCaseConverter
    (caseFlag : nuint;
    caseHandle : pCONVERT
): nint;
```

Parameters

caseFlag

(IN) Specifies the flag to indicate which case converter should be loaded:

NWU_LOWER_CASE
NWU_UPPER_CASE
NWU_TITLE_CASE

caseHandle

(OUT) Points to the converter handle. If an error occurs, the handle is set to NULL.

Return Values

0x0000	SUCCESSFUL
0xFDE1	NWU_CONVERTER_NOT_FOUND

0xFDE2	NWU_TOO_MANY_FILES (NIOS only)
0xFDE3	NWU_NO_PERMISSION (NIOS only)
0xFDE4	NWU_OPEN_FAILED (NIOS only)
0xFDE5	NWU_READ_FAILED (NIOS only)
0xFDE6	NWU_OUT_OF_MEMORY
0xFDE7	NWU_CANT_LOAD_CONVERTER
0xFDE8	NWU_CONVERTER_CORRUPT
0xFDED	NWU_RANGE_ERROR

For an explanation of the NWU_CONVERTER_NOT_FOUND error, see [“NWU_CONVERTER_NOT_FOUND Error” on page 23](#)

See [exldcase.c \(../../samplecode/club_sample/intl/exldcase/exldcase.c.html\)](#) for sample code.

See Also

[NWUXLoadByteUnicodeConverter \(page 147\)](#), [NWUXUnloadConverter \(page 174\)](#)

NWUXResetConverter

Resets the converter to a default state

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXResetConverter (
    pCONVERT    convert);
```

Pascal Syntax

```
uses netwin32

Function NWUXResetConverter
    convert : pCONVERT
): nint;
```

Parameters

convert

(IN) Points to the handle of the converter to be reset.

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH

Remarks

See [exreset.c](#) ([../samplecode/clib_sample/intl/exreset/exreset.c.html](#)) for sample code.

NWUXSetByteFunctions

Specifies the functions to be used to handle unmappable bytes and special byte sequences during byte-to-unicode conversion

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXSetByteFunctions (
    pCONVERT    byteUniHandle,
    NMBYTE      noMapByteFunc,
    SCBYTE      scanByteFunc,
    PRBYTE      parseByteFunc);
```

Pascal Syntax

```
uses netwin32;

Function NWUXSetByteFunctions
    (byteUniHandle : pCONVERT;
    noMapByteFunc : NMBYTE;
    scanByteFunc : SCBYTE;
    parseByteFunc : PRBYTE
    ): nint;
```

Parameters

byteUniHandle

(IN) Points to the converter handle.

noMapByteFunc

(IN) Specifies the function to be called when an unmappable byte is found.

scanByteFunc

(IN) Specifies the function to scan for special byte sequences.

parseByteFunc

(IN) Specifies the function to parse special byte sequences.

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH

Remarks

NWUXSetByteFunctions will not set the action code to NWU_CALL_HANDLER.

Values for the `noMapByteFunc`, `scanByteFunc`, and `parseByteFunc` parameters follow:

NWU_RESET_TO_DEFAULT Resets the current setting to the default setting

NWU_UNCHANGED_FUNCTION Leaves the current setting unchanged

See [exsbfnc.c \(../../samplecode/clib_sample/intl/exsbfnc/exsbfnc.c.html\)](#) for sample code.

See Also

[NWUXGetByteFunctions \(page 128\)](#), [NWUXGetUniFunctions \(page 140\)](#), [NWUXGetSubByte \(page 136\)](#), [NWUXGetSubUni \(page 138\)](#), [NWUXResetConverter \(page 151\)](#), [NWUXSetNoMapAction \(page 154\)](#), [NWUXSetUniFunctions \(page 162\)](#), [NWUXSetSubByte \(page 158\)](#), [NWUXSetSubUni \(page 160\)](#)

NWUXSetNoMapAction

Sets the actions to follow when an unmappable byte or an unmappable Unicode character is found

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXSetNoMapAction (
    pCONVERT    byteUniHandle,
    nint        noMapByteAction,
    nint        noMapUniAction);
```

Pascal Syntax

```
uses netwin32

Function NWUXSetNoMapAction
    (byteUniHandle : pCONVERT;
    noMapByteFunc : nint;
    noMapUniFunc : nint;
    ): nint;
```

Parameters

byteUniHandle

(IN) Points to the converter handle.

noMapByteAction

(IN) Specifies the action to follow for unmappable bytes during byte-to-Unicode conversion.

noMapUniAction

(IN) Specifies the action to follow for unmappable Unicode characters during Unicode-to-byte conversion.

Return Values

0x0000	SUCCESSFUL
--------	------------

0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH
0xFDED	NWU_RANGE_ERROR

Remarks

Values for either the `noMapByteAction` or `noMapUniAction` parameter are:

NWU_RETURN_ERROR	Returns an error code of <code>NWU_UNMAPPABLE_CHAR</code> .
NWU_SUBSTITUTE	Uses the current substitute byte if converting to bytes, or the current substitution character if converting to Unicode characters.
NWU_CALL_HANDLER	Calls the current NoMap handler. User defined handlers may be specified by calling the <code>NWUXSetByteFunctions</code> or <code>NWUXSetUniFunctions</code> functions.
NWU_UNCHANGED_ACTION	Leaves the current setting unchanged.

See [exsnomap.c \(../../samplecode/clib_sample/intl/exsnomap/exsnomap.c.html\)](#) for sample code.

See Also

[NWUXGetNoMapAction \(page 132\)](#), [NWUXGetByteFunctions \(page 128\)](#), [NWUXGetUniFunctions \(page 140\)](#), [NWUXGetSubByte \(page 136\)](#), [NWUXGetSubUni \(page 138\)](#), [NWUXSetByteFunctions \(page 152\)](#), [NWUXSetUniFunctions \(page 162\)](#), [NWUXSetSubByte \(page 158\)](#), [NWUXSetSubUni \(page 160\)](#)

NWUXSetScanAction

Enables or disables the current scan/parse functions

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXSetScanAction (
    pCONVERT    byteUniHandle,
    nint        scanByteAction,
    nint        scanUniAction);
```

Pascal Syntax

```
uses netwin32

Function NWUXSetScanAction
    (byteUniHandle : pCONVERT;
    scanByteFunc : nint;
    ScanUniFunc : nint;
    ): nint;
```

Parameters

byteUniHandle

(IN) Points to the converter handle.

scanByteAction

(IN) Specifies the status for current byte scan/parse functions.

scanUniAction

(IN) Specifies the status for current Unicode scan/parse functions.

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE

0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH
0xFDED	NWU_RANGE_ERROR

Remarks

Values for the `scanByteAction` or `scanUniAction` parameters follow:

NWU_ENABLED	Enables scan/parse functions
NWU_DISABLED	Disables scan/parse functions
NWU_UNCHANGED_ACTION	Leaves the current settings unchanged

See [exsscan.c](#) ([../../samplecode/clib_sample/intl/exsscan/exsscan.c.html](#)) for sample code.

See Also

[NWUXGetScanAction](#) (page 134), [NWUXGetByteFunctions](#) (page 128), [NWUXGetUniFunctions](#) (page 140)

NWUXSetSubByte

Specifies the substitution byte for the converter

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXSetSubByte (
    pCONVERT    byteUniHandle,
    nuint8      substituteByte);
```

Pascal Syntax

```
uses netwin32

Function NWUXSetSubByte
    (byteUniHandle : pCONVERT;
    substituteByte : nuint8
    ): nint;
```

Parameters

byteUniHandle

(IN) Points to the converter handle.

substituteByte

(IN) Specifies the new substitution byte.

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH

Remarks

During a Unicode to byte conversion, the substitution byte is written to the output buffer if an unmappable Unicode character is found and the current action is set to `NWU_SUBSTITUTE`.

`NWUXSetSubByte` does not set the NoMap Unicode action to `NWU_SUBSTITUTE`. NoMap Unicode action must be set by calling the `NWUXSetNoMapAction` function.

See [exssubb.c \(../../samplecode/clib_sample/intl/exssubb/exssubb.c.html\)](#) for sample code.

See Also

[NWUXGetByteFunctions \(page 128\)](#), [NWUXGetNoMapAction \(page 132\)](#), [NWUXGetSubByte \(page 136\)](#), [NWUXGetSubUni \(page 138\)](#), [NWUXGetUniFunctions \(page 140\)](#), [NWUXSetByteFunctions \(page 152\)](#), [NWUXSetNoMapAction \(page 154\)](#), [NWUXSetUniFunctions \(page 162\)](#), [NWUXSetSubUni \(page 160\)](#)

NWUXSetSubUni

Specifies the substitution character for the converter

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXSetSubUni (
    pCONVERT    byteUniHandle,
    Unicode     substituteUni);
```

Pascal Syntax

```
uses netwin32

Function NWUXSetSubUni
    (byteUniHandle : pCONVERT;
    substituteUni : Unicode
): nint;
```

Parameters

byteUniHandle

(IN) Points to the converter handle.

substituteUni

(OUT) Receives the new substitution character.

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH

Remarks

During a byte to Unicode conversion, the substitution character is written to the output buffer if an unmappable byte is found and the current NoMap byte action is set to `NWU_SUBSTITUTE`.

`NWUXSetSubUni` does not set the NoMap byte action to be followed to `NWU_SUBSTITUTE`. NoMap byte action must be set by calling the `NWUXSetNoMapAction` function.

See [exssubu.c \(../../samplecode/clib_sample/intl/exssubu/exssubu.c.html\)](#) for sample code.

See Also

[NWUXGetByteFunctions \(page 128\)](#), [NWUXGetNoMapAction \(page 132\)](#), [NWUXGetSubByte \(page 136\)](#), [NWUXGetSubUni \(page 138\)](#), [NWUXGetSubUni \(page 138\)](#), [NWUXGetUniFunctions \(page 140\)](#), [NWUXSetByteFunctions \(page 152\)](#), [NWUXSetNoMapAction \(page 154\)](#), [NWUXSetUniFunctions \(page 162\)](#), [NWUXSetSubByte \(page 158\)](#)

NWUXSetUniFunctions

Specifies the functions to be used to handle unmappable Unicode characters and special Unicode sequences during unicode-to-byte conversion

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXSetUniFunctions (
    pCONVERT    byteUniHandle,
    NMUNI       noMapUniFunc,
    SCUNI       scanUniFunc,
    PRUNI       parseUniFunc);
```

Pascal Syntax

```
uses netwin32

Function NWUXSetUniFunctions
  (byteUniHandle : pCONVERT;
  noMapUniFunc : NMUNI;
  scanUniFunc : SCUNI;
  parseUniFunc : PRUNI
): nint;
```

Parameters

byteUniHandle

(IN) Points to the converter handle.

noMapUniFunc

(IN) Specifies the Unicode function to be called when unmappable Unicode characters are found.

scanUniFunc

(IN) Specifies the function to scan for special Unicode sequences.

parseUniFunc

(IN) Specifies the function to parse special Unicode sequences.

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH

Remarks

NWUXSetUniFunctions will not set the action code to `NWU_CALL_HANDLER`.

Values for the `noMapUniFunc`, `scanUniFunc`, and `parseUniFunc` parameters follow:

`NWU_RESET_TO_DEFAULT` resets the current setting to the default setting.

`NWU_UNCHANGED_FUNCTION` leaves the current setting unchanged.

See [exsufunc.c](#) ([../../samplecode/clib_sample/intl/exsufunc/exsufunc.c.html](#)) for sample code.

See Also

[NWUXGetByteFunctions](#) (page 128), [NWUXGetUniFunctions](#) (page 140), [NWUXGetSubByte](#) (page 136), [NWUXGetSubUni](#) (page 138), [NWUXResetConverter](#) (page 151), [NWUXSetNoMapAction](#) (page 154), [NWUXSetByteFunctions](#) (page 152), [NWUXSetSubByte](#) (page 158), [NWUXSetSubUni](#) (page 160)

NWUXUnicodeToByte

Converts a Unicode string into a NULL-terminated byte string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXUnicodeToByte (
    pCONVERT          byteUniHandle,
    puint8            byteOutput,
    nuint             outputBufferLen,
    const unicode N_FAR *unicodeInput,
    puint             actualLength);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWUXUnicodeToByte
  (byteUniHandle : pCONVERT;
   byteOutput : puint8;
   outputBufferLen : nuint
   unicodeInput : const unicode
   actualLength : puint
  ): nint;
```

Parameters

byteUniHandle

(IN) Points to the Unicode converter handle.

byteOutput

(OUT) Points to the output buffer to receive the converted byte string (optional).

outputBufferLen

(IN) Specifies the maximum size of the output buffer in bytes (0 specifies that the buffer size is not checked).

unicodeInput

(IN) Points to the input buffer containing the Unicode string to be converted.

actualLength

(OUT) Points to the returned length (in bytes) of the converted string (optional). Does not include the NULL terminator.

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH
0xFDEC	NWU_UNMAPPABLE_CHAR
0xFDEE	NWU_BUFFER_FULL

Remarks

By default, NWUXUnicodeToByte converts an unmappable Unicode character into a special 6-byte sequence. For example, 0x2620 is converted to "[2620]".

By default, NWUXUnicodeToByte does not recognize any special Unicode sequences for conversion. For example, the Unicode string "ab[81]cd" will be returned as the byte string "ab[81]cd".

Call NWUXUnicodeToByte to determine the size of the string before it is converted by setting the `byteOutput` parameter to NULL. The `outputBufferLen` parameter will be ignored, a converted string will not be returned, and the length of the string if it were converted will be returned in the `actualLength` parameter.

See [exunib.c \(.../samplecode/clib_sample/intl/exunib/exunib.c.html\)](#) for sample code.

See Also

[NWUXUnicodeToBytePath \(page 166\)](#), [NWUXUnicodeToCase \(page 168\)](#)

NWUXUnicodeToBytePath

Converts a Unicode file path string into a NULL-terminated byte string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXUnicodeToBytePath (
    pCONVERT          byteUniHandle,
    puint8            byteOutput,
    nuint             outputBufferLen,
    const unicode N_FAR *unicodeInput,
    puint             actualLength);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWUXUnicodeToBytePath
  (byteUniHandle : pCONVERT;
   byteOutput : puint8;
   outputBufferLen : nuint
   unicodeInput : const unicode
   actualLength : puint
  ): nint;
```

Parameters

byteUniHandle

(IN) Points to the Unicode converter handle.

byteOutput

(OUT) Points to the output buffer to receive the converted byte string (optional).

outputBufferLen

(IN) Specifies the maximum size of the output buffer in bytes (0 specifies that the buffer size is not checked).

unicodeInput

(IN) Points to the input buffer containing the Unicode string to be converted.

actualLength

(OUT) Points to the returned length (in bytes) of the converted string (optional). Does not include the NULL terminator.

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH
0xFDEC	NWU_UNMAPPABLE_CHAR
0xFDEE	NWU_BUFFER_FULL

Remarks

When you want to convert a file path, call the `NWUXUnicodeToBytePath` function rather than the `NWUXUnicodeToByte` function.

Regardless of the language being converted, `NWUXUnicodeToBytePath` interprets Unicode yen (00A5), won (20A9), backslash (005C), and the Novell defined path separator (F8F7) all as path separators and converts each to the byte backslash character (5C).

By default, `NWUXUnicodeToBytePath` converts an unmappable Unicode character into a special 6-byte sequence. For example, 0x2620 is converted to "[2620]".

By default, `NWUXUnicodeToBytePath` does not recognize any special Unicode sequences for conversion. For example, the Unicode string "ab[81]cd" will be returned as the byte string "ab[81]cd".

Call `NWUXUnicodeToBytePath` to determine the size of the string before it is converted by setting the `byteOutput` parameter to `NULL`. The `outputBufferLen` parameter will be ignored, a converted string will not be returned, and the length of the string if it were converted will be returned in the `actualLength` parameter.

See [exunibp.c \(../../samplecode/club_sample/intl/exunibp/exunibp.c.html\)](#) for sample code.

See Also

[NWUXSetNoMapAction \(page 154\)](#), [NWUXUnicodeToByte \(page 164\)](#), [NWUXUnicodeToCase \(page 168\)](#)

NWUXUnicodeToCase

Converts a NULL-terminated Unicode string to upper case, lower case, or title case, depending on the converter pointed to

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXUnicodeToCase (
    pCONVERT          caseHandle,
    punicode          monocasedOutput,
    nuint             outputBufferLen,
    const unicode N_FAR *unicodeInput,
    pnuint            actualLength);
```

Pascal Syntax

```
uses netwin32
```

```
Function NWUXUnicodeToCase
  (caseHandle : pCONVERT;
  monocasedOutput : punicode;
  outputBufferLen : nuint
  unicodeInput : const unicode
  actualLength : pnuint
): nint;
```

Parameters

caseHandle

(IN) Points to the monospace converter handle.

monocaseOutput

(OUT) Points to the output buffer to receive the converted Unicode string (optional).

outputBufferLen

(IN) Specifies the maximum size of the output buffer in bytes (0 specifies that the buffer size is not checked).

unicodeInput

(IN) Points to the input buffer containing the Unicode string to be moncased.

actualLength

(OUT) Points to the returned length (in Unicode characters) of the converted string (optional). Does not include the NULL terminator.

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH
0xFDEE	NWU_BUFFER_FULL

Remarks

The `caseHandle` parameter points to the converter to be used. The type of converter is specified when the converter is loaded with the `NWUXLoadCaseConverter` function.

Lower case conversions are preferred for most operations since there are more lower case than upper case characters in Unicode.

There are Unicode characters that may result in two or more Unicode characters when converted. Do not use the same buffer for both input and output strings.

Input characters that have no case are unaffected.

Call `NWUXUnicodeToCase` to determine the size of the string before it is converted by setting the `monocasedOutput` parameter to `NULL`. The `outputBufferLen` parameter will be ignored, a converted string will not be returned, and the length of the string if it were converted will be returned in the `actualLength` parameter.

See [exucase.c \(../../samplecode/clib_sample/intl/exucase/exucase.c.html\)](#) for sample code.

See Also

[NWUXLoadCaseConverter \(page 149\)](#)

NWUXUnicodeToUntermByte

Converts a Unicode string into an unterminated byte string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXUnicodeToUntermByte (
    pCONVERT          byteUniHandle,
    puint8            byteOutput,
    nuint             outputBufferLen,
    const unicode N_FAR *unicodeInput,
    puint             actualLength);
```

Pascal Syntax

```
uses netwin32

Function NWUXUnicodeToUntermByte
  (byteUniHandle : pCONVERT;
  byteOutput : puint8;
  outputBufferLen : nuint
  unicodeInput : const unicode
  actualLength : puint
  ): nint;
```

Parameters

byteUniHandle

(IN) Points to the Unicode converter handle.

byteOutput

(OUT) Points to the output buffer to receive the unterminated byte string (optional).

outputBufferLen

(IN) Specifies the maximum size of the output buffer in bytes.

unicodeInput

(IN) Points to the input buffer containing the Unicode string to be converted.

actualLength

(OUT) Points to the returned length (in bytes) of the converted string (optional). Does not include the NULL terminator.

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH
0xFDEC	NWU_UNMAPPABLE_CHAR
0xFDEE	NWU_BUFFER_FULL

Remarks

By default, `NWUXUnicodeToUntermByte` converts an unmappable Unicode character into a special unterminated 6-byte sequence. For example, 0x2620 is converted to "[2620]".

By default, `NWUXUnicodeToUntermByte` does not recognize any special Unicode sequences for conversion. For example, the Unicode string "ab[81]cd" will be returned as the byte string "ab[81]cd".

Call `NWUXUnicodeToUntermByte` to determine the size of the string before it is converted by setting the `byteOutput` parameter to NULL. The `outputBufferLen` parameter will be ignored, a converted string will not be returned, and the length of the string if it were converted will be returned in the `actualLength` parameter.

See [exuniub.c \(../../samplecode/clib_sample/intl/exuniub/exuniub.c.html\)](#) for sample code.

See Also

[NWUXLenByteToUnicode \(page 142\)](#), [NWUXUnicodeToUntermBytePath \(page 172\)](#)

NWUXUnicodeToUntermBytePath

Converts a Unicode file path string into an unterminated byte string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXUnicodeToUntermBytePath (
    pCONVERT          byteUniHandle,
    pnuint8           byteOutput,
    nuint             outputBufferLen,
    const unicode N_FAR *unicodeInput,
    pnuint            actualLength);
```

Pascal Syntax

```
uses netwin32

Function NWUXUnicodeToUntermBytePath
  (byteUniHandle : pCONVERT;
  byteOutput : pnuint8;
  outputBufferLen : nuint
  unicodeInput : const unicode
  actualLength : pnuint
): nint;
```

Parameters

byteUniHandle

(IN) Points to the Unicode converter handle.

byteOutput

(OUT) Points to the output buffer to receive the unterminated byte string (optional).

outputBufferLen

(IN) Specifies the maximum size of the output buffer in bytes.

unicodeInput

(IN) Points to the input buffer containing the Unicode string to be converted.

actualLength

(OUT) Points to the returned length (in bytes) of the converted string (optional). Does not include the NULL terminator.

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE
0xFDEB	NWU_HANDLE_MISMATCH
0xFDEC	NWU_UNMAPPABLE_CHAR
0xFDEE	NWU_BUFFER_FULL

Remarks

When you want to convert a file path, call the `NWUXUnicodeToUntermBytePath` function rather than the `NWUXUnicodeToUntermByte` function.

Regardless of the language being converted, `NWUXUnicodeToUntermBytePath` interprets Unicode yen (00A5), won (20A9), backslash (005C), and the Novell defined path separator (F8F7) all as path separators and converts each to the byte backslash character (5C).

By default, `NWUXUnicodeToUntermBytePath` converts an unmappable Unicode character into a special unterminated 6-byte sequence. For example, 0x2620 is converted to "[2620]".

By default, `NWUXUnicodeToUntermBytePath` does not recognize any special Unicode sequences for conversion. For example, the Unicode string "ab[81]cd" will be returned as the byte string "ab[81]cd".

Call `NWUXUnicodeToUntermBytePath` to determine the size of the string before it is converted by setting the `byteOutput` parameter to NULL. The `outputBufferLen` parameter will be ignored, a converted string will not be returned, and the length of the string if it were converted will be returned in the `actualLength` parameter.

See [exuniubp.c \(../../samplecode/clib_sample/intl/exuniubp/exuniubp.c.html\)](#) for sample code.

See Also

[NWUXLenByteToUnicodePath \(page 144\)](#), [NWUXUnicodeToUntermByte \(page 170\)](#)

NWUXUnloadConverter

Unloads a converter and releases all associated resources

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <nunicode.h>

N_EXTERN_LIBRARY(nint) NWUXUnloadConverter (
    pCONVERT    converterHandle);
```

Pascal Syntax

```
uses netwin32

Function NWUXUnloadConverter
    (convertHandle : pCONVERT
): nint;
```

Parameters

converterHandle

(IN) Points to the converter handle to release.

Return Values

0x0000	SUCCESSFUL
0xFDE9	NWU_NULL_HANDLE
0xFDEA	NWU_BAD_HANDLE

Remarks

NWUXUnloadConverter should be called separately for each converter loaded with the extended Unicode functions. Exiting without unloading a converter may result in the converter remaining unnecessarily loaded. In contrast to NWUSStandardUnicodeRelease, NWUXUnloadConverter unloads a specific converter specified by the handle passed in through the `converterHandle` parameter.

See [exunl.c \(../../samplecode/clib_sample/intl/exunl/exunl.c.html\)](#) for sample code.

See Also

[NWUXLoadByteUnicodeConverter \(page 147\)](#), [NWUXLoadCaseConverter \(page 149\)](#)

unicat

Appends a copy of a specified string to the end of another string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(punicode) unicat (
    punicode          s1,
    const unicode N_FAR *s2);
```

Pascal Syntax

```
uses netwin32

Function unicat
    (s1 : punicode;
     s2 : const unicode
    ) : punicode;
```

Parameters

s1

(OUT) Points to the original string.

s2

(IN) Points to the string to be appended.

Return Values

Pointer to concatenated s1.

Remarks

unicat corresponds to the C strcat function.

The length of the resulting string is:

```
unilen (s1) + unilen (s2)
```

For sample code, see [Section 3.11, “Example: unicat,”](#) on page 51.

See Also

[unincat \(page 189\)](#)

unichr

Finds the first occurrence of a given character in a specified string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(punicode) unichr (
    const unicode N_FAR *s,
    unicode c);
```

Pascal Syntax

```
uses netwin32

Function unichr
(s : const unicode;
 c : unicode
) : punicode;
```

Parameters

- s**
(IN) Points to the string to be scanned.
- c**
(IN) Specifies the character to be found.

Return Values

Non-NULL	Pointer to the first occurrence of the character <i>c</i> in <i>s</i> .
NULL	<i>c</i> does not occur in <i>s</i> .

Remarks

The NULL terminator is part of the string. For example, `unichr(string,0)` returns a pointer to the terminating NULL character of string.

`unichr` corresponds to the C `strchr` function.

For sample code, see [Section 3.12, “Example: `unichr`,”](#) on page 51.

See Also

[`unirchr` \(page 203\)](#), [`unistr` \(page 211\)](#)

unicmp

Compares two Unicode strings for differences

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(nint) unicmp (
    const unicode N_FAR *s1,
    const unicode N_FAR *s2);
```

Pascal Syntax

```
uses netwin32

Function unicmp
(s1 : const unicode;
 s2 : const unicode
) : nint;
```

Parameters

s1

(IN) Points to the first string to be compared.

s2

(IN) Points to the second string to be compared.

Return Values

One of the following int values:

< 0 if s1 is less than s2

= 0 if s1 is equal to s2

> 0 if s1 is greater than s2

Remarks

unicmp compares `s1` to `s2`, starting with the first character in each string and continuing with subsequent characters until (1) the corresponding characters differ, or (2) the end of the strings is reached. The comparison is done lexicographically, using the value of the unicode character, not the collation weight.

unicmp is useful for comparing strings for equality. Do not call unicmp for sorting strings into collation order.

unicmp corresponds to the C `strcmp` function.

For sample code, see [Section 3.13, “Example: unicmp,” on page 52](#).

See Also

[uniicmp \(page 186\)](#), [unincmp \(page 191\)](#)

unicpy

Copies from one specified string to another

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(punicode) unicpy (
    punicode          s1,
    const unicode N_FAR *s2);
```

Pascal Syntax

```
uses netwin32

Function unicpy
    (s1 : punicode;
     s2 : const unicode
    ) : punicode;
```

Parameters

s1

(OUT) Points to the destination string.

s2

(IN) Points to the source string.

Return Values

Pointer to s1.

Remarks

unicpy stops copying after it moves the terminating NULL character.

unicpy corresponds to the C strcpy function.

For sample code, see [Section 3.14, “Example: unicpy,” on page 52.](#)

See Also

[unincpy \(page 193\)](#), [unipcpy \(page 201\)](#)

unicspn

Scans a specified string for the initial segment not containing any subset of the given set of characters

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(size_t) unicspn (
    const unicode N_FAR *s1,
    const unicode N_FAR *s2);
```

Pascal Syntax

```
uses netwin32

Function unicspn
  (s1 : const unicode;
   s2 : const unicode
  ) : size_t;
```

Parameters

s1

(IN) Points to the string to be scanned.

s2

(IN) Points to the character set.

Return Values

Returns the length of the initial segment of *s1* consisting entirely of characters not from *s2*.

Remarks

unicspn corresponds to the C stropsn function.

For sample code, see [Section 3.15, “Example: unicspn,” on page 52](#).

See Also

[unispn \(page 209\)](#), [unipbrk \(page 199\)](#)

uniicmp

Compares the lower case versions of two different strings (using the character values, not the collation value) for differences

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(nint) uniicmp (
    const unicode N_FAR *s1,
    const unicode N_FAR *s2);
```

Pascal Syntax

```
uses netwin32

Function uniicmp
    (s1 : const unicode;
     s2 : const unicode
    ) : nint;
```

Parameters

s1

(IN) Points to the first string to be compared.

s2

(IN) Points to the second string to be compared.

Return Values

One of the following int values:

< 0 if s1 is less than s2

= 0 if s1 is equal to s2

> 0 if s1 is greater than s2

Remarks

`uniicmp` converts its arguments to lower case according to the standard Monocase Converter rules. It then compares `s1` to `s2`, starting with the first character in each string and continuing with subsequent characters until (1) the corresponding characters differ, or (2) the end of the strings is reached. The comparison is done lexicographically, using the value of the unicode character, not the collation weight.

`uniicmp` is useful for comparing strings for equality. Do not call `uniicmp` for sorting strings into collation order.

`uniicmp` corresponds to the C `stricmp` function.

For sample code, see [Section 3.16, “Example: `uniicmp`,” on page 53](#).

unilen

Returns the number of unicode characters in a string (not counting the NULL terminator)

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(size_t) unilen (
    const unicode N_FAR *s);
```

Pascal Syntax

```
uses netwin32

Function unilen
    (s : const unicode
) : size_t;
```

Parameters

s

(IN) Points to the string for which to determine the length.

Return Values

Number of characters (not bytes) in *s*, not counting the null-terminating character.

Remarks

unilen corresponds to the C *strlen* function.

For sample code, see [Section 3.17, “Example: unilen,” on page 53](#).

See Also

[unysize \(page 208\)](#)

unincat

Copies the specified number of characters from one string to the end of another string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(punicode) unincat (
    punicode          s1,
    const unicode N_FAR *s2,
    size_t            n);
```

Pascal Syntax

```
uses netwin32

Function unincat
    (s1 : punicode;
     s2 : const unicode;
     n  : size_t
    ) : punicode;
```

Parameters

s1

(OUT) Points to the original string.

s2

(IN) Points to the string to be appended.

n

(IN) Specifies the maximum number of characters to be appended.

Return Values

Pointer to s1.

Remarks

`unincat` copies at most `n` characters of `s2` to the end of `s1`, then appends a null character. The maximum length of the resulting string is:

```
unilen(s1) + n
```

`unincat` corresponds to the C `strncat` function.

For sample code, see [Section 3.18, “Example: unincat,” on page 53](#).

See Also

[unicat \(page 176\)](#)

unincmp

Compares a specified number of characters of two Unicode strings

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(nint) unincmp (
    const unicode N_FAR *s1,
    const unicode N_FAR *s2,
    size_t len);
```

Pascal Syntax

```
uses netwin32

Function unincmp
    (s1 : const unicode;
    s2 : const unicode;
    len : size_t
) : nint;
```

Parameters

s1

(IN) Points to the first string to be compared.

s2

(IN) Points to the second string to be compared.

n

(IN) Specifies the maximum number of characters (not bytes) to be compared.

Return Values

One of the following values:

< 0 if s1 is less than s2

= 0 if s1 is equal to s2

> 0 if s_1 is greater than s_2

Remarks

`unincmp` compares s_1 to s_2 , for a maximum length of n characters, starting with the first character in each string and continuing with subsequent characters until (1) the corresponding characters differ or (2) the end of the strings is reached. The comparison is done lexicographically, using the value of the unicode character not the collation weight.

`unincmp` is useful for comparing strings for equality. Do not call `unincmp` for sorting strings into collation order.

`unincmp` corresponds to the C `strncmp` function.

For sample code, see [Section 3.19, “Example: `unincmp`,” on page 54](#).

See Also

[unicmp \(page 180\)](#), [uninicmp \(page 195\)](#)

unincpy

Copies a specified number of characters from one string to another

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(punicode) unincpy (
    punicode          s1,
    const unicode N_FAR *s2,
    size_t            n);
```

Pascal Syntax

```
uses netwin32

Function unincpy
    (s1 : punicode;
     s2 : const unicode;
     n  : size_t
    ) : punicode;
```

Parameters

s1

(OUT) Points to the destination string.

s2

(IN) Points to the source string.

n

(IN) Specifies the maximum length in characters (not bytes).

Return Values

Returns a pointer to s1.

Remarks

unicpy copies up to the number of characters specified by the `n` parameter from the source string in the `s2` parameter to the destination string in the `s1` parameter and truncates the `s1` parameter if necessary. The destination string in the `s1` parameter might not be null-terminated if the length of the `s2` parameter is the number of characters specified by the `n` parameter or more.

Win32 clients call `wcsncpy` which pads any remaining space in the buffer with nulls. Non-Win32 clients do not NULL-pad the output buffer.

`unicpy` corresponds to the C `strncpy` function.

For sample code, see [Section 3.22, “Example: unicpy,” on page 55](#).

See Also

[unicpy \(page 182\)](#), [unipcpy \(page 201\)](#)

unicmp

Compares a specified number of characters (using the character values, not the collation value) of the lower case versions of two strings

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(nint) unicmp (
    const unicode N_FAR *s1,
    const unicode N_FAR *s2,
    size_t len);
```

Pascal Syntax

```
uses netwin32

Function unicmp
(s1 : const unicode;
 s2 : const unicode;
 len : size_t
) : nint;
```

Parameters

s1

(IN) Points to the first string to be compared.

s2

(IN) Points to the second string to be compared.

n

(IN) Specifies the maximum number of characters (not bytes) to be compared.

Return Values

One of the following values:

< 0 if s1 is less than s2

= 0 if `s1` is equal to `s2`

> 0 if `s1` is greater than `s2`

Remarks

`unicmp` converts its arguments to lower case according to the standard Monocase Converter rules. It then compares `s1` to `s2`, for a maximum length of `n` characters, starting with the first character in each string and continuing with subsequent characters until (1) the corresponding characters differ or (2) the end of the strings is reached. The comparison is done lexicographically, using the value of the unicode character not the collation weight.

`unicmp` is useful for comparing strings for equality. Do not call `unicmp` for sorting strings into collation order.

`unicmp` corresponds to the C `strnicmp` function.

For sample code, see [Section 3.20, “Example: `unicmp`,” on page 54](#).

See Also

[uniicmp \(page 186\)](#)

uninset

Copies a given character into the first specified number of characters of a string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(punicode) uninset (
    punicode    s,
    unicode     c,
    size_t      n);
```

Pascal Syntax

```
uses netwin32

Function uninset
    (s : punicode;
     c : unicode;
     n : size_t
    ) : punicode;
```

Parameters

s

(OUT) Points to the string to modify.

c

(IN) Specifies the fill character.

n

(IN) Specifies the maximum number of characters (not bytes).

Return Values

Returns a pointer to the *s* parameter.

Remarks

`uninset` copies the character specified by the `c` parameter into the first number of characters specified by the `n` parameter of the string pointed to by the `s` parameter. If the number specified by the `n` parameter is greater than the return value of `unilen(s)`, the return value of `strlen(s)` replaces the `n` parameter.

`uninset` stops after (1) setting the number of characters specified by the `n` parameter, or (2) finding a NULL character.

`uninset` corresponds to the C `memset` function.

For sample code, see [Section 3.21, “Example: uninset,” on page 55](#).

See Also

[uniset \(page 206\)](#)

unipbrk

Scans a specified string for a given set of characters

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(punicode) unipbrk (
    const unicode N_FAR *s1,
    const unicode N_FAR *s2);
```

Pascal Syntax

```
uses netwin32

Function unipbrk
    (s1 : const unicode;
     s2 : const unicode
    ) : punicode;
```

Parameters

s1

(IN) Points to the string to scan.

s2

(IN) Points to the character set.

Return Values

Returns a pointer to the first occurrence of any character in the s2 parameter. NULL is returned if no characters specified in the s2 parameter occurs in string pointed to by the s1 parameter.

Remarks

unipbrk scans the string pointed to by the s1 parameter for the first occurrence of any character appearing in the s2 parameter.

unipbrk corresponds to the C strpbrk function.

For sample code, see [Section 3.23](#), “Example: unipbrk,” on page 56.

See Also

[unicspn \(page 184\)](#), [unispn \(page 209\)](#)

unipcpy

Copies one string to another up to the null-termination

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(punicode) unipcpy (
    punicode          s1,
    const unicode N_FAR *s2);
```

Pascal Syntax

```
uses netwin32

Function unipcpy
    (s1 : punicode;
     s2 : const unicode
    ) : punicode;
```

Parameters

s1
(OUT) Points to the destination string.

s2
(IN) Points to the source string.

Return Values

Returns a pointer to the s1 parameter plus the return value of unilen(s2).

Remarks

unipcpy copies the string pointed to by the s2 parameter to the destination string pointed to by the s1 parameter and stops after moving the terminating NULL character.

unipcpy has no corresponding C function.

unipcpy is identical to the unicpy function except for the return value.

unipcpy returns a pointer to the NULL terminating character of the resulting destination string. This pointer can be used in subsequent calling unicpy to concatenate a series of strings without having to scan the entire string each time.

For sample code, see [Section 3.22, “Example: unipcpy,” on page 55](#).

See Also

[unicpy \(page 182\)](#), [unincpy \(page 193\)](#)

unirchr

Scans a string in the reverse direction, searching for the last occurrence of a given character

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(punicode) unirchr (
    const unicode N_FAR *s,
    unicode c);
```

Pascal Syntax

```
uses netwin32

Function unirchr
  (s : const unicode;
   c : unicode
  ) : punicode;
```

Parameters

s
(IN) Points to the string to scan.

c
(IN) Specifies the character to find.

Return Values

Returns a pointer to the last occurrence of the character specified by the `c` parameter. NULL is returned if the character specified by the `c` parameter does not occur in the string pointed to by the `s` parameter.

Remarks

`unirchr` searches for the last occurrence of the character specified by the `c` parameter in the string pointed to by the `s` parameter. It considers the NULL terminator to be part of the string.

`unirchr` corresponds to the C `strchr` function.

For sample code, see [Section 3.24, “Example: unirchr,” on page 56](#).

See Also

[unichr \(page 178\)](#)

unirev

Reverses the order of all characters in a string, except for the null terminating character

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(punicode) unirev (
    punicode    s);
```

Pascal Syntax

```
uses netwin32

Function unirev
    (s : punicode
) : punicode;
```

Parameters

s
(OUT) Points to the string to reverse.

Return Values

Returns a pointer to the reversed string.

Remarks

After calling `unirev`, the original contents of the string pointed to by the `s` parameter are replaced by the reversed string. The terminating NULL character is not reversed. For example, `unirev` changes "string" to "gnirts."

`unirev` corresponds to the C `strrev` function.

For sample code, see [Section 3.25, "Example: unirev," on page 56](#).

uniset

Sets all characters in a string to a specified character

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(punicode) uniset (
    punicode    s,
    unicode     c);
```

Pascal Syntax

```
uses netwin32

Function uniset
    (s : punicode;
    c : unicode
    ) : punicode;
```

Parameters

s
(OUT) Points to the string to modify.

c
(IN) Specifies the fill character.

Return Values

Returns a pointer to the `s` parameter.

Remarks

`uniset` quits when it finds the terminating NULL character.

`uniset` corresponds to the C `strset` function.

For sample code, see [Section 3.26, “Example: uniset,” on page 57](#).

See Also

[unset \(page 197\)](#)

unysize

Determines the size in bytes (not characters) the current string occupies including the 2-byte NULL terminator

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(size_t) unysize (
    const unicode N_FAR *s);
```

Pascal Syntax

```
uses netwin32

Function unysize
    (s : const unicode
) : size_t;
```

Parameters

s

(IN) Points to the string for which to get the size.

Return Values

Returns the number of bytes in the string pointed to by the *s* parameter including the terminating NULL character.

Remarks

For sample code, see [Section 3.27, “Example: unysize,” on page 57](#).

See Also

[unilen \(page 188\)](#)

unispn

Finds the first segment of a string consisting entirely of characters from another string

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(size_t) unispn (
    const unicode N_FAR *s1,
    const unicode N_FAR *s2);
```

Pascal Syntax

```
uses netwin32

Function unispn
    (s1 : const unicode;
     s2 : const unicode
    ) : size_t;
```

Parameters

s1

(IN) Points to the string to test.

s2

(IN) Points to the character set.

Return Values

Returns the length of the first segment of the string pointed to by the `s1` parameter that consists entirely of characters from the `s2` parameter.

Remarks

`unispn` corresponds to the C `strspn` function.

For sample code, see [Section 3.28, “Example: unispn,” on page 58](#).

See Also

[unicspn \(page 184\)](#), [unipbrk \(page 199\)](#)

unistr

Scans a string for the first occurrence of a specified substring

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(punicode) unistr (
    const unicode N_FAR *s1,
    const unicode N_FAR *s2);
```

Pascal Syntax

```
uses netwin32

Function unistr
  (s1 : const unicode;
   s2 : const unicode
  ) : punicode;
```

Parameters

s1

(IN) Points to the string to be scanned.

s2

(IN) Points to the string to be located.

Return Values

Non-NULL Pointer to the element in *s1* where *s2* begins (points to *s2* in *s1*).

NULL *s2* does not occur in *s1*.

Remarks

If the *s2* parameter points to a zero length string, unistr returns the string pointed to by the *s1* parameter.

unistr corresponds to the C strstr function.

For sample code, see [Section 3.29, “Example: unistr,” on page 58](#).

See Also

[unichr \(page 178\)](#)

unitok

Searches a string for tokens separated by specified delimiters

Local Servers: nonblocking

Remote Servers: N/A

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM, Windows NT, Windows95, Windows 98

Library: Cross-Platform Localization (LOC*.*)

Service: Unicode

Syntax

```
#include <unicode.h>

N_EXTERN_LIBRARY(punicode) unitok (
    punicode          s1,
    const unicode N_FAR *s2);
```

Pascal Syntax

```
uses netwin32

Function unitok
    (s1 : punicode;
     s2 : const unicode
    ) : punicode;
```

Parameters

s1

(IN) Points to the string to parse.

s2

(IN) Points to the delimiter values.

Return Values

If a delimiter is found, returns a pointer to the first byte of a token. On subsequent iterations if no delimiter is found, returns a null pointer.

If the string does not contain any of the delimiters specified in *s2*, returns a pointer to the string. All of the string is considered to be a token.

Remarks

The `unitok` function considers the string pointed to by the `s1` parameter to consist of a sequence of zero or more text tokens, separated from the delimiter pointed to by the `s2` parameter by spans of one or more characters.

The first call to `unitok` returns a pointer to the first character of the first token in the string parameter and writes a null character into the string parameter immediately following the returned token. The `unitok` function sets the string parameter to a null pointer which allows `unitok`, on subsequent calls, to search through the string and return successive tokens, until no tokens remain. Because `unitok` can modify the original string, that string should be duplicated if the string is to be reused.

The `unitok` function corresponds to the `strtok` function.

For sample code, see [Section 3.30, “Example: `unitok`,” on page 58](#).

Revision History

A

The following table outlines all the changes that have been made to the Unicode documentation (in reverse chronological order):

March 1, 2006	Updated format.
October 5, 2005	Transitioned to revised Novell documentation standards.
March 2, 2005	Fixed the preface and legal information.
July 30, 2003	Updated the documentation for unitok (page 213) .
March 2002	Updated Pascal syntax for NWUSUnicodeToByte (page 110) .
February 2002	Updated links.
September 2001	Added support for NetWare 6.x to documentation.
June 2001	Changed the descriptions of <code>outputBufferLen</code> in NWUXByteToUnicode (page 122) , NWUXByteToUnicodePath (page 124) , NWUXLenByteToUnicode (page 142) , and NWUXLenByteToUnicodePath (page 144) . Updated tables.
February 2001	Added Delphi (Pascal) syntax to functions where missing. Corrected return error code (-500 changed to -506) for the NWLUTF8ToUnicodeSize (page 83) function.
July 2000	Removed documentation for <code>NWUXLoadCollationConverter</code> , <code>NWUXLoadNormalizeConverter</code> , <code>NWUXUnicodeToCollation</code> , and <code>NWUXUnicodeToNormalized</code> because these functions were never implemented.
May 2000	Added documentation for NWUXEnableOemEuro (page 126) . Added sample code links in NWLUnicodeToUTF8 (page 78) , NWLUnicodeToUTF8Size (page 80) , NWLUTF8ToUnicode (page 81) , and NWLUTF8ToUnicodeSize (page 83) .
March 2000	Added NWLUnicodeToUTF8 (page 78) , NWLUnicodeToUTF8Size (page 80) , NWLUTF8ToUnicode (page 81) , and NWLUTF8ToUnicodeSize (page 83) . Changed <code>nwnunicode.h</code> to <code>nunicode.h</code> and <code>nwunicode.h</code> to <code>unicode.h</code> in the "About This Guide" on page 11 . Also, removed asterisk (pointer indicator) from first parameter in syntax of unincpy (page 193) . Removed NetWare 3.x references from all "Functions" on page 61 . Also, fixed wording about the length of the input string due to default conversion behavior found in several Unicode functions.
January 2000	Added <code>const</code> to syntax of input pointers.
November 1999	Added library information to each Unicode Function .
