<https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751(v=vs.85).aspx>

**Windows Data Types**

The data types supported by Windows are used to define function return values, function and message parameters, and structure members. They define the size and meaning of these elements. For more information about the underlying C/C++ data types, see [Data Type Ranges](Http://go.microsoft.com/fwlink/p/?linkid=83930).

The following table contains the following types: character, integer, Boolean, pointer, and handle. The character, integer, and Boolean types are common to most C compilers. Most of the pointer-type names begin with a prefix of P or LP. Handles refer to a resource that has been loaded into memory.

For more information about handling 64-bit integers, see [Large Integers](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383710%28v=vs.85%29.aspx).

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| **Data type** | **Description** |
| **APIENTRY** | The calling convention for system functions.  This type is declared in WinDef.h as follows:  #define APIENTRY WINAPI |
| **ATOM** | An atom. For more information, see [About Atom Tables](https://msdn.microsoft.com/en-us/library/windows/desktop/ms649053%28v=vs.85%29.aspx).  This type is declared in WinDef.h as follows:  typedef WORD ATOM; |
| **BOOL** | A Boolean variable (should be **TRUE** or **FALSE**).  This type is declared in WinDef.h as follows:  typedef int BOOL; |
| **BOOLEAN** | A Boolean variable (should be **TRUE** or **FALSE**).  This type is declared in WinNT.h as follows:  typedef BYTE BOOLEAN; |
| **BYTE** | A byte (8 bits).  This type is declared in WinDef.h as follows:  typedef unsigned char BYTE; |
| **CALLBACK** | The calling convention for callback functions.  This type is declared in WinDef.h as follows:  #define CALLBACK \_\_stdcall  **CALLBACK**, **WINAPI**, and **APIENTRY** are all used to define functions with the \_\_stdcall calling convention. Most functions in the Windows API are declared using **WINAPI**. You may wish to use **CALLBACK** for the callback functions that you implement to help identify the function as a callback function. |
| **CCHAR** | An 8-bit Windows (ANSI) character.  This type is declared in WinNT.h as follows:  typedef char CCHAR; |
| **CHAR** | An 8-bit Windows (ANSI) character. For more information, see [Character Sets Used By Fonts](https://msdn.microsoft.com/en-us/library/windows/desktop/dd183415%28v=vs.85%29.aspx).  This type is declared in WinNT.h as follows:  typedef char CHAR; |
| **COLORREF** | The red, green, blue (RGB) color value (32 bits). See [**COLORREF**](https://msdn.microsoft.com/en-us/library/windows/desktop/dd183449%28v=vs.85%29.aspx) for information on this type.  This type is declared in WinDef.h as follows:  typedef DWORD COLORREF; |
| **CONST** | A variable whose value is to remain constant during execution.  This type is declared in WinDef.h as follows:  #define CONST const |
| **DWORD** | A 32-bit unsigned integer. The range is 0 through 4294967295 decimal.  This type is declared in IntSafe.h as follows:  typedef unsigned long DWORD; |
| **DWORDLONG** | A 64-bit unsigned integer. The range is 0 through 18446744073709551615 decimal.  This type is declared in IntSafe.h as follows:  typedef unsigned \_\_int64 DWORDLONG; |
| **DWORD\_PTR** | An unsigned long type for pointer precision. Use when casting a pointer to a long type to perform pointer arithmetic. (Also commonly used for general 32-bit parameters that have been extended to 64 bits in 64-bit Windows.)  This type is declared in BaseTsd.h as follows:  typedef ULONG\_PTR DWORD\_PTR; |
| **DWORD32** | A 32-bit unsigned integer.  This type is declared in BaseTsd.h as follows:  typedef unsigned int DWORD32; |
| **DWORD64** | A 64-bit unsigned integer.  This type is declared in BaseTsd.h as follows:  typedef unsigned \_\_int64 DWORD64; |
| **FLOAT** | A floating-point variable.  This type is declared in WinDef.h as follows:  typedef float FLOAT; |
| **HACCEL** | A handle to an [accelerator table](https://msdn.microsoft.com/en-us/library/windows/desktop/ms645526%28v=vs.85%29.aspx).  This type is declared in WinDef.h as follows:  typedef HANDLE HACCEL; |
| **HALF\_PTR** | Half the size of a pointer. Use within a structure that contains a pointer and two small fields.  This type is declared in BaseTsd.h as follows:  C++  #ifdef \_WIN64  typedef int HALF\_PTR;  #else  typedef short HALF\_PTR;  #endif |
| **HANDLE** | A handle to an object.  This type is declared in WinNT.h as follows:  typedef PVOID HANDLE; |
| **HBITMAP** | A handle to a [bitmap](https://msdn.microsoft.com/en-us/library/windows/desktop/dd183377%28v=vs.85%29.aspx).  This type is declared in WinDef.h as follows:  typedef HANDLE HBITMAP; |
| **HBRUSH** | A handle to a [brush](https://msdn.microsoft.com/en-us/library/windows/desktop/dd183394%28v=vs.85%29.aspx).  This type is declared in WinDef.h as follows:  typedef HANDLE HBRUSH; |
| **HCOLORSPACE** | A handle to a [color space](https://msdn.microsoft.com/en-us/library/windows/desktop/ms536546%28v=vs.85%29.aspx).  This type is declared in WinDef.h as follows:  typedef HANDLE HCOLORSPACE; |
| **HCONV** | A handle to a dynamic data exchange (DDE) conversation.  This type is declared in Ddeml.h as follows:  typedef HANDLE HCONV; |
| **HCONVLIST** | A handle to a DDE conversation list.  This type is declared in Ddeml.h as follows:  typedef HANDLE HCONVLIST; |
| **HCURSOR** | A handle to a [cursor](https://msdn.microsoft.com/en-us/library/windows/desktop/ms646970%28v=vs.85%29.aspx).  This type is declared in WinDef.h as follows:  typedef HICON HCURSOR; |
| **HDC** | A handle to a [device context](https://msdn.microsoft.com/en-us/library/windows/desktop/dd183560%28v=vs.85%29.aspx) (DC).  This type is declared in WinDef.h as follows:  typedef HANDLE HDC; |
| **HDDEDATA** | A handle to DDE data.  This type is declared in Ddeml.h as follows:  typedef HANDLE HDDEDATA; |
| **HDESK** | A handle to a [desktop](https://msdn.microsoft.com/en-us/library/windows/desktop/ms682573%28v=vs.85%29.aspx).  This type is declared in WinDef.h as follows:  typedef HANDLE HDESK; |
| **HDROP** | A handle to an internal drop structure.  This type is declared in ShellApi.h as follows:  typedef HANDLE HDROP; |
| **HDWP** | A handle to a deferred window position structure.  This type is declared in WinUser.h as follows:  typedef HANDLE HDWP; |
| **HENHMETAFILE** | A handle to an [enhanced metafile](https://msdn.microsoft.com/en-us/library/windows/desktop/dd145051%28v=vs.85%29.aspx).  This type is declared in WinDef.h as follows:  typedef HANDLE HENHMETAFILE; |
| **HFILE** | A handle to a file opened by [**OpenFile**](https://msdn.microsoft.com/en-us/library/windows/desktop/aa365430%28v=vs.85%29.aspx), not [**CreateFile**](https://msdn.microsoft.com/en-us/library/windows/desktop/aa363858%28v=vs.85%29.aspx).  This type is declared in WinDef.h as follows:  typedef int HFILE; |
| **HFONT** | A handle to a [font](https://msdn.microsoft.com/en-us/library/windows/desktop/dd162470%28v=vs.85%29.aspx).  This type is declared in WinDef.h as follows:  typedef HANDLE HFONT; |
| **HGDIOBJ** | A handle to a GDI object.  This type is declared in WinDef.h as follows:  typedef HANDLE HGDIOBJ; |
| **HGLOBAL** | A handle to a global memory block.  This type is declared in WinDef.h as follows:  typedef HANDLE HGLOBAL; |
| **HHOOK** | A handle to a [hook](https://msdn.microsoft.com/en-us/library/windows/desktop/ms632589%28v=vs.85%29.aspx).  This type is declared in WinDef.h as follows:  typedef HANDLE HHOOK; |
| **HICON** | A handle to an [icon](https://msdn.microsoft.com/en-us/library/windows/desktop/ms646973%28v=vs.85%29.aspx).  This type is declared in WinDef.h as follows:  typedef HANDLE HICON; |
| **HINSTANCE** | A handle to an instance. This is the base address of the module in memory.  **HMODULE** and **HINSTANCE** are the same today, but represented different things in 16-bit Windows.  This type is declared in WinDef.h as follows:  typedef HANDLE HINSTANCE; |
| **HKEY** | A handle to a registry key.  This type is declared in WinDef.h as follows:  typedef HANDLE HKEY; |
| **HKL** | An input locale identifier.  This type is declared in WinDef.h as follows:  typedef HANDLE HKL; |
| **HLOCAL** | A handle to a local memory block.  This type is declared in WinDef.h as follows:  typedef HANDLE HLOCAL; |
| **HMENU** | A handle to a [menu](https://msdn.microsoft.com/en-us/library/windows/desktop/ms646977%28v=vs.85%29.aspx).  This type is declared in WinDef.h as follows:  typedef HANDLE HMENU; |
| **HMETAFILE** | A handle to a [metafile](https://msdn.microsoft.com/en-us/library/windows/desktop/dd145051%28v=vs.85%29.aspx).  This type is declared in WinDef.h as follows:  typedef HANDLE HMETAFILE; |
| **HMODULE** | A handle to a module. The is the base address of the module in memory.  **HMODULE** and **HINSTANCE** are the same in current versions of Windows, but represented different things in 16-bit Windows.  This type is declared in WinDef.h as follows:  typedef HINSTANCE HMODULE; |
| **HMONITOR** | A handle to a display monitor.  This type is declared in WinDef.h as follows:  if(WINVER >= 0x0500) typedef HANDLE HMONITOR; |
| **HPALETTE** | A handle to a palette.  This type is declared in WinDef.h as follows:  typedef HANDLE HPALETTE; |
| **HPEN** | A handle to a [pen](https://msdn.microsoft.com/en-us/library/windows/desktop/dd162786%28v=vs.85%29.aspx).  This type is declared in WinDef.h as follows:  typedef HANDLE HPEN; |
| **HRESULT** | The return codes used by COM interfaces. For more information, see [Structure of the COM Error Codes](https://msdn.microsoft.com/en-us/library/windows/desktop/ms690088%28v=vs.85%29.aspx). To test an **HRESULT** value, use the [**FAILED**](https://msdn.microsoft.com/en-us/library/windows/desktop/ms693474%28v=vs.85%29.aspx) and [**SUCCEEDED**](https://msdn.microsoft.com/en-us/library/windows/desktop/ms687197%28v=vs.85%29.aspx) macros.  This type is declared in WinNT.h as follows:  typedef LONG HRESULT; |
| **HRGN** | A handle to a [region](https://msdn.microsoft.com/en-us/library/windows/desktop/dd162913%28v=vs.85%29.aspx).  This type is declared in WinDef.h as follows:  typedef HANDLE HRGN; |
| **HRSRC** | A handle to a resource.  This type is declared in WinDef.h as follows:  typedef HANDLE HRSRC; |
| **HSZ** | A handle to a DDE string.  This type is declared in Ddeml.h as follows:  typedef HANDLE HSZ; |
| **HWINSTA** | A handle to a [window station](https://msdn.microsoft.com/en-us/library/windows/desktop/ms687096%28v=vs.85%29.aspx).  This type is declared in WinDef.h as follows:  typedef HANDLE WINSTA; |
| **HWND** | A handle to a [window](https://msdn.microsoft.com/en-us/library/windows/desktop/ms632595%28v=vs.85%29.aspx).  This type is declared in WinDef.h as follows:  typedef HANDLE HWND; |
| **INT** | A 32-bit signed integer. The range is -2147483648 through 2147483647 decimal.  This type is declared in WinDef.h as follows:  typedef int INT; |
| **INT\_PTR** | A signed integer type for pointer precision. Use when casting a pointer to an integer to perform pointer arithmetic.  This type is declared in BaseTsd.h as follows:  C++  #if defined(\_WIN64)  typedef \_\_int64 INT\_PTR;  #else  typedef int INT\_PTR;  #endif |
| **INT8** | An 8-bit signed integer.  This type is declared in BaseTsd.h as follows:  typedef signed char INT8; |
| **INT16** | A 16-bit signed integer.  This type is declared in BaseTsd.h as follows:  typedef signed short INT16; |
| **INT32** | A 32-bit signed integer. The range is -2147483648 through 2147483647 decimal.  This type is declared in BaseTsd.h as follows:  typedef signed int INT32; |
| **INT64** | A 64-bit signed integer. The range is –9223372036854775808 through 9223372036854775807 decimal.  This type is declared in BaseTsd.h as follows:  typedef signed \_\_int64 INT64; |
| **LANGID** | A language identifier. For more information, see [Language Identifiers](https://msdn.microsoft.com/en-us/library/windows/desktop/dd318691%28v=vs.85%29.aspx).  This type is declared in WinNT.h as follows:  typedef WORD LANGID; |
| **LCID** | A locale identifier. For more information, see [Locale Identifiers](https://msdn.microsoft.com/en-us/library/windows/desktop/dd373763%28v=vs.85%29.aspx).  This type is declared in WinNT.h as follows:  typedef DWORD LCID; |
| **LCTYPE** | A locale information type. For a list, see [Locale Information Constants](https://msdn.microsoft.com/en-us/library/windows/desktop/dd464799%28v=vs.85%29.aspx).  This type is declared in WinNls.h as follows:  typedef DWORD LCTYPE; |
| **LGRPID** | A language group identifier. For a list, see [**EnumLanguageGroupLocales**](https://msdn.microsoft.com/en-us/library/windows/desktop/dd317819%28v=vs.85%29.aspx).  This type is declared in WinNls.h as follows:  typedef DWORD LGRPID; |
| **LONG** | A 32-bit signed integer. The range is –2147483648 through 2147483647 decimal.  This type is declared in WinNT.h as follows:  typedef long LONG; |
| **LONGLONG** | A 64-bit signed integer. The range is –9223372036854775808 through 9223372036854775807 decimal.  This type is declared in WinNT.h as follows:  C++  #if !defined(\_M\_IX86)  typedef \_\_int64 LONGLONG;  #else  typedef double LONGLONG;  #endif |
| **LONG\_PTR** | A signed long type for pointer precision. Use when casting a pointer to a long to perform pointer arithmetic.  This type is declared in BaseTsd.h as follows:  C++  #if defined(\_WIN64)  typedef \_\_int64 LONG\_PTR;  #else  typedef long LONG\_PTR;  #endif |
| **LONG32** | A 32-bit signed integer. The range is –2147483648 through 2147483647 decimal.  This type is declared in BaseTsd.h as follows:  typedef signed int LONG32; |
| **LONG64** | A 64-bit signed integer. The range is –9223372036854775808 through 9223372036854775807 decimal.  This type is declared in BaseTsd.h as follows:  typedef \_\_int64 LONG64; |
| **LPARAM** | A message parameter.  This type is declared in WinDef.h as follows:  typedef LONG\_PTR LPARAM; |
| **LPBOOL** | A pointer to a [BOOL](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#BOOL).  This type is declared in WinDef.h as follows:  typedef BOOL far \*LPBOOL; |
| **LPBYTE** | A pointer to a [BYTE](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#BYTE).  This type is declared in WinDef.h as follows:  typedef BYTE far \*LPBYTE; |
| **LPCOLORREF** | A pointer to a [**COLORREF**](https://msdn.microsoft.com/en-us/library/windows/desktop/dd183449%28v=vs.85%29.aspx) value.  This type is declared in WinDef.h as follows:  typedef DWORD \*LPCOLORREF; |
| **LPCSTR** | A pointer to a constant null-terminated string of 8-bit Windows (ANSI) characters. For more information, see [Character Sets Used By Fonts](https://msdn.microsoft.com/en-us/library/windows/desktop/dd183415%28v=vs.85%29.aspx).  This type is declared in WinNT.h as follows:  typedef \_\_nullterminated CONST CHAR \*LPCSTR; |
| **LPCTSTR** | An [LPCWSTR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#LPCWSTR) if **UNICODE** is defined, an [LPCSTR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#LPCSTR) otherwise. For more information, see [Windows Data Types for Strings](https://msdn.microsoft.com/en-us/library/windows/desktop/dd374131%28v=vs.85%29.aspx).  This type is declared in WinNT.h as follows:  C++  #ifdef UNICODE  typedef LPCWSTR LPCTSTR;  #else  typedef LPCSTR LPCTSTR;  #endif |
| **LPCVOID** | A pointer to a constant of any type.  This type is declared in WinDef.h as follows:  typedef CONST void \*LPCVOID; |
| **LPCWSTR** | A pointer to a constant null-terminated string of 16-bit Unicode characters. For more information, see [Character Sets Used By Fonts](https://msdn.microsoft.com/en-us/library/windows/desktop/dd183415%28v=vs.85%29.aspx).  This type is declared in WinNT.h as follows:  typedef CONST WCHAR \*LPCWSTR; |
| **LPDWORD** | A pointer to a [DWORD](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#DWORD).  This type is declared in WinDef.h as follows:  typedef DWORD \*LPDWORD; |
| **LPHANDLE** | A pointer to a [HANDLE](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#HANDLE).  This type is declared in WinDef.h as follows:  typedef HANDLE \*LPHANDLE; |
| **LPINT** | A pointer to an [INT](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#INT).  This type is declared in WinDef.h as follows:  typedef int \*LPINT; |
| **LPLONG** | A pointer to a [LONG](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#LONG).  This type is declared in WinDef.h as follows:  typedef long \*LPLONG; |
| **LPSTR** | A pointer to a null-terminated string of 8-bit Windows (ANSI) characters. For more information, see [Character Sets Used By Fonts](https://msdn.microsoft.com/en-us/library/windows/desktop/dd183415%28v=vs.85%29.aspx).  This type is declared in WinNT.h as follows:  typedef CHAR \*LPSTR; |
| **LPTSTR** | An [LPWSTR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#LPWSTR) if **UNICODE** is defined, an [LPSTR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#LPSTR) otherwise. For more information, see [Windows Data Types for Strings](https://msdn.microsoft.com/en-us/library/windows/desktop/dd374131%28v=vs.85%29.aspx).  This type is declared in WinNT.h as follows:  C++  #ifdef UNICODE  typedef LPWSTR LPTSTR;  #else  typedef LPSTR LPTSTR;  #endif |
| **LPVOID** | A pointer to any type.  This type is declared in WinDef.h as follows:  typedef void \*LPVOID; |
| **LPWORD** | A pointer to a [WORD](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#WORD).  This type is declared in WinDef.h as follows:  typedef WORD \*LPWORD; |
| **LPWSTR** | A pointer to a null-terminated string of 16-bit Unicode characters. For more information, see [Character Sets Used By Fonts](https://msdn.microsoft.com/en-us/library/windows/desktop/dd183415%28v=vs.85%29.aspx).  This type is declared in WinNT.h as follows:  typedef WCHAR \*LPWSTR; |
| **LRESULT** | Signed result of message processing.  This type is declared in WinDef.h as follows:  typedef LONG\_PTR LRESULT; |
| **PBOOL** | A pointer to a [BOOL](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#BOOL).  This type is declared in WinDef.h as follows:  typedef BOOL \*PBOOL; |
| **PBOOLEAN** | A pointer to a [BOOLEAN](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#BOOLEAN).  This type is declared in WinNT.h as follows:  typedef BOOLEAN \*PBOOLEAN; |
| **PBYTE** | A pointer to a [BYTE](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#BYTE).  This type is declared in WinDef.h as follows:  typedef BYTE \*PBYTE; |
| **PCHAR** | A pointer to a [CHAR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#CHAR).  This type is declared in WinNT.h as follows:  typedef CHAR \*PCHAR; |
| **PCSTR** | A pointer to a constant null-terminated string of 8-bit Windows (ANSI) characters. For more information, see [Character Sets Used By Fonts](https://msdn.microsoft.com/en-us/library/windows/desktop/dd183415%28v=vs.85%29.aspx).  This type is declared in WinNT.h as follows:  typedef CONST CHAR \*PCSTR; |
| **PCTSTR** | A [PCWSTR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#PCWSTR) if **UNICODE** is defined, a [PCSTR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#PCSTR) otherwise. For more information, see [Windows Data Types for Strings](https://msdn.microsoft.com/en-us/library/windows/desktop/dd374131%28v=vs.85%29.aspx).  This type is declared in WinNT.h as follows:  C++  #ifdef UNICODE  typedef LPCWSTR PCTSTR;  #else  typedef LPCSTR PCTSTR;  #endif |
| **PCWSTR** | A pointer to a constant null-terminated string of 16-bit Unicode characters. For more information, see [Character Sets Used By Fonts](https://msdn.microsoft.com/en-us/library/windows/desktop/dd183415%28v=vs.85%29.aspx).  This type is declared in WinNT.h as follows:  typedef CONST WCHAR \*PCWSTR; |
| **PDWORD** | A pointer to a [DWORD](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#DWORD).  This type is declared in WinDef.h as follows:  typedef DWORD \*PDWORD; |
| **PDWORDLONG** | A pointer to a [DWORDLONG](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#DWORDLONG).  This type is declared in WinNT.h as follows:  typedef DWORDLONG \*PDWORDLONG; |
| **PDWORD\_PTR** | A pointer to a [DWORD\_PTR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#DWORD_PTR).  This type is declared in BaseTsd.h as follows:  typedef DWORD\_PTR \*PDWORD\_PTR; |
| **PDWORD32** | A pointer to a [DWORD32](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#DWORD32).  This type is declared in BaseTsd.h as follows:  typedef DWORD32 \*PDWORD32; |
| **PDWORD64** | A pointer to a [DWORD64](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#DWORD64).  This type is declared in BaseTsd.h as follows:  typedef DWORD64 \*PDWORD64; |
| **PFLOAT** | A pointer to a [FLOAT](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#FLOAT).  This type is declared in WinDef.h as follows:  typedef FLOAT \*PFLOAT; |
| **PHALF\_PTR** | A pointer to a [HALF\_PTR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#HALF_PTR).  This type is declared in BaseTsd.h as follows:  C++  #ifdef \_WIN64  typedef HALF\_PTR \*PHALF\_PTR;  #else  typedef HALF\_PTR \*PHALF\_PTR;  #endif |
| **PHANDLE** | A pointer to a [HANDLE](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#HANDLE).  This type is declared in WinNT.h as follows:  typedef HANDLE \*PHANDLE; |
| **PHKEY** | A pointer to an [HKEY](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#HKEY).  This type is declared in WinDef.h as follows:  typedef HKEY \*PHKEY; |
| **PINT** | A pointer to an [INT](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#INT).  This type is declared in WinDef.h as follows:  typedef int \*PINT; |
| **PINT\_PTR** | A pointer to an [INT\_PTR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#INT_PTR).  This type is declared in BaseTsd.h as follows:  typedef INT\_PTR \*PINT\_PTR; |
| **PINT8** | A pointer to an [INT8](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#INT8).  This type is declared in BaseTsd.h as follows:  typedef INT8 \*PINT8; |
| **PINT16** | A pointer to an [INT16](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#INT16).  This type is declared in BaseTsd.h as follows:  typedef INT16 \*PINT16; |
| **PINT32** | A pointer to an [INT32](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#INT32).  This type is declared in BaseTsd.h as follows:  typedef INT32 \*PINT32; |
| **PINT64** | A pointer to an [INT64](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#INT64).  This type is declared in BaseTsd.h as follows:  typedef INT64 \*PINT64; |
| **PLCID** | A pointer to an [LCID](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#LCID).  This type is declared in WinNT.h as follows:  typedef PDWORD PLCID; |
| **PLONG** | A pointer to a [LONG](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#LONG).  This type is declared in WinNT.h as follows:  typedef LONG \*PLONG; |
| **PLONGLONG** | A pointer to a [LONGLONG](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#LONGLONG).  This type is declared in WinNT.h as follows:  typedef LONGLONG \*PLONGLONG; |
| **PLONG\_PTR** | A pointer to a [LONG\_PTR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#LONG_PTR).  This type is declared in BaseTsd.h as follows:  typedef LONG\_PTR \*PLONG\_PTR; |
| **PLONG32** | A pointer to a [LONG32](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#LONG32).  This type is declared in BaseTsd.h as follows:  typedef LONG32 \*PLONG32; |
| **PLONG64** | A pointer to a [LONG64](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#LONG64).  This type is declared in BaseTsd.h as follows:  typedef LONG64 \*PLONG64; |
| **POINTER\_32** | A 32-bit pointer. On a 32-bit system, this is a native pointer. On a 64-bit system, this is a truncated 64-bit pointer.  This type is declared in BaseTsd.h as follows:  C++  #if defined(\_WIN64)  #define POINTER\_32 \_\_ptr32  #else  #define POINTER\_32  #endif |
| **POINTER\_64** | A 64-bit pointer. On a 64-bit system, this is a native pointer. On a 32-bit system, this is a sign-extended 32-bit pointer.  Note that it is not safe to assume the state of the high pointer bit.  This type is declared in BaseTsd.h as follows:  C++  #if (\_MSC\_VER >= 1300)  #define POINTER\_64 \_\_ptr64  #else  #define POINTER\_64  #endif |
| **POINTER\_SIGNED** | A signed pointer.  This type is declared in BaseTsd.h as follows:  #define POINTER\_SIGNED \_\_sptr |
| **POINTER\_UNSIGNED** | An unsigned pointer.  This type is declared in BaseTsd.h as follows:  #define POINTER\_UNSIGNED \_\_uptr |
| **PSHORT** | A pointer to a [SHORT](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#SHORT).  This type is declared in WinNT.h as follows:  typedef SHORT \*PSHORT; |
| **PSIZE\_T** | A pointer to a [SIZE\_T](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#SIZE_T).  This type is declared in BaseTsd.h as follows:  typedef SIZE\_T \*PSIZE\_T; |
| **PSSIZE\_T** | A pointer to a [SSIZE\_T](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#SSIZE_T).  This type is declared in BaseTsd.h as follows:  typedef SSIZE\_T \*PSSIZE\_T; |
| **PSTR** | A pointer to a null-terminated string of 8-bit Windows (ANSI) characters. For more information, see [Character Sets Used By Fonts](https://msdn.microsoft.com/en-us/library/windows/desktop/dd183415%28v=vs.85%29.aspx).  This type is declared in WinNT.h as follows:  typedef CHAR \*PSTR; |
| **PTBYTE** | A pointer to a [TBYTE](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#TBYTE).  This type is declared in WinNT.h as follows:  typedef TBYTE \*PTBYTE; |
| **PTCHAR** | A pointer to a [TCHAR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#TCHAR).  This type is declared in WinNT.h as follows:  typedef TCHAR \*PTCHAR; |
| **PTSTR** | A [PWSTR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#PWSTR) if **UNICODE** is defined, a [PSTR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#PSTR) otherwise. For more information, see [Windows Data Types for Strings](https://msdn.microsoft.com/en-us/library/windows/desktop/dd374131%28v=vs.85%29.aspx).  This type is declared in WinNT.h as follows:  C++  #ifdef UNICODE  typedef LPWSTR PTSTR;  #else typedef LPSTR PTSTR;  #endif |
| **PUCHAR** | A pointer to a [UCHAR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#UCHAR).  This type is declared in WinDef.h as follows:  typedef UCHAR \*PUCHAR; |
| **PUHALF\_PTR** | A pointer to a [UHALF\_PTR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#UHALF_PTR).  This type is declared in BaseTsd.h as follows:  C++  #ifdef \_WIN64  typedef UHALF\_PTR \*PUHALF\_PTR;  #else  typedef UHALF\_PTR \*PUHALF\_PTR;  #endif |
| **PUINT** | A pointer to a [UINT](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#UINT).  This type is declared in WinDef.h as follows:  typedef UINT \*PUINT; |
| **PUINT\_PTR** | A pointer to a [UINT\_PTR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#UINT_PTR).  This type is declared in BaseTsd.h as follows:  typedef UINT\_PTR \*PUINT\_PTR; |
| **PUINT8** | A pointer to a [UINT8](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#UINT8).  This type is declared in BaseTsd.h as follows:  typedef UINT8 \*PUINT8; |
| **PUINT16** | A pointer to a [UINT16](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#UINT16).  This type is declared in BaseTsd.h as follows:  typedef UINT16 \*PUINT16; |
| **PUINT32** | A pointer to a [UINT32](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#UINT32).  This type is declared in BaseTsd.h as follows:  typedef UINT32 \*PUINT32; |
| **PUINT64** | A pointer to a [UINT64](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#UINT64).  This type is declared in BaseTsd.h as follows:  typedef UINT64 \*PUINT64; |
| **PULONG** | A pointer to a [ULONG](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#ULONG).  This type is declared in WinDef.h as follows:  typedef ULONG \*PULONG; |
| **PULONGLONG** | A pointer to a [ULONGLONG](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#ULONGLONG).  This type is declared in WinDef.h as follows:  typedef ULONGLONG \*PULONGLONG; |
| **PULONG\_PTR** | A pointer to a [ULONG\_PTR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#ULONG_PTR).  This type is declared in BaseTsd.h as follows:  typedef ULONG\_PTR \*PULONG\_PTR; |
| **PULONG32** | A pointer to a [ULONG32](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#ULONG32).  This type is declared in BaseTsd.h as follows:  typedef ULONG32 \*PULONG32; |
| **PULONG64** | A pointer to a [ULONG64](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#ULONG64).  This type is declared in BaseTsd.h as follows:  typedef ULONG64 \*PULONG64; |
| **PUSHORT** | A pointer to a [USHORT](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#USHORT).  This type is declared in WinDef.h as follows:  typedef USHORT \*PUSHORT; |
| **PVOID** | A pointer to any type.  This type is declared in WinNT.h as follows:  typedef void \*PVOID; |
| **PWCHAR** | A pointer to a [WCHAR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#WCHAR).  This type is declared in WinNT.h as follows:  typedef WCHAR \*PWCHAR; |
| **PWORD** | A pointer to a [WORD](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#WORD).  This type is declared in WinDef.h as follows:  typedef WORD \*PWORD; |
| **PWSTR** | A pointer to a null-terminated string of 16-bit Unicode characters. For more information, see [Character Sets Used By Fonts](https://msdn.microsoft.com/en-us/library/windows/desktop/dd183415%28v=vs.85%29.aspx).  This type is declared in WinNT.h as follows:  typedef WCHAR \*PWSTR; |
| **QWORD** | A 64-bit unsigned integer.  This type is declared as follows:  typedef unsigned \_\_int64 QWORD; |
| **SC\_HANDLE** | A handle to a service control manager database. For more information, see [SCM Handles](https://msdn.microsoft.com/en-us/library/windows/desktop/ms685104%28v=vs.85%29.aspx).  This type is declared in WinSvc.h as follows:  typedef HANDLE SC\_HANDLE; |
| **SC\_LOCK** | A lock to a service control manager database. For more information, see [SCM Handles](https://msdn.microsoft.com/en-us/library/windows/desktop/ms685104%28v=vs.85%29.aspx).  This type is declared in WinSvc.h as follows:  typedef LPVOID SC\_LOCK; |
| **SERVICE\_STATUS\_HANDLE** | A handle to a service status value. For more information, see [SCM Handles](https://msdn.microsoft.com/en-us/library/windows/desktop/ms685104%28v=vs.85%29.aspx).  This type is declared in WinSvc.h as follows:  typedef HANDLE SERVICE\_STATUS\_HANDLE; |
| **SHORT** | A 16-bit integer. The range is –32768 through 32767 decimal.  This type is declared in WinNT.h as follows:  typedef short SHORT; |
| **SIZE\_T** | The maximum number of bytes to which a pointer can point. Use for a count that must span the full range of a pointer.  This type is declared in BaseTsd.h as follows:  typedef ULONG\_PTR SIZE\_T; |
| **SSIZE\_T** | A signed version of [SIZE\_T](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#SIZE_T).  This type is declared in BaseTsd.h as follows:  typedef LONG\_PTR SSIZE\_T; |
| **TBYTE** | A [WCHAR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#WCHAR) if **UNICODE** is defined, a [CHAR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#CHAR) otherwise.  This type is declared in WinNT.h as follows:  C++  #ifdef UNICODE  typedef WCHAR TBYTE;  #else  typedef unsigned char TBYTE;  #endif |
| **TCHAR** | A [WCHAR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#WCHAR) if **UNICODE** is defined, a [CHAR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#CHAR) otherwise.  This type is declared in WinNT.h as follows:  C++  #ifdef UNICODE  typedef WCHAR TCHAR;  #else  typedef char TCHAR;  #endif |
| **UCHAR** | An unsigned [CHAR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#CHAR).  This type is declared in WinDef.h as follows:  typedef unsigned char UCHAR; |
| **UHALF\_PTR** | An unsigned [HALF\_PTR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#HALF_PTR). Use within a structure that contains a pointer and two small fields.  This type is declared in BaseTsd.h as follows:  C++  #ifdef \_WIN64  typedef unsigned int UHALF\_PTR;  #else  typedef unsigned short UHALF\_PTR;  #endif |
| **UINT** | An unsigned [INT](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#INT). The range is 0 through 4294967295 decimal.  This type is declared in WinDef.h as follows:  typedef unsigned int UINT; |
| **UINT\_PTR** | An unsigned [INT\_PTR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#INT_PTR).  This type is declared in BaseTsd.h as follows:  C++  #if defined(\_WIN64)  typedef unsigned \_\_int64 UINT\_PTR;  #else  typedef unsigned int UINT\_PTR;  #endif |
| **UINT8** | An unsigned [INT8](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#INT8).  This type is declared in BaseTsd.h as follows:  typedef unsigned char UINT8; |
| **UINT16** | An unsigned [INT16](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#INT16).  This type is declared in BaseTsd.h as follows:  typedef unsigned short UINT16; |
| **UINT32** | An unsigned [INT32](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#INT32). The range is 0 through 4294967295 decimal.  This type is declared in BaseTsd.h as follows:  typedef unsigned int UINT32; |
| **UINT64** | An unsigned [INT64](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#INT64). The range is 0 through 18446744073709551615 decimal.  This type is declared in BaseTsd.h as follows:  typedef usigned \_\_int 64 UINT64; |
| **ULONG** | An unsigned [LONG](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#LONG). The range is 0 through 4294967295 decimal.  This type is declared in WinDef.h as follows:  typedef unsigned long ULONG; |
| **ULONGLONG** | A 64-bit unsigned integer. The range is 0 through 18446744073709551615 decimal.  This type is declared in WinNT.h as follows:  C++  #if !defined(\_M\_IX86)  typedef unsigned \_\_int64 ULONGLONG;  #else  typedef double ULONGLONG;  #endif |
| **ULONG\_PTR** | An unsigned [LONG\_PTR](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#LONG_PTR).  This type is declared in BaseTsd.h as follows:  C++  #if defined(\_WIN64)  typedef unsigned \_\_int64 ULONG\_PTR;  #else  typedef unsigned long ULONG\_PTR;  #endif |
| **ULONG32** | An unsigned [LONG32](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#LONG32). The range is 0 through 4294967295 decimal.  This type is declared in BaseTsd.h as follows:  typedef unsigned int ULONG32; |
| **ULONG64** | An unsigned [LONG64](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#LONG64). The range is 0 through 18446744073709551615 decimal.  This type is declared in BaseTsd.h as follows:  typedef unsigned \_\_int64 ULONG64; |
| **UNICODE\_STRING** | A Unicode string.  This type is declared in Winternl.h as follows:  C++  typedef struct \_UNICODE\_STRING {  USHORT Length;  USHORT MaximumLength;  PWSTR Buffer;  } UNICODE\_STRING;  typedef UNICODE\_STRING \*PUNICODE\_STRING;  typedef const UNICODE\_STRING \*PCUNICODE\_STRING; |
| **USHORT** | An unsigned [SHORT](https://msdn.microsoft.com/en-us/library/windows/desktop/aa383751%28v=vs.85%29.aspx#SHORT). The range is 0 through 65535 decimal.  This type is declared in WinDef.h as follows:  typedef unsigned short USHORT; |
| **USN** | An update sequence number (USN).  This type is declared in WinNT.h as follows:  typedef LONGLONG USN; |
| **VOID** | Any type.  This type is declared in WinNT.h as follows:  #define VOID void |
| **WCHAR** | A 16-bit Unicode character. For more information, see [Character Sets Used By Fonts](https://msdn.microsoft.com/en-us/library/windows/desktop/dd183415%28v=vs.85%29.aspx).  This type is declared in WinNT.h as follows:  typedef wchar\_t WCHAR; |
| **WINAPI** | The calling convention for system functions.  This type is declared in WinDef.h as follows:  #define WINAPI \_\_stdcall  **CALLBACK**, **WINAPI**, and **APIENTRY** are all used to define functions with the \_\_stdcall calling convention. Most functions in the Windows API are declared using **WINAPI**. You may wish to use **CALLBACK** for the callback functions that you implement to help identify the function as a callback function. |
| **WORD** | A 16-bit unsigned integer. The range is 0 through 65535 decimal.  This type is declared in WinDef.h as follows:  typedef unsigned short WORD; |
| **WPARAM** | A message parameter.  This type is declared in WinDef.h as follows:  typedef UINT\_PTR WPARAM; |

**Requirements**

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| --- | --- |
| **Minimum supported client** | Windows XP [desktop apps only] |
| **Minimum supported server** | Windows Server 2003 [desktop apps only] |
| **Header** | BaseTsd.h;  WinDef.h;  WinNT.h |