OperatingSystems

Please send updates/corrections to predef-contribute.

AIX

Type	Macro	Description
Identification	`_AIX`	
Version	`_AIX'VR'`	V = Version R = Revision
Identification	`__TOS_AIX__`	Defined by xlC

Example

If `_AIX` is defined, then the following macros can be used to determine the version. Notice that the macros indicates the mentioned version or higher. For example, if `_AIX43` is defined, then `_AIX41` will also be defined.

AIX Version	Macro
3.2.x	`_AIX3` `_AIX32`
4.1	`_AIX41`
4.3	`_AIX43`

Android

Type	Macro	Format	Description
Identification	`__ANDROID__`		
Version	`__ANDROID_API__`	V	V = API Version Must be included from `<android/api-level.h>`

Notice that Android is based on Linux, and that the Linux macros also are defined for Android.

Example

Android Version	`__ANDROID_API__`
1.0	1
1.1	2
1.5	3
1.6	4
2.0	5
2.0.1	6
2.1	7
2.2	8
2.3	9
2.3.3	10
3.0	11

Amdahl UTS

Type	Macro
Identification	`UTS`

AmigaOS

Type	Macro	Description
Identification	`AMIGA`	
Identification	`__amigaos__`	Defined by GNU C

Apollo AEGIS

Type	Macro
Identification	`aegis`

Apollo Domain/OS

Type	Macro
Identification	`apollo`

Bada

Based on Nucleus OS.

BeOS

Type	Macro
Identification	`__BEOS__`

Blue Gene

Type	Macro	Description
Identification	`__bg__`	All Blue Gene systems Defined by XL C/C++ and GNU C
Version	`__bgq__`	Blue Gene/Q Defined for XL C/C++ and GNU C
Identification	`__THW_BLUEGENE__`	All Blue Gene systems Defined by XL C/C++
Version	`__TOS_BGQ__`	Blue Gene/Q Defined by XL C/C++

BSD Environment

Type	Macro	Format	Description

Identification	`__FreeBSD__`
	`__NetBSD__`
	`__OpenBSD__`
	`__bsdi__`
	`__DragonFly__`		

Version	`BSD`	YYYYMM	YYYY = Year MM = Month Must be included from `<sys/param.h>`

Version	`BSD4_2`
	`BSD4_3`
	`BSD4_4`
			Must be included from `<sys/param.h>`

Identification	`_SYSTYPE_BSD`		Defined by DEC C

Example

Version	BSD	Macro
4.3 Net2	199103	
4.4	199306	`BSD4_4`
4.4BSD-Lite2	199506	

BSD/OS

Type	Macro
Identification	`__bsdi__`

ConvexOS

Type	Macro
Identification	`__convex__`

Cygwin Environment

Type	Macro
Identification	`__CYGWIN__`

DG/UX

Type	Macro
Identification	`DGUX`
Identification	`__DGUX__`
Identification	`__dgux__`

DragonFly

Type	Macro
Identification	`__DragonFly__`

DYNIX/ptx

Type	Macro
Identification	`_SEQUENT_`
Identification	`sequent`

eCos

Type	Macro
Identification	`__ECOS`

EMX Environment

Type	Macro
Identification	`__EMX__`

FreeBSD

Type	Macro	Format	Description
Identification	`__FreeBSD__`		
Identification	`__FreeBSD_kernel__`		From FreeBSD 8.3, 9.1, and 10.0.1
Version	`BSD`		
Version	`__FreeBSD__`	V	V = Version
Version	`__FreeBSD_version`	?	Must be included from `<osreldate.h>`

Example

FreeBSD	`__FreeBSD__`	`__FreeBSD_version`
1.x	1	
2.0-RELEASE	2	119411
2.2-RELEASE	2	220000
3.0-RELEASE	3	300005
4.0-RELEASE	4	400017
4.5-RELEASE	4	450000

For more information see the FreeBSD porters handbook.

GNU aka GNU/Hurd

The official name of this operating system is GNU. Hurd is the kernel in the GNU operating system. It is often listed as GNU/Hurd since there is also GNU/Linux and GNU/kFreeBSD, which are most of the GNU operating system with the Linux and FreeBSD kernels respectively.

Type	Macro
Identification	`__GNU__` 1
Identification	`__gnu_hurd__` 1

GNU/kFreeBSD

GNU/kFreeBSD is one of the Debian distros that is based on the FreeBSD kernel rather than the Linux or Hurd kernels.

Type	Macro
Identification	`__FreeBSD_kernel__ && __GLIBC__`

Notice that FreeBSD also defines `__FreeBSD_kernel__` so the `__GLIBC__` macro must be checked to distinguish it.

GNU/Linux

Type	Macro
Identification	`__gnu_linux__`

HI-UX MPP

Type	Macro
Identification	`__hiuxmpp`

HP-UX

Type	Macro	Description
Identification	`_hpux`	Defined by HP UPC
Identification	`hpux`	
Identification	`__hpux`	

IBM OS/400

Type	Macro
Identification	`__OS400__`

INTEGRITY

Type	Macro
Identification	`__INTEGRITY`

Interix Environment

Type	Macro	Description
Identification	`__INTERIX`	Defined by GNU C and Visual Studio

IRIX

Type	Macro
Identification	`sgi`
Identification	`__sgi`

Linux kernel

Systems based on the Linux kernel define these macros. There are two major Linux-based operating systems: GNU/Linux andAndroid, and numerous others like Ångström or OpenEmbedded

Type	Macro	Description
Identification	`__linux__`	1
Identification	`linux`	Obsolete (not POSIX compliant)
Identification	`__linux`	Obsolete (not POSIX compliant)

LynxOS

Type	Macro
Identification	`__Lynx__`

MacOS

Type	Macro	Description
Identification	`macintosh`	Mac OS 9
Identification	`Macintosh`	Mac OS 9
Identification	`__APPLE__ && __MACH__`	Mac OS X Defined by GNU C and Intel C++

Microware OS-9

Type	Macro	Description
Identification	`__OS9000`	Defined by Ultimate C/C++
Identification	`_OSK`	Defined by Ultimate C/C++

MINIX

Type	Macro
Identification	`__minix`

MorphOS

Type	Macro
Identification	`__MORPHOS__`

MPE/iX

Type	Macro
Identification	`mpeix`
Identification	`__mpexl`

MSDOS

Type	Macro
Identification	`MSDOS`
Identification	`__MSDOS__`
Identification	`_MSDOS`
Identification	`__DOS__`

NetBSD

Type	Macro	Format	Description
Identification	`__NetBSD__`		
Version	`BSD`		
Version	`NetBSD'V'_'R'`		V = Version R = Revision Must be included from `<sys/param.h>`
Version	`__NetBSD_Version__`	VVRRAAPP00	VV = Version RR = Revision AA = Release PP = Patch From NetBSD 1.2D (?) until NetBSD 2.0H Must be included from `<sys/param.h>`
Version	`__NetBSD_Version__`	VVRR00PP00	VV = Version RR = Revision PP = Patch From NetBSD 2.99.9 Must be included from `<sys/param.h>`

Example

NetBSD	__NetBSD_Version__	Macro
0.8		NetBSD0_8
0.9		NetBSD0_9
1.0		NetBSD1_0 = 1
1.0A		NetBSD1_0 = 2
1.2D	102040000	
1.2.1	102000100	

NonStop

Type	Macro
Identification	__TANDEM

Nucleus RTOS

Type	Macro
Identification	__nucleus__

OpenBSD

Type	Macro	Format	Description
Identification	__OpenBSD__		
Version	BSD		
Version	OpenBSD'V'_'R'		V = Version R = Revision Must be included from <sys/param.h>

Example

OpenBSD	Macro
3.1	OpenBSD3_1
3.9	OpenBSD3_9

OS/2

Type	Macro
Identification	OS2
Identification	_OS2
Identification	__OS2__
Identification	__TOS_OS2__

Palm OS

Type	Macro	Description
Identification	__palmos__	Defined by GNU C in PRC-Tools

Plan 9

Type	Macro
Identification	EPLAN9

Pyramid DC/OSx

Type	Macro
Identification	pyr

QNX

Type	Macro	Format	Description
Identification	`__QNX__`		QNX 4.x
Identification	`__QNXNTO__`		QNX 6.x
Version	`_NTO_VERSION`	VRR	V = Version RR = Revision Only available when `__QNXNTO__` is defined. Must be included from `<sys/neutrino.h>`
Version	`BBNDK_VERSION_CURRENT`	VVRRRRPPPP	V = Version RRRR = Revision PPPP = Patch Only available on Blackberry 10 From Blackberry 10.1.0 Must be included from `<bbndk.h>`

Example

QNX	`_NTO_VERSION`
6.2	620

Reliant UNIX

Type	Macro
Identification	`sinux`

SCO OpenServer

Type	Macro	Description
Identification	`M_I386`	Defined by GNU C
Identification	`M_XENIX`	Defined by GNU C
Identification	`_SCO_DS`	

Solaris

Type	Macro	Description
Identification	`sun`	
Identification	`__sun`	
Version	`__'System'_'Version'`	System = `uname -s` Version = `uname -r` Any illegal character is replaced by an underscore. Defined by Sun Studio

Use the SVR4 macros to distinguish between Solaris and SunOS.

```
#if defined(sun) || defined(__sun)
# if defined(__SVR4) || defined(__svr4__)
/* Solaris */
# else
/* SunOS */
# endif
#endif
```

Example

Solaris	Macro
2.7	`__SunOS_5_7`
8	`__SunOS_5_8`

Stratus VOS

Type	Macro	Format	Description
Identification	__VOS__		
Version	__VOS__	V	V = Version

Notice that the __VOS__ macro is defined by the compiler, but as several compilers can co-exist in the same OS release, the version number is not reliable.

SVR4 Environment

Type	Macro	Description
Identification	__sysv__	
Identification	__SVR4	
Identification	__svr4__	
Identification	_SYSTYPE_SVR4	Defined on IRIX

Syllable

Type	Macro
Identification	__SYLLABLE__

Symbian OS

Type	Macro
Identification	__SYMBIAN32__

Tru64 (OSF/1)

Type	Macro
Identification	__osf__
Identification	__osf

Ultrix

Type	Macro
Identification	ultrix
Identification	__ultrix
Identification	__ultrix__
Identification	unix & vax

UNICOS

Type	Macro	Format	Description
Identification	_UNICOS		
Version	_UNICOS	V	V = Version

UNICOS/mp

Type	Macro	Description
Identification	_CRAY __crayx1	

UNIX Environment

Type	Macro
Identification	__unix__
Identification	__unix

Notice that not all compilers defines these macros, e.g. the xlC or the DEC C/C++ compiler, so it may be better to use the POSIX or X/Open standard macros instead.

UnixWare

Type	Macro
Identification	`sco`
Identification	`_UNIXWARE7`

U/Win Environment

Type	Macro
Identification	`_UWIN`

VMS

Type	Macro	Format	Description
Identification	`VMS`		
Identification	`__VMS`		
Version	`__VMS_VER`	VVRREPPTT	VV = Version RR = Revision E = Edit number PP = Patch (01 = A, ... 26 = Z) TT = Type (22 = official)

Example

VMS	`__VMS_VER`
6.1	60100022
6.2	60200022
6.2-1I	60210922

VxWorks

Type	Macro	Description
Identification	`__VXWORKS__`	Defined by GNU C and Diab (from ?)
Identification	`__vxworks`	Defined by GNU C and Diab (from ?)
Version	`_WRS_VXWORKS_MAJOR`	Version Must be included from `<version.h>`
Version	`_WRS_VXWORKS_MINOR`	Revision Must be included from `<version.h>`
Version	`_WRS_VXWORKS_MAINT`	Patch/maintenance Must be included from `<version.h>`
Mode	`__RTP__`	For real-time mode
Mode	`_WRS_KERNEL`	For kernel mode

Example

VxWorks	`_WRS_VXWORKS_MAJOR`	`_WRS_VXWORKS_MINOR`	`_WRS_VXWORKS_MAINT`
6.2	6	2	0

Windows

Type	Macro	Description
Identification	`_WIN16`	Defined for 16-bit environments 1
Identification	`_WIN32`	Defined for both 32-bit and 64-bit environments 1
Identification	`_WIN64`	Defined for 64-bit environments 1
Identification	`__WIN32__`	Defined by Borland C++
Identification	`__TOS_WIN__`	Defined by xlC
Identification	`__WINDOWS__`	Defined by Watcom C/C++

Windows CE

Type	Macro	Format	Description
Identification	_WIN32_WCE		Defined by Embedded Visual Studio C++
Version	_WIN32_WCE	VRR	V = Version R = Revision
Identification	WIN32_PLATFORM_'P'		P = Platform
Version	WIN32_PLATFORM_'P'	V	P = Platform V = Version

Example

Version	_WIN32_WCE
2.01	201
2.11	211
3.0	300
4.0	400
4.1	410
4.2	420
5.0	501

Platform	Macro	Value
H/PC 2000	WIN32_PLATFORM_HPC2000	
H/PC Pro 2.11	WIN32_PLATFORM_HPCPRO	211
H/PC Pro 3.0	WIN32_PLATFORM_HPCPRO	300
Pocket PC	WIN32_PLATFORM_PSPC	1
Pocket PC 2002	WIN32_PLATFORM_PSPC	310
Windows Mobile 2003	WIN32_PLATFORM_PSPC	400
Smartphone 2002	WIN32_PLATFORM_WFSP	100

Wind/U Environment

Type	Macro	Format	Description
Identification	_WINDU_SOURCE		
Version	_WINDU_SOURCE	0xVVRRPP	VV = Version RR = Revision PP = Patch

Example

Wind/U	_WINDU_SOURCE
3.1.2	0x030102

z/OS

Type	Macro	Description
Identification	__MVS__	Host
Identification	__HOS_MVS__	Host
Identification	__TOS_MVS__	Target