NAME

uname, **machine**, **arch** — get system information

SYNOPSIS

uname [**-asnrvmpio**]
machine
arch

DESCRIPTION

Writes some system information to the standard output stream in the order listed below, separated by spaces. Except where otherwise specified, information is obtained using uname(2), and is beholden to drawbacks thereof.

For **uname**, the default is **-s**. **machine** and **arch** are equivalent to **uname -m**.

OPTIONS

Parenthesised are fields of *struct utsname* returned by uname(2).

-a, **--all**	Write all fields, *but* only write **-pi** if not "unknown" and **-o** if different from **-s**.
-s, **--kernel-name**	Name of the kernel (*sysname*).
-n, **--nodename**	Name of system on some communcation network, which usually means the configured hostname (*nodename*).
-r, **--kernel-release**	Kernel version (*release*).
-v, **--kernel-version**	Extended human-readable (*version*).
-m, **--machine**	Kernel processor target (*machine*).
-p, **--processor**	Current processor architecture. *hw.machine_arch* sysctl on NetBSD, FreeBSD, and DragonFly, the MACHINE_ARCH macro on OpenBSD, **sysinfo**(SI_ARCHITECTURE) on the illumos gate, and "unknown" elsewhere.
-i, **--hardware-platform**	**sysinfo**(SI_PLATFORM) on the illumos gate; "unknown" elsewhere.
-o, **--operating-system**	Same string as **-s**.

SEE ALSO

uname(2)

STANDARDS

Conforms to IEEE Std 1003.1-2024 (“POSIX.1”). **-p** is an extension, originating from AT&T System V Release 4 UNIX. **-i** is an extension, originating from SunOS 5 (Solaris 2). **-o** is an extension, originating from the GNU system.

-a is allowed to write any extra fields after the mandated **-mnrsv**. This implementation mimicks the GNU system by writing **-pi**, if not "unknown". On the GNU system, **-o** is a mangled **-s**.

arch is compatible with SunOS 3 (but not SunOS 4 (Solaris) and later) and the GNU system, but not OpenBSD. **machine** is compatible with 4.4BSD (OpenBSD (sans **-a**), NetBSD).

HISTORY

System V

Appears in the Programmer’s Workbench (PWB/UNIX) User’s manual as uname(I):

> uname – print name of current UNIX

"mainly useful to determine what system one is using", writing out uname(II):

> uname – get name of current PWB/UNIX

with a **DESCRIPTION** of

> *Uname* returns in *name* the 8 byte character name of the current PWB/UNIX. The name is not null-terminated. By convention, the name is of the form pwb?date. For example, pwba0401 would indicate that this is PWB/UNIX System A and that its operating system was last modified on April 1.

AT&T System III UNIX inherits them in an almost-present-day **-asnrv** (default **-s**) and *struct utsname* with *sysname*, *nodename*, *release*, *version*, all **8** characters + NUL long, with uname(2) just copying *utsname* with strings defined at build time.

AT&T System V Release 1 UNIX adds **-m** and the corresponding *struct utsname machine* member.

SunOS

SunOS 3 ships **arch** and **mach** scripts, writing **sun**[**23**] and **mc680**[**12**]**0**, respectively, if the corresponding programs return successfully (i.e. on a **sun3** system, /bin/sun3 is linked to /bin/true and **sun2** to **false**, likewise for the architecture).

The "System V programs and libraries" optional package contains AT&T System V Release 1 UNIX uname(1V) and uname(2V).

System V (again)

AT&T System V Release 3 UNIX adds **uname -S** *system name*, only on the 3B2, validating the argument length and setting *sysname* and *nodename* thereto, and updating the NVRAM if available (with the kernel similarly reading it back from the NVRAM on boot).

AT&T System V Release 4 UNIX adds **-p** (included in **-a**), writing out **sysinfo**(SI_ARCHITECTURE) of "386/MB1", "386/MB2", or "386/AT" as a fallback, contrasting with **-m** (always "i386"), and extends the member lengths to **256** characters + NUL "to support Internet hostnames". This is papered over in userspace, defaulting to the larger fields, unless compatibility mode is requested. **-S** is extended to i386, the only official target platform, but since i386 doesn't have non-volatile RAM (and the 3B2 only has **8** bytes' worth), it's stored, if changed, in /etc/nodename (and on i386 the /etc/rc2.d/S11uname init-script calling **uname -S** is created) before being set for the current system.

A **setuname** [**-t**] [**-s** *name*] [**-n** *node*] command is also provided (with at least one of **-sn** required) setting the *sysname* and *nodename* separately (and validating both the length and domain to alphanumerics plus {'**-**', '_'}) by:

- writing them directly to kernel address space;
- writing the /etc/rc2.d/S18setuname init-script ("**setuname -s** *name*|*sysname* **-n** *node*|*nodename*"), unless **-t** is specified;
- committing *sysname* to /etc/systemid, if changed;
- committing *nodename* to /etc/nodename, if changed.

It also ships **arch** and **mach** in /usr/ucb for "compatibility with the SunOS command"s, just runnng **uname -m** and **uname -p**, respectively. It is therefore likely that **-p** appeared as a reasonable alternative to shipping another (hostid(1)) single-puts(3) program.

SunOS (again)

SunOS 4 (Solaris) **mach** is largely equivalent methodologically to SunOS 3's, but across **sparc**, **mc68020**, **i386**, and **mc68010**, and writes "unknown" if none of the above match. **arch**, however, grows **-k**, writing the "kernel architecture" (model), any of **sun2**, **sun3**, **sun3x**, **sun4**, **sun4c**, **sun4m** and **sun386** (or "unknown"), but writes the "application architecture" by default — that being the same, but without the trailing letter (or "unknown"), in an unprecedented case of software compatibility forethought. It may instead take *archname*, exiting successfully if *archname* is the same as the current "application architecture".

SunOS 5 (Solaris 2), now based on AT&T System V Release 4 UNIX, inherits its **uname** (sans platform-specific cases, with **-S** *system_name* available everywhere, no init-script, and setting just the hostname (*nodename*) the via the usual **sysinfo**(SI_SET_HOSTNAME)) adding **-i** (included in **-a**) for **sysinfo**(SI_PLATFORM).

setuname, following the removal of **uname**'s init-script, writes its init-script with **-t**, doesn't read it back, and only specifies **-s** *name* in it, writing the **-n** *node* argument, if any, to /etc/nodename, which is the normal location /etc/init.d/**rootusr** reads and passes to **uname -S**, before falling back to network (the default being the empty string).

Indeed, it's very odd *sysname* was ever settable at all, more so still that it was the expected default when setting the hostname.

Likewise, **mach** is just **uname -p**. **arch** "kernel architecture" is just **uname -m** but the "application architecture" is the same, except on **sun4**-family systems where it's **sun4**.

SunOS 5.7 (Solaris 7) adds SCO UNIX compatibility **-X** flag to write, after the usual output (but before the newline):

```
System = sysname
Node = nodename
Release = release
KernelID = version
Machine = machine
BusType = <unknown>
Serial = <unknown>
Users = <unknown>
OEM# = 0
Origin# = 1
NumCPU = sysconf(_SC_NPROCESSORS_CONF)
```

It also includes a SCO UNIX compatibility compilation mode that splits the SYSV3 environment variable on commas ('**,**'), ignoring the first entry (supposedly the "OS" field), copying consecutive fields into the output (or, if set but empty, using the "reasonable default" of *sysname* = *nodename*, *release* = "3.2", *version* = "2", *machine* = "i386") and removing **-ip** from **-a** if set. Thankfully, the latter does not remain in the illumos gate.

SunOS 5.8 (Solaris 8) **uname -S** no longer writes /etc/nodename.

The BSD

4.3BSD–Reno includes **machine**, **puts**()ing MACHINE, matching the source name for the architecture (**vax**, **tahoe**, **hp300**).

4.4BSD obsoletes it with **uname -m**, providing a shell wrapper doing exactly that; the **uname** implementation is exactly standard, and uname(3) reads {CTL_KERN, KERN_OSTYPE} ("*kern.ostype*"), {CTL_KERN, KERN_HOSTNAME} ("*kern.hostname*"), {CTL_KERN, KERN_OSRELEASE} ("*kern.osrelease*"), {CTL_KERN, KERN_VERSION} ("*kern.version*") (with newlines and tabs replaced with spaces, a NUL if at the end), and {CTL_HW, HW_MACHINE} ("*hw.machine*") sysctls. All of these, save for the hostname, are unsettable, and the *kern* tree ones generated as part of the kernel build.

386BSD

NetBSD

NetBSD 1.4 adds **-p** (not included in **-a**) "inspired by SunOS 5", {CTL_HW, HW_MACHINE_ARCH} ("*hw.machine_arch*"), returning the precise architecture, in contrast to **-m**'s port name.

OpenBSD

OpenBSD 1.2 adds **arch** [**-k**] (quoting SunOS for the latter), writing the "application architecture" ("kernel architecture" with **-k**) — this time defined as a "*sysname*.MACHINE_ARCH" ("*sysname*.MACHINE" with **-k**) tuple.

OpenBSD 2.3 adds **-p** (not included in **-a**) writing "the processor type in more detail" — {CTL_HW, HW_MODEL} ("*hw.model*"). This, being the precise CPU model (in some cases the marketing name, in others the ID + revision, sometimes the frequency, &c.) is of course incompatible with all other **-p** implementations.

OpenBSD 2.6 merges **machine** into **arch** (no output changes), adding **-a** (to write MACHINE_ARCH) instead. **arch** itself grows **-s** (removing the OpenBSD. prefix, now literal).

OpenBSD 5.0 changes its **-p** to the current MACHINE_ARCH for compatibility.

FreeBSD

FreeBSD 2.0 removes **machine**.

FreeBSD 3.0 adds **-p** as an alias for **-m**, quoting AT&T System V Release 4 UNIX compatibility.

FreeBSD 5.0 makes it a bespoke flag (not included in **-a**), equivalent to NetBSD's, and allows per-flag overrides via UNAME_*flag* environment variables. As part of that, it also replaces the uname(3) call with manual sysctl parsing, and breaks **-v** output by not truncating it if the final byte is a tab or newline; this is an obvious conformance bug, somehow unnoticed, reported and fixed in FreeBSD 13.1 by yours truly after 19 *years*: *#256486*: **https://bugs.freebsd.org/256486**.

FreeBSD 5.2 adds **-i** (not included in **-a**), for {CTL_KERN, KERN_IDENT} ("*kern.ident*") — the kernel config filename/-type (GENERIC, MINIMAL, &c.).

FreeBSD 9.0 adds **-o** as an alias for **-s** "for compatibility with other systems", cf. the unfortunate case of **-o** in **STANDARDS**.

Many more flags appear in later FreeBSD releases.

Standards

uname() appears in System V Interface Definition ("SVID"), with *struct utsname* members of size SYS_NMLN. X/Open Portability Guide ("XPG") includes it verbatim.

uname appears in X/Open Portability Guide Issue 2 ("XPG2"), as present-day.

X/Open Portability Guide Issue 3 ("XPG3") makes *struct utsname* member array lengths undefined and allows **uname**() to be a macro, as present-day.