Install OpenBSD 5.5 on HP 9000/300 Series Computer

The last version of OpenBSD supporting HP 9000 series 300 computers was version 5.5, released in 2014. Installation is straight forward from CD media using a SCSI CD-ROM drive as the source and a SCSI hard drive as the target. Installation onto an HP-IB drive does not seem to work.

If you have a non-HP machine already running OpenBSD, Linux or a few other variants of Unix then it is possible to net boot the HP300 and install the kernel from your local machine. It may be necessary to compile and install *sun-rbootd* on the source machine so that the HP300 can boot according to the Remote Maintenance Protocol. Packages can then be loaded from the boot server, from CD-ROM, or download by ftp or http. The official OpenBSD/hp300 installation notes contains further information on this installation method.

To install from CD-ROM using the image provided, insert the CD into the CD-ROM drive, power-up the HP300 and, after the keyboard is recognised, press the space bar. A list of bootable systems will be displayed from which one should select `SYS_CDBOOT`. After a short delay (and a warning message that can be ignored), the ramdisk kernel /5.5/hp300/bsd.rd will be loaded and the installation script will start. One should note that the ramdisc kernel is specific to version 5.5 and one cannot load file sets from an earlier version of OpenBSD.

The installation script is easy to use and a nice feature is that a draft partition table is designed automatically, creating one large 'a' partition for the root file system and a smaller 'b' partition for swap space. The 'a' partition is offset from the beginning of the disc to leave room for the SYS_UBOOT universal boot program to be located there. The 'c' partition, used for boot, is designed to extend over the whole disc but only the small reserved area at the start of the disc (before the 'a' partition) is actually used. One can edit the draft partition table, for example to adjust the swap space.

The installation process advances with dialog as detailed below. Example responses are based on a SCSI disc with the lowest bus address among available hard drives on the first (or only) SCSI interface; CD-ROM drives on the same bus are ignored in this count.

Prompt	Example response	Comment
(I)nstall, (U)pgrade, (A)utoinstall or (S)hell?	I	Start installation
Choose your keyboard layout	default	No other options for hp300
System hostname?	<host_name>	Desired host name, no domain
Which network interface do you wish to configure	le0	A list of available interfaces is provided
IPv4 address for le0?	dhcp	DHCP should work
Which network interface do you wish to configure	done	

Password for root account?	hp300	Enter and confirm
Start sshd(8) by default?	yes	
Start ntpd(8) by default?	yes	For auto time sync
NTP server?	0.uk.pool.ntp.org	Select for country
Setup a user	n	Optional at this stage
Available disks are: <list> Which disk is the root disc?	sd0	Take care! [Notes 1, 2]
Use DUIDs rather than device names in fstab	yes	
Use (A)uto layout, (E)dit autolayout, or create (C)ustom layout?	a	One could select 'e' to edit the table; type ? for a command menu
Available disks are: <list> Which disk do you wish to initialize?	done	Unless you want to add other discs
Location of sets	cd	Change to disc 2 now
Available CD-ROMs are: <list> Which CD-ROM contains the install media?	cd0	Disc 2
Pathname to sets	/5.5/hp300	Default
Set name(s)?	done	Accepts default - all file sets. Alternatively, deselect unwanted sets [Note 3]
Checksum test for file bsd.rd failed. Continue anyway?	yes	Safe to continue. Asks twice.
File sets will be read, unpacked and installed		
Location of sets?	done	All sets loaded
What time zone are you in?	GB	Enter your time zone
Time appears wrong. Set to ...?	Yes or no	To set time

Note 1. Discs are designated as hd*n* (HP-IB interface) or sd*n* (SCSI interface), where *n* is the number of the drive counting up from zero for the drive with the lowest bus address. For example, if the SCSI interface has drives at bus addresses 4, 5 and 6 these are designated sd0, sd1 and sd2, respectively. The install program does not warn before overwriting if an operating system already exists on the selected drive.

Note 2. There appears to be a bug in the install script which cases the computer to hang at this point when an HP-IB drive is selected.

Note 3. As a minimum, file sets base55 and etc55 must be installed.

The process of loading and installing all file sets will take several hours to complete. After completion of the installation, reboot the computer. SYS_CDBOOT will have been replaced by SYS_UBOOT, the universal boot code, so this is the system to select for booting. After the first boot, the system will create a RSA key, in a process that takes around 45 minutes on a model 385 and presumably very much longer on slower machines. This is, however, a one-time process.

Creating the bootable CD: to create the install CD image file, download the 5.5/hp300 directory from e.g. ftp.nluug.nl/pub/OpenBSD. The file 5.5/hp300/bsd.rd is gzipped and must be replaced by its unzipped version, keeping the file name bsd.rd. This step is essential to make the ramdisk kernel loadable but will generate checksum warnings during the installation process. Next, create an iso image file, copy the 5.5/hp300 directory structure and all its contents to the root directory and save it. Finally, to make the image bootable, use a hex editor to replace the first x6BB3 null bytes of the iso image and with the x6BB3 bytes of the file SYS_CDBOOT found in 5.5/hp300.

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