```
  AS      arch/x86/boot/header.o
  LD      arch/x86/boot/setup.elf
  OBJCOPY arch/x86/boot/setup.bin
  BUILD   arch/x86/boot/bzImage
Setup is 13852 bytes (padded to 14336 bytes).
System is 8372 kB
CRC 9a22f3d3
Kernel: arch/x86/boot/bzImage is ready  (#14)
namachan@namachan ~/P/g/n/k/kernel (kernelhack)> gdb ./vmlinux
GNU gdb (GDB) 9.2
Copyright (C) 2020 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.
Type "show copying" and "show warranty" for details.
This GDB was configured as "x86_64-pc-linux-gnu".
Type "show configuration" for configuration details.
For bug reporting instructions, please see:
<http://www.gnu.org/software/gdb/bugs/>.
Find the GDB manual and other documentation resources online at:
    <http://www.gnu.org/software/gdb/documentation/>.

For help, type "help".
Type "apropos word" to search for commands related to "word"...
Reading symbols from ./vmlinux...
(gdb) target remote :10000
Remote debugging using :10000
default_idle () at arch/x86/kernel/process.c:698
698             trace_cpu_idle_rcuidle(PWR_EVENT_EXIT, smp_processor_id());
(gdb) c
Continuing.

^C
Program received signal SIGINT, Interrupt.
default_idle () at arch/x86/kernel/process.c:698
698             trace_cpu_idle_rcuidle(PWR_EVENT_EXIT, smp_processor_id());
(gdb) ls
Undefined command: "ls".  Try "help".
(gdb) break __x
Display all 200 possibilities? (y or n)
(gdb) break __x64_sys_openat
__x64_sys_openat   __x64_sys_openat2
(gdb) break __x64_sys_getppid
Breakpoint 1 at 0xffffffff8107bdb0: file ./arch/x86/include/asm/current.h, line 15.
(gdb) c
Continuing.
(gdb)
Breakpoint 1, get_current () at ./arch/x86/include/asm/current.h:15
15              return this_cpu_read_stable(current_task);
(gdb)
```

Machine View

```
k: ffffffffffffffff
[ 1580.455785] tsc: Marking TSC unstable due to clocksource watchdog
[ 1580.458095] TSC found unstable after boot, most likely due to broken BIOS. Use 'tsc=unstable'.
[ 1580.458185] sched_clock: Marking unstable (1580457596283, 495611)<-(1580561023434, -102931453)
[ 1580.462271] clocksource: Switched to clocksource hpet

archlinux login: namachan
Password:
[ 1593.534692] audit: type=1100 audit(1596639351.387:23): pid=211 uid=0 auid=4294967295 ses=4294967
95 subj=kernel msg='op=PAM:authentication grantors=pam_securetty,pam_tally2,pam_shells,pam_unix,pam
permit acct="namachan" exe="/usr/bin/login" hostname=archlinux addr=? terminal=tty1 res=success'
[ 1593.567442] audit: type=1101 audit(1596639351.420:24): pid=211 uid=0 auid=4294967295 ses=4294967
95 subj=kernel msg='op=PAM:accounting grantors=pam_tally2,pam_access,pam_unix,pam_permit,pam_time a
ct="namachan" exe="/usr/bin/login" hostname=archlinux addr=? terminal=tty1 res=success'
[ 1593.596231] audit: type=1103 audit(1596639351.449:25): pid=211 uid=0 auid=4294967295 ses=4294967
95 subj=kernel msg='op=PAM:setcred grantors=pam_securetty,pam_tally2,pam_shells,pam_unix,pam_permit
acct="namachan" exe="/usr/bin/login" hostname=archlinux addr=? terminal=tty1 res=success'
[ 1593.610816] audit: type=1006 audit(1596639351.463:26): pid=211 uid=0 subj=kernel old-auid=429496
295 auid=1000 tty=tty1 old-ses=4294967295 ses=1 res=1
[ 1593.627546] audit: type=1300 audit(1596639351.463:26): arch=c000003e syscall=1 success=yes exit=
 a0=3 a1=7fffe17f8ed0 a2=4 a3=7fffe17f8be4 items=0 ppid=1 pid=211 auid=1000 uid=0 gid=0 euid=0 suid
0 fsuid=0 egid=0 sgid=1000 fsgid=0 tty=tty1 ses=1 comm="login" exe="/usr/bin/login" subj=kernel key
(null)
[ 1593.636161] audit: type=1327 audit(1596639351.463:26): proctitle=2F62696E2F6C6F67696E002D70002D2
002020202020202020
[ 1593.667570] audit: type=1130 audit(1596639351.520:27): pid=1 uid=0 auid=4294967295 ses=429496729
 subj=kernel msg='unit=user-runtime-dir@1000 comm="systemd" exe="/usr/lib/systemd/systemd" hostname
? addr=? terminal=? res=success'
[ 1593.681853] audit: type=1101 audit(1596639351.534:28): pid=249 uid=0 auid=4294967295 ses=4294967
95 subj=kernel msg='op=PAM:accounting grantors=pam_tally2,pam_access,pam_unix,pam_permit,pam_time a
ct="namachan" exe="/usr/lib/systemd/systemd" hostname=? addr=? terminal=? res=success'
[ 1593.686050] audit: type=1103 audit(1596639351.538:29): pid=249 uid=0 auid=4294967295 ses=4294967
95 subj=kernel msg='op=PAM:setcred grantors=? acct="namachan" exe="/usr/lib/systemd/systemd" hostna
e=? addr=? terminal=? res=failed'
[ 1593.689705] audit: type=1006 audit(1596639351.538:30): pid=249 uid=0 subj=kernel old-auid=429496
295 auid=1000 tty=(none) old-ses=4294967295 ses=2 res=1
```