x86-specific ELF Auxiliary Vectors

This document describes the semantics of the x86 auxiliary vectors.

Introduction

ELF Auxiliary vectors enable the kernel to efficiently provide configuration-specific parameters to userspace. In this example, a program allocates an alternate stack based on the kernel-provided size:

```
#include <sys/auxv.h>
#include <elf.h>
#include <signal.h>
#include <stdlib.h>
#include <assert.h>
#include <err.h>

#ifndef AT_MINSIGSTKSZ
#define AT_MINSIGSTKSZ       51
#endif

....
stack_t ss;

ss.ss_sp = malloc(ss.ss_size);
assert(ss.ss_sp);

ss.ss_size = getauxval(AT_MINSIGSTKSZ) + SIGSTKSZ;
ss.ss_flags = 0;

if (sigaltstack(&ss, NULL))
     err(1, "sigaltstack");
```

The exposed auxiliary vectors

AT_SYSINFO is used for locating the vsyscall entry point. It is not exported on 64-bit mode.

AT_SYSINFO_EHDR is the start address of the page containing the vDSO.

AT_MINSIGSTKSZ denotes the minimum stack size required by the kernel to deliver a signal to user-space. AT_MINSIGSTKSZ comprehends the space consumed by the kernel to accommodate the user context for the current hardware configuration. It does not comprehend subsequent user-space stack consumption, which must be added by the user. (e.g. Above, user-space adds SIGSTKSZ to AT_MINSIGSTKSZ.)