EarlyUserspace

Early User Space

Early user space is referred to as INITRAMFS or Initial RAM Filesystem. Early user space is a replacement for initial ram disk (initrd) and was introduced in the 2.6 kernel series.

For developers the principal advantages of early user space are its tight integration with the kernel building process (there is no longer the need to take the extra step of binding a built kernel with a ream disk) and it's flexibility; all that is necessary is to supply a process (which could be a sell script) called init in the root directory of the specified file system, allowing the simplified use of customized init processes.

Early user space can be used in the same way as an initrd. For example, to load device drivers before mounting a permanent root filesystem or as a working environment for a diskless system or for some other specialized purpose such as running a firewall or router.

A Brief Introduction to INITRAMFS

For a INITRAMFS HOWTO please see this post.

http://www.vas.nu/pipermail/klibc/2005-August/001111.html

The kernel build process will attempt to build in your early user space files if CONFIG_INITRAMFS_SOURCE points at either a cpio archive or to a directory. So, for instance, it is possible to build a busybox install and then point CONFIG_INITRAMFS_SOURCE at it. If the selected directory hierarchy contains an executable file called init in the root directory then the system should boot.

The init can simply be a symbolic link pointed at the executable - for instance, this is my setup:

```
drwxrwxr-x  2 adrian adrian 4096 Aug  4 19:25 bin
drwxrwxr-x  2 adrian adrian 4096 Jul 29 18:53 dev
drwxrwxr-x  2 adrian adrian 4096 Aug  4 23:09 etc
lrwxrwxrwx  1 adrian adrian    7 Aug 10 22:58 init -> linuxrc
lrwxrwxrwx  1 adrian adrian   11 Aug  4 19:25 linuxrc -> bin/busybox
drwxrwxr-x  2 adrian adrian 4096 Aug  4 23:08 proc
drwxrwxr-x  2 adrian adrian 4096 Aug  4 19:25 sbin
drwxrwxr-x  4 adrian adrian 4096 Jul 29 18:44 usr
```

In addition to CONFIG_INITRAMFS_SOURCE it is also necessary to set CONFIG_INITRAMFS_ROOT_UID and CONFIG_INITRAMFS_ROOT_GID - the kernel build process will complain if you haven't set them and force you to reconfigure the kernel.

Early user space also supports a slimmed down C library - klibc - to allow the construction of more sophisticated init applications. For more details please see the klibc mailing list.

http://www.zytor.com/mailman/listinfo/klibc