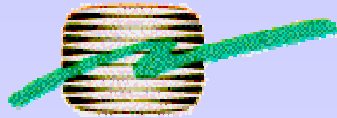


Introduction to POSIX

Presented by
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Allegro Consultants, Inc.

<http://www.allegro.com>
<http://www.gccsupport.com>



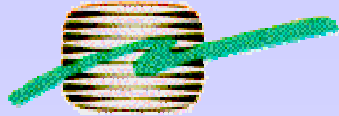


Introduction to POSIX

Why?

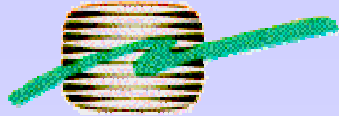
Port from MPE to Unix & from Unix to MPE

- Applications and Tools
- Skills, Knowledge, Experience



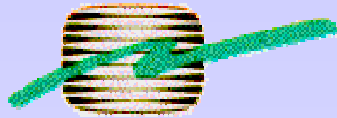
A Review of MPE

- CI
- Utilities
- INTRINSICs
- File System
- File Types
- Security



What is POSIX?

- sh
- Utilities
- APIs
- File System
- Bytestream files
- Security



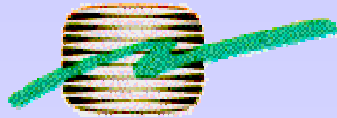
MPE + POSIX =

- MPE

- CI
- Utilities
- INTRINSICs
- File System
- File Types
- Security

- POSIX

- sh
- Utilities
- APIs
- hfs
- bytestream files
- Security



MPE/iX

- MPE

- CI
- Utilities
- INTRINSICs
- File System
- File Types
- Security

- POSIX

- sh
- Utilities
- APIs
- HFS
- Bytestream Files
- Security



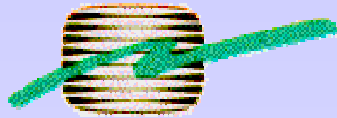
POSIX and the CI

- hfs
- Installation and Setup
- Wildcard expansion
- Assorted MPE commands
- Running hfs Program Files
- HPBIN.SYS
- Scripts
- Editing

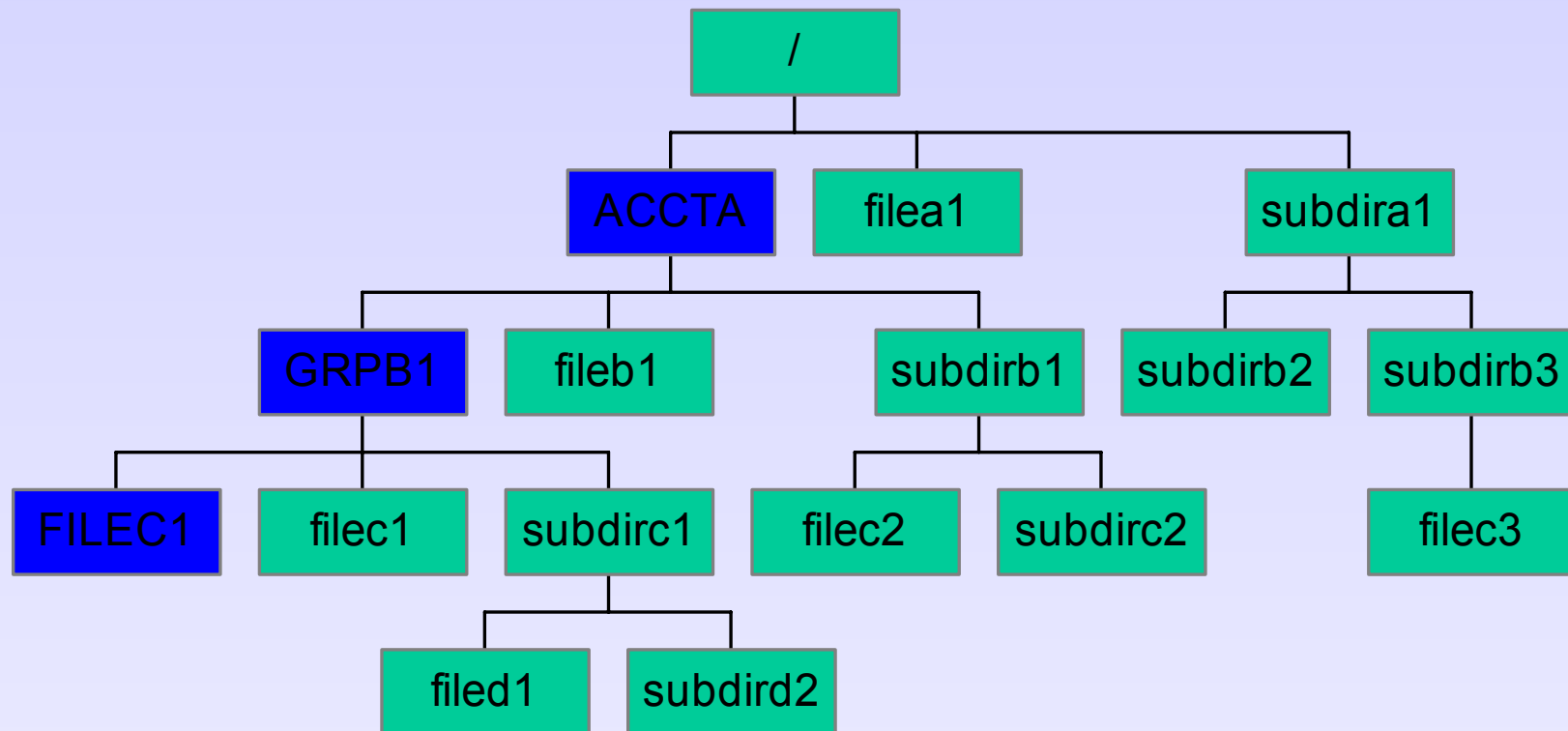


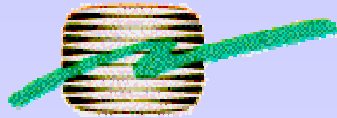
POSIX and the CI: HFS

- Hierarchical File System
- Case-sensitive filenames
- Long filenames
 - Limited to 16 characters if directly under a group



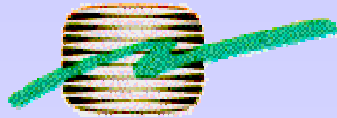
POSIX and the CI: HFS





POSIX and the CI: File Types

- ASCII/BINARY
- Fixed/Variable/Undefined/Bytestream
- Record Separators
 - MPE: advanced record structures
 - UNIX (and Mac): LF
 - DOS/Windows: CR/LF
- Converting
 - frombyte
 - tobyte -at
 - insert LF record separators
 - strip trailing spaces



POSIX and the CI: File Types

Removing embedded Carriage Returns

```
:QEDIT
```

```
/c '13 "" @
```

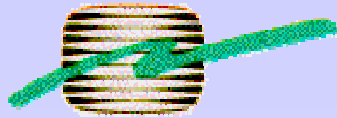
```
:EDITOR
```

```
/T myfile
```

```
/CQ '13'10," ",ALL
```

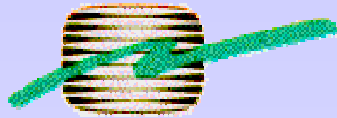
```
/K myfile
```

```
$ tr -d "015" < filename > filename
```



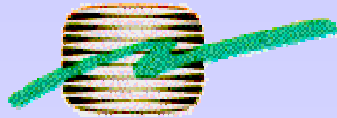
POSIX and the CI: Installation and Setup

- `:SETCATALOG HPPXUDC.PUB.SYS;SYSTEM;APPEND`
- `:SETVAR HPPATH HPPATH+",HPBIN.SYS"`
- `:SETVAR TZ "PST8PDT"`



POSIX and the CI: Installation and Setup

```
# /etc/profile.local
export PS1='pwd$ '
alias qedit="/ROBELLE/PUB/QEDIT"
alias lclint="/usr/local/bin/lclint"
alias -x ll="ls -lFa"
alias -x ls="ls -Fa"
alias -x make="/usr/local/bin/make"
export CC=gcc
export MAKE=/usr/local/bin/make
```



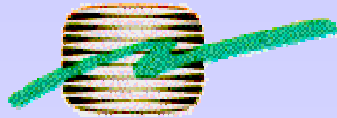
POSIX and the CI: Wildcard Expansion

- CI
 - expansion done by programs
 - @, #, ?, [ABC]
- sh
 - expansion done by the shell
 - regular expressions



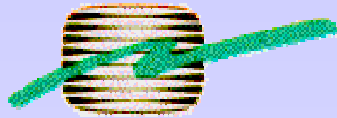
POSIX and the CI: MPE commands

- :LISTFILE
 - :LISTFILE /MYACCT/MYGRP
 - :LISTFILE /MYACCT/MYGRP/
 - :LISTFILE /MYACCT/MYGRP/@
- :PURGE
- :RENAME
- :BUILD
- :COPY



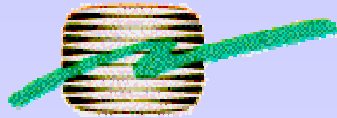
POSIX and the CI: Running hfs Programs

- `./myprog`
- `;INFO=` and `;PARM=`
- Special Capabilities
- Make sure your MPE userid has PH capability!!!



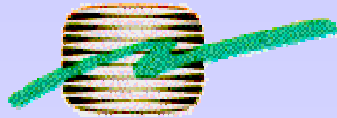
POSIX and the CI: HPBIN.SYS

- ASA.HPBIN.SYS
- AWK.HPBIN.SYS
- BANNER.HPBIN.SYS
- BASENAME.HPBIN.SYS
- BC.HPBIN.SYS
- BDIFF.HPBIN.SYS
- C.HPBIN.SYS
- C89.HPBIN.SYS
- CALENDAR.HPBIN.SYS
- CALLCI.HPBIN.SYS
- CANCEL.HPBIN.SYS
- CAT.HPBIN.SYS
- CD.HPBIN.SYS
- CHGRP.HPBIN.SYS
- CHMOD.HPBIN.SYS
- CHOWN.HPBIN.SYS
- CI.HPBIN.SYS
- CKSUM.HPBIN.SYS
- CMP.HPBIN.SYS
- CO.HPBIN.SYS
- COMM.HPBIN.SYS
- COMMAND.HPBIN.SYS
- COMPRESS.HPBIN.SYS
- CP.HPBIN.SYS
- CPIO.HPBIN.SYS
- CSPLIT.HPBIN.SYS
- CTAGS.HPBIN.SYS
- CUT.HPBIN.SYS
- DATE.HPBIN.SYS
- ... (149 total)



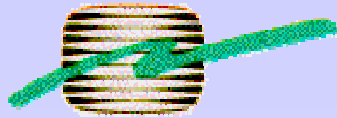
POSIX and the CI: Scripts

- MPE
 - Command Files
 - UDCs
 - Jobs
- `:xeq sh.hpbin.sys <myscr`
- `:/usr/bin/perl ./myperlscript`



POSIX and the CI: Editing

- Editor/3000
- vi
- Qedit
 - /set hfs on
 - /set keep bytestream
 - /chdir ...



POSIX and the CI:

vi

`:%s/foo/bar/g`
(replace "foo" with "bar" in all)

`1G` = beginning of current line
`nG` = beginning of line `n`
`G` = beginning of last line

`k` = up one line
`h` = left one char
`l` = right one char
`j` = down one line

`w` = beginning of next word
`b` = beginning of prev word
`e` = end of next word

`fc` = find next character "`c`"

`/string` = find next "string"

`?string` = find prev "string"

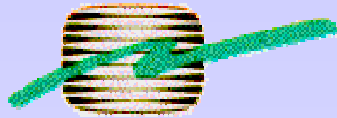
`n` = repeat prev / or ?

`x` = delete char at cursor

`dw` = delete to end-of-word

`D` = delete to end-of-line

`dd` = delete current line



POSIX and the CI:

vi

yw = copy to end-of-word

y\$ = copy to end-of-line

yy = copy current line

P = paste buffer before current line

p = paste buffer after current line

u = undo last edit

U = undo current line

:e! = undo all edits

. = repeat prev command

J = join current line with next line

r = replace current char

s = replace current char, then add mode

cw = replace to end-of-word, then add mode

C = replace to end-of-line, then add mode

cc = erase current line, then add mode

a = add mode after cursor

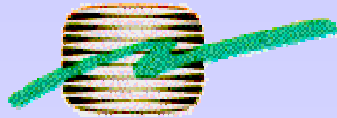
i = add mode before cursor

O = insert blank line above current, then
add mode

A = add mode at end of current line

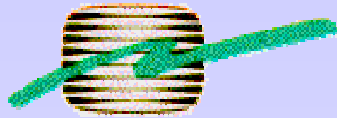
m = modify character at cursor

M = modify mode starting at cursor



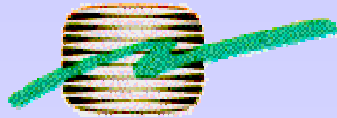
POSIX and the sh

- The POSIX shell is most like the Korn shell (ksh) on Unix
- `:xex sh.hpbin.sys "-L"`
 - `/etc/profile`
 - `$HOME/.profile`
- env vars inherited from `:SETVARs`
 - But they are only copied!



POSIX and the sh

- callci
 - \$ callci “showjob”
 - \$ callci “abortjob #j1234”
- Redo
 - \$ history
 - \$ r 1234



POSIX and the sh

- ls
 - -a
 - -F
 - -d



POSIX and the sh

Other basic commands and tools:

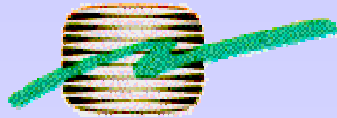
- \$ touch a
- \$ cp a b
- \$ rm a
- \$ more
- \$ cat
- \$ grep



POSIX and the sh

Other basic commands and tools:

- \$ tar
- \$ gzip
- \$ ftp
- :STORE-to-disc



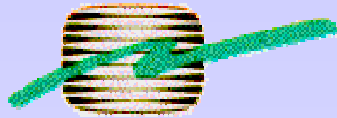
POSIX and the sh tar

- `tar -tf MYTAR`
 - (view the contents of the tar file MYTAR)
- `tar cvf foobar.tar ./foobar`
 - (stores foobar and everything under it, relative paths)
- `tar xvof foobar.tar`
 - (creates foobar, and restores everything, changing owner to me)
- `tar cvfA`
 - (on MPE, don't include MPE attributes)
- `tar -cf - | (cd /foobar; tar -xf -)`
 - (copy all the files in the current dir and below to /foobar)



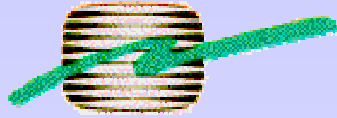
POSIX and the sh find

- `find / -name [fF]oobar.huh`
 - (find Foobar.huh or foobar.huh anywhere on the system)
- `find . -name [fF]oobar.huh`
 - (find Foobar.huh or foobar.huh from the current directory and below)



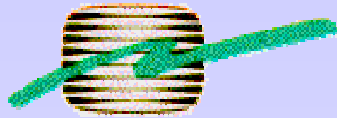
POSIX and the sh find

- `find /mydir/mysub "*foobar*"`
 - (find all files in /mydir/mysub and below whose name contains "foobar")
 - (the quotes are required to keep the shell from expanding the filenames)
- `find . -type f`
 - (list all files in current directory and below)



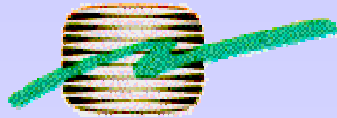
POSIX and the sh find

- `find . -type f | xargs twiddle`
 - ("twiddle" every file in current directory and below)
- `find . -type f -mtime +60 -exec rm {} \;`
 - (rm all files older than 60 days)



POSIX and the sh scripts

- sh scripts
- Why won't they execute?
 - \$ chmod +x scriptname
 - \$./scriptname



POSIX and the sh scripts

- for loops

```
FILES=`ls`
```

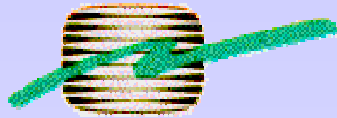
```
for fn in $FILES; do
```

```
    echo $fn
```

```
    cp $fn $fn.bak
```

```
done
```

```
echo "*****End of script*****"
```

POSIX and the sh scripts

- “here is” doc

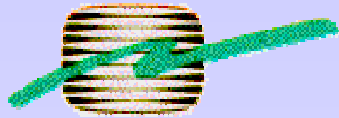
```
cat > foo << STOP
```

Here is the first line that will go into the file called foo.

Here is the last line.

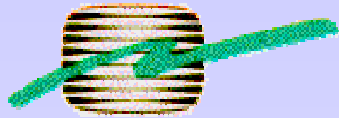
```
STOP
```

```
date "+The script $0 is ending at %c."
```



What's GNU?

- cvs
- gmake
- gcc
- perl
- Plus many, many more!



TANSTAAFL? TISATAAFT!

- Apache
- Samba
- syslog
- sendmail
- bind



Resources

- www.allegro.com
- www.gccsupport..com
- jazz.external.hp.com
- www.gnu.org
- www.perl.org
- www.oreilly.com
- docs.hp.com
- The Posix.1 Standard
A Programmer's Guide
- The Kornshell
Command and Programming
Language
- MPE/iX Shell and Utilities, Vol
1 & 2
- MPE/iX Shell and Utilities
User's Guide