BLUE WATERS
SUSTAINED PETASCALE COMPUTING

Blue Waters Shell and User Environment Lightning Session

Blue Waters User Workshop

December 3-5 2013

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EVERYTHING Is Configurable

- This presentation (mostly) shows the *shortest easiest* path

- There are more complicated ways to do anything

- If you want something changed but you don't know how, ask:
  - Us
  - Your POC
  - On the support chat
  - File a bug at help+bw@ncsa.illlinois.edu

Where to put changes

- Default login shell on Blue Waters is (and the vast majority of users use) *bash*

- "login" shells (via ssh)

  - Read (one of) ~/.bash_profile OR ~/.bash_login OR ~/.profile

  - Once-only changes

- Non-login shells

  - Read .bashrc

  - Changes that can be repeated

  - By default includes qsub job scripts

Qsub Scripts

- Submitted job scripts are parsed TWICE
  - Once at qsub tim for #PBS directives
  - Once on the mom node as an executable script (by default as a non-login script with no parent context

- By default, modules don't carry over and "module" commands don't work
  - `#!bash -l` [makes job script run as "login" shell]

Command Aliases Can Add Options to existing commands

- `alias rm="rm -i"`

- `alias cp="cp -i"`

- `alias mv="mv -i"`

Can Modify Shell Variables

```
export PATH=$PATH:~/bin/:.
```
    ("." at least should go at the END
    of your path to avoid a system
    command being supplanted by a local
    executable)

Commonly Used Command Combinations

- `alias nodisplay="export DISPLAY=\"\""`

- `alias module_list="module list 2>&1"`

- `alias module_available="module available 2>&1"`

- # Delete all files ending with '~' (temp files) (Ryan M)
  # Using this keeps me from accidentally executing "rm *"
  alias rm~~='rm *~'

  - `(it's a good idea to alias frequently used rm commands; it avoids mis-typing mistakes)`

Customize Prompt

- `PS1="\u@\h \A \w \$ "`

- makes prompt look like:
  - `csteffen@h2ologin3 10:57 ~ $`

Prompt can be context-specific

- (see interactive job behavior on Blue Waters)
- This example is set at invocation time

from "man bash" includes (search for PS1)

- **PROMPT_COMMAND**
- **If set, the value is executed as a command prior to issuing each primary prompt. (be a bit cautious doing this)**
- PS1   The value of this parameter is expanded (see PROMPTING below) and used as the primary prompt string. The default value is ``\s-\v\$ ''.
- PS2   The value of this parameter is expanded as with PS1 and used as the secondary prompt string. The default is ``> ''.

PROMPT_COMMAND Example:

This env setting makes prompt that's sensitive to the perftools module being loaded.

PROMPT_COMMAND="if [\`module list | grep perftools | wc -l\` != 0]; then PS1=\"\u@\h \A \w PT \$ \"; else PS1=\"\u@\h \A \w noPT \$ \"; fi"

csteffen@jyc1 23:31 ~ PT $ module unload perftools
csteffen@jyc1 23:31 ~ noPT $
csteffen@jyc1 23:31 ~ noPT $ module load perftools
csteffen@jyc1 23:31 ~ PT $

Special Prompt

- # red prompt - I find this extremely useful when scrolling up in a terminal (from Ryan Mokos) PS1='\u@\h\[\033[00m\]:\[\033[01;31m\]\w\[\033[00m\]\$ '

Bash has user-customizable TAB-completion

- complete (shell intrinsic)

- Add non-file tab-completon options to ANY command

- Likely upcoming software package to implement tab-complete on "module" commands

Screen

- Screen is a persistent text-mode switcher
- All commands start with CTRL-A
- `screen -r` to rejoin existing (disconnected) session
  - (must be on the same BW login node)