Chapel in Containers

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Containers: the buzz word

- Containered environments provide isolation
  - Lighter weight than full virtualization
  - Repeatable and self-consistent
  - Originally designed for micro services

- Turns out to be handy for other things
  - Software distribution
  - Reproducibility

- Everyone’s on the bandwagon
  - *HPC Containers in Use.* Jonathan Sparks, CUG 2017
Containers: in HPC

- Users are accustomed to “logging in”

- Obvious solution
  - Install all tools in the container
  - Treat it like an interactive shell

- This is the guidance for Chapel on DockerHub*

* Shamefully, at my insistence
Containers: for programming languages

- Fire up the container to run the compiler, etc.
  - Go’s guidance on DockerHub

- For Chapel, you’d want
  - printchplenv
  - compiler
  - runtime
  - tools
Chapel in containers

● Wrapper script for binaries and script (e.g. chpl, printchplenv)
  ● Invoked with current Chapel environment variables
  ● Must handle include paths and other file-related info

● Launcher invokes the container
  ● Container environment should be embedded in the launcher

● Container overhead
  ● Insignificant for compilation and most programs
  ● Noticeable for printchplenv, but better the second time
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