CSinParallel Chicago 2015 Workshop

Beowulf clusters

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Beowulf clusters

- A *Beowulf cluster* is a networked collection of commodity computers, typically constructed using open-source software components (such as Linux, MPI)
  – Thomas Sterling and Donald Becker, 1994
Beowulf cluster

• Typical organization: Head node; worker nodes

• Distributions of cluster management software include Rocks (SCSD) and BCCD (associated with LittleFe)
  – XSEDE bridge software (dist as a Rocks Roll)
TOPS 500 systems, 1994-2012

- MMP
- SMP
- Sequential
- SIMD
- Constellations
- Clusters
Virtual clusters in the teaching lab

• Idea: Launch a virtual machine on each classroom/lab computer, and operate the VMs as a cluster
  – Example: MistRider
    (37 nodes, Fedora host, Ubuntu guest, Xen)
  – Example: Selkie
    (N nodes, OS-X host, Ubuntu guest, VirtualBox)
  – Example (in progress): Remora (Caswell)
    (“pop-up” cluster distributed on thumb drives)
Cluster management by students?

- Strategy: Use a team of current student to develop and maintain cluster resources
  – Can this be replicated?