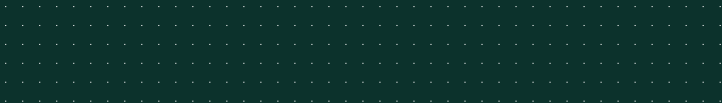


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Warewulf making cluster installations fast and reliable

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Introduction

Warewulf is tool for managing beowulf clusters

Beowulf

- old british poem

Beowulf cluster

- became popular in the 90.
- use of the shelf hardware
 - 486 & linux
 - **not** Cray & unix
- warewulf is a typo of werewolf



Introduction

HPC landscape

Top five Supercomputers

1	Frontier	EPYC 64C	AMD MI250X	Slingshot-11
2	Aurora	Xeon 9470	Intel GPU Max	Slingshot-11
3	Eagle	Xeon 8480	NVIDIA H100	NVIDIA Infiniband
4	Fugaku	A64FX 48C 2.2GHz	-	Tofu interconnect D
5	LUMI	EPYC 64C 2GHz	AMD MI250X	Slingshot-11

- only Fugaku uses non standard CPU
- others are beowulf clusters with GPUs attached



Introduction

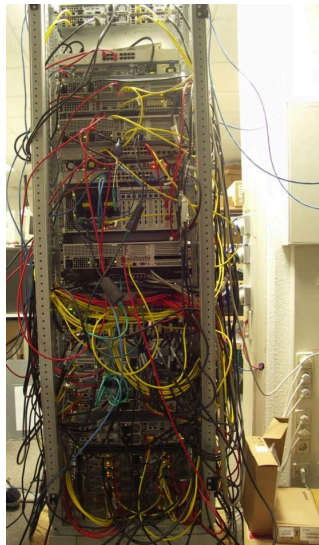
Beowulf cluster

base components

- management node
- compute nodes
- management network

optional components

- more compute nodes
- fast network interconnects
- central storage
- bmc/ipmi



Introduction

Beowulf Cluster

differences to data centers

- compute nodes are cattle
- hierarchical organization
- compute are not updated after boot process
- application come from central storage
- applications are self compiled
- one application can run over several nodes

