ABCI: AI Bridging Cloud Infrastructure

ABCI Services for Wide Range of Use Cases

ABCI facilitates a wide range of AI research/development use cases by providing various services. These services foster applying state-of-the-art AI technologies to real world problems.

Tier 1 Grand Challenge program

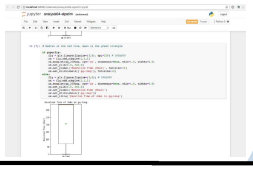
ABCI provides full system access to projects expected to achieve big academic/industrial achievements

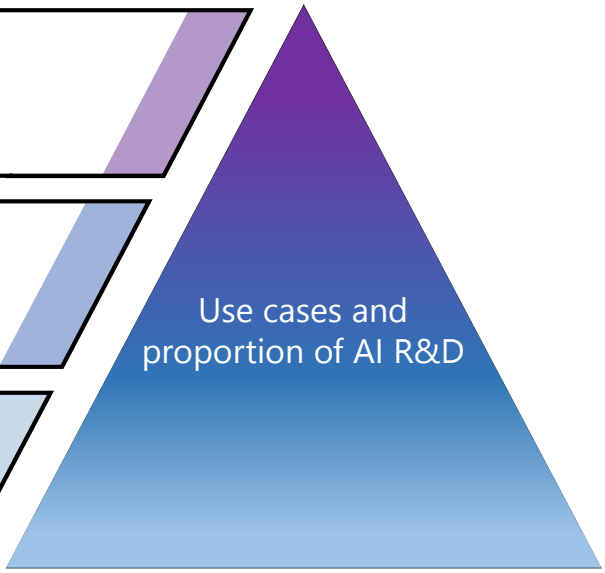
Tier 2

- Dedicated use of middle size of resources up to 512 nodes
- Use pre-installed software/container images
- Use user-defined software/container images

Tier 3

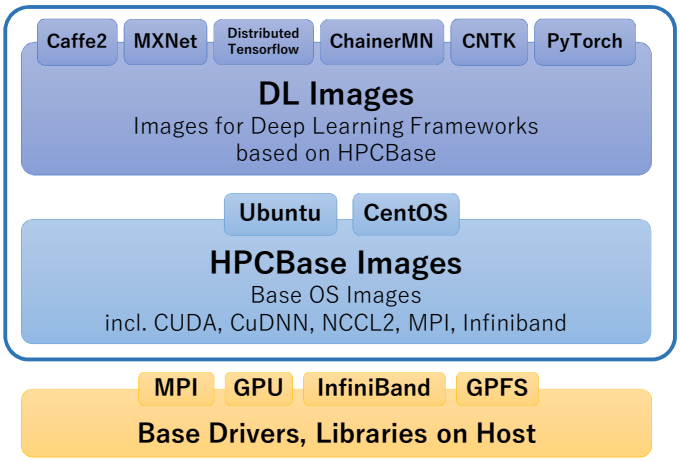
Interactively use via WebUI, such as Jupyter and NVIDIA DIGITS





Containers Facilitate AI Research on ABCI

System provided container images



- ABCI supports two container technologies
  Docker, having a large user community,
  Singularity, recently accepted HPC community
- HPCBase Images provide basic OS functionalities optimized to achieve high performance on ABCI
- DL Images provide various single-node/distributed deep learning frameworks and AI applications on top of HPCBase Images

ABCI Software

DL/AI Software	Popular deep learning frameworks are tuned to achieve high performance on ABCI and provided as both environment modules and container images. Caffe, Caffe2, Chainer, ChainerMN, CNTK, Keras, MXNet, TensorFlow, PyTorch, etc.	
HPC/Development Software	• GCC, Intel Compiler, PGI Compiler • OpenMPI, MVAPICH, IntelMPI • CUDA compiler/debugger/profiler, cublas, cufft, nvgraph, cudnn	• Python, Java, R, Ruby, etc. • Apache Hadoop, Spark
Container	NVIDIA-Docker for system-defined images	Singularity for user/system-defined images
Resource Management	Univa Grid Engine	Resource isolation using cgroups, advanced reservation, FCFS+Backfill, a simple topology-aware resource allocation
Filesystem	GPFS for shared storage	BeeGFS On Demand for local SSD aggregation
OS	CentOS for compute nodes	Red Hat Enterprise Linux for mission critical nodes

ABCI

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