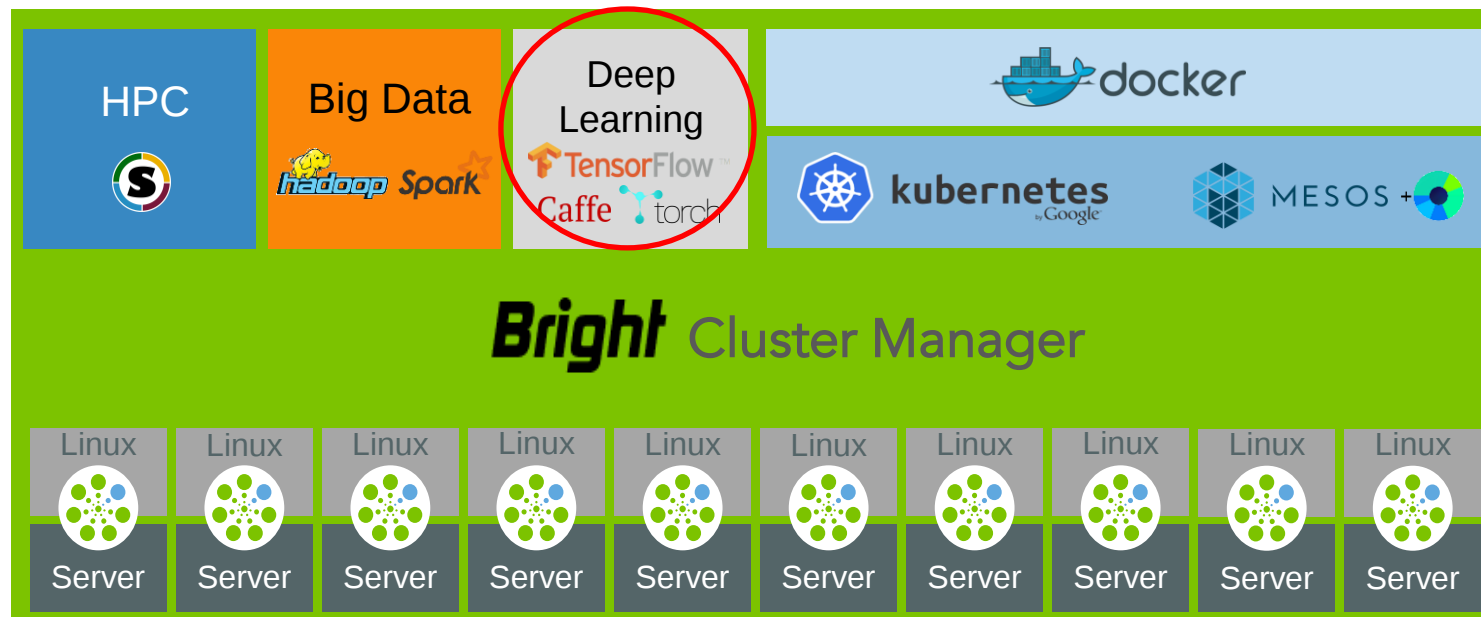




Achieving a Dynamic Datacenter with Bright and Cray

CUG 2017

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Director of Systems Engineering



Deploy Deep Learning

```
# yum install tensorflow
```

```
# yum --installroot=/cm/images/default-image \  
install cm-ml-distdeps
```

- 1st command installs Tensorflow in shared directory on head node; Digits then available on every node in cluster
- Yum installs all dependencies for tensorflow including Caffe, Torch, and all Python dependencies
- 2nd command installs all Python dependencies into default-image



Running an Application

```
[root@bright73-r720 ~]# module load tensorflow/0.10
```

```
[root@bright73-r720 ~]# cd models/image/imagenet
```

```
[root@bright73-r720 imagenet]# python classify_image.py --image_file=Indochinese-Tiger-Zoo.jpg
I tensorflow/core/common_runtime/gpu/gpu_init.cc:102] Found device 0 with properties:
name: Tesla K40c
major: 3 minor: 5 memoryClockRate (GHz) 0.745
pciBusID 0000:05:00.0
Total memory: 11.92GiB
Free memory: 11.78GiB
```

```
tiger, Panthera tigris (score = 0.71628)
tiger cat (score = 0.11725)
lynx, catamount (score = 0.00376)
jaguar, panther, Panthera onca, Felis onca (score = 0.00371)
cougar, puma, catamount, mountain lion, painter, panther, Felis concolor (score = 0.00218)
[root@bright73-r720 imagenet]#
```



Deep Learning Frameworks

FRAMEWORKS

- Caffe 
- CaffeOnSpark
- Tensorflow
- Theano
- Torch 7
- CNTK
- Keras
- MXNet
- Caffe-MPI
- Caffe + Intel MKL
- Caffe (half-precision)



Deep Learning Libraries

LIBRARIES

- cm-ml-distdeps collection
- mlpython
- NCCL 
- CUB 
- CUDNN 
- cm-ml-pythondeps collection
- protobuf3
- opencv3
- BigDL
- TensorRT 



Deep Learning Tools and Platforms

Development Tools

- mvn
- sbt
- bazel

Notebook

- Jupyter/Jupyterhub

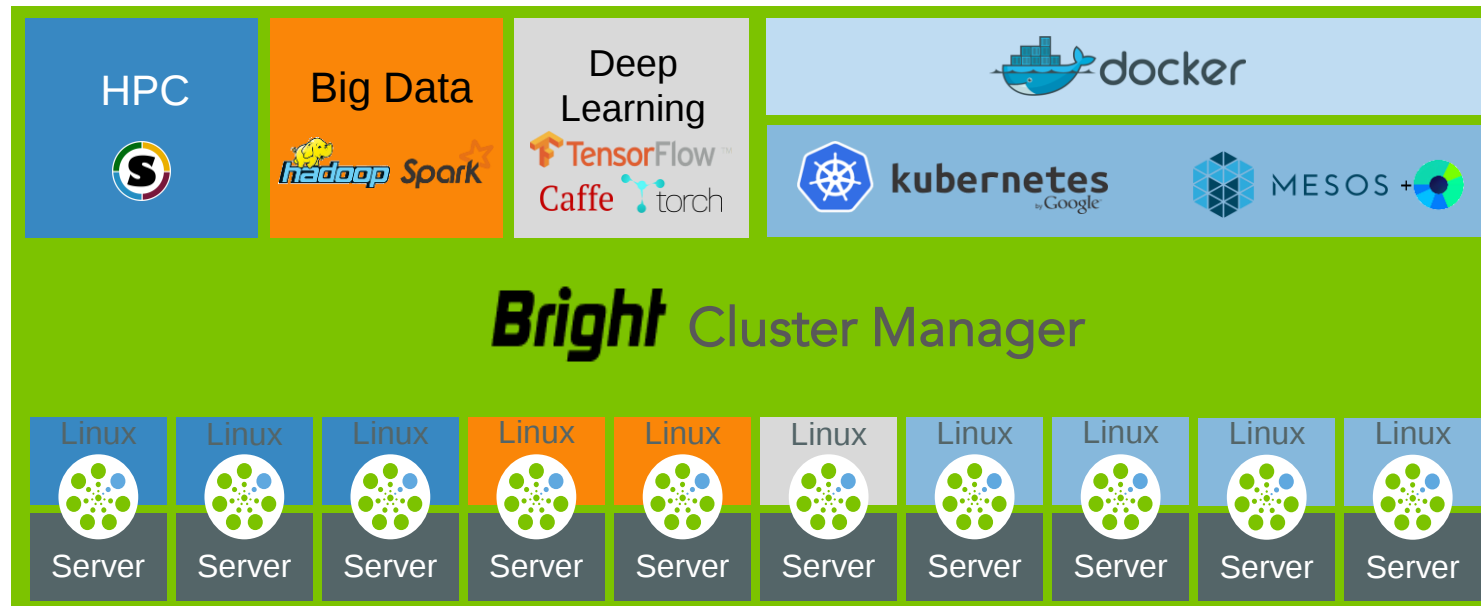
GUI

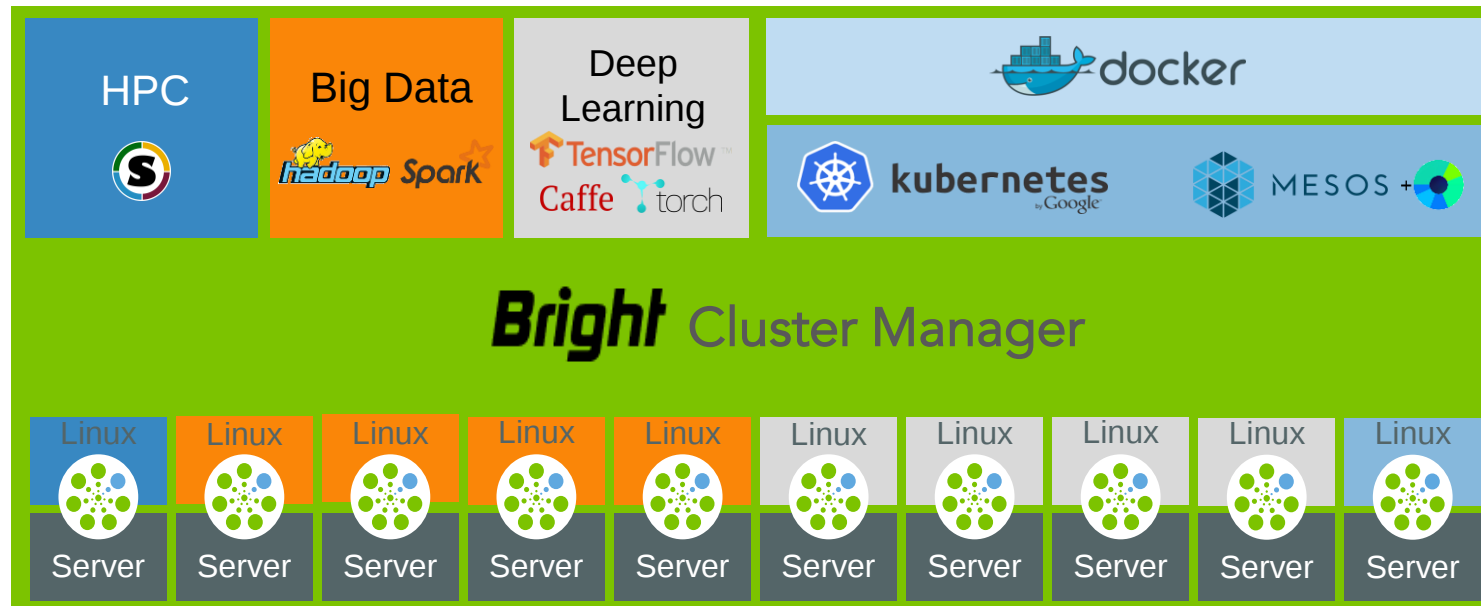
- NVIDIA Digits 

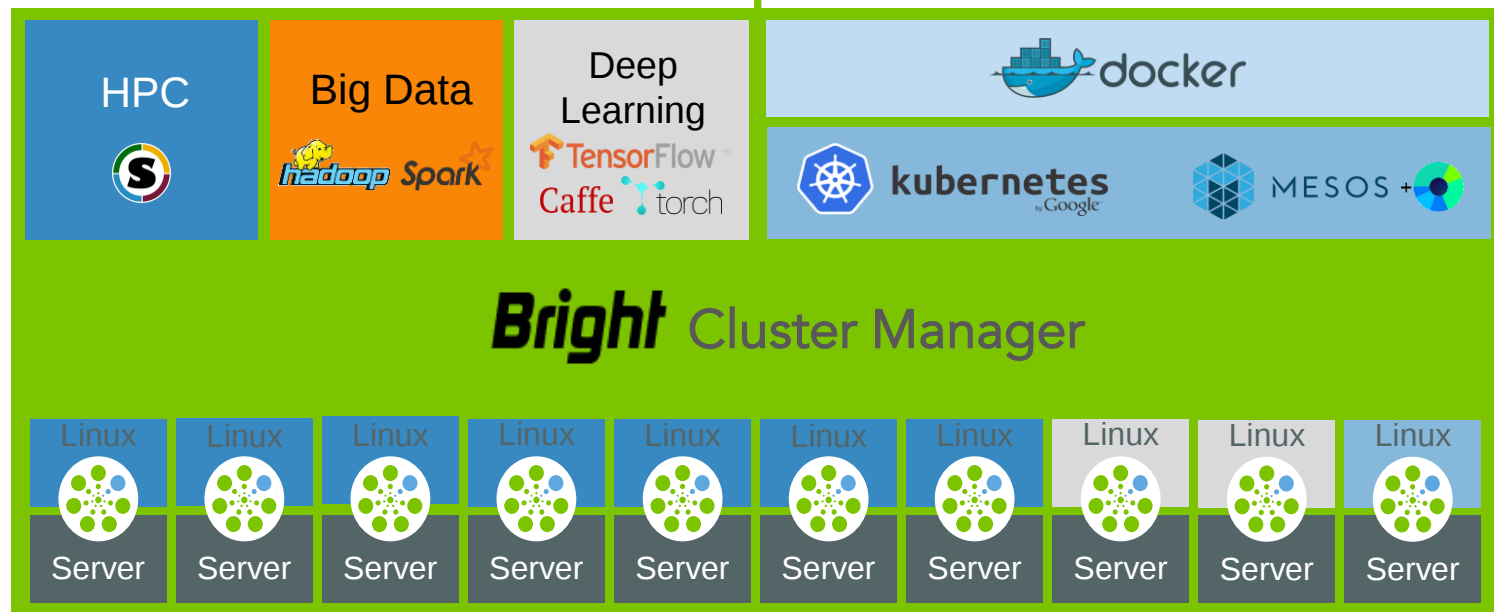
Supported Platforms

- SLES 12 sp1
- SLES 12 sp 2
- Ubuntu 16.04 LTS
- CentOS 7
- RHEL 7









Thank You!

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