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Chapter 1.
NVIDIA GPU CLOUD IMAGE OVERVIEW

NVIDIA makes available on the Google Cloud Platform a customized NGC virtual machine image optimized for the NVIDIA® Volta™ GPU. Running NVIDIA GPU Cloud containers on this instance provides optimum performance for deep learning jobs.

See the NGC with Google Cloud Platform Setup Guide for instructions on setting up and using the VMI.
Chapter 2.
VERSION 20.03.1

Image Name

‣ NGC Image: nvidia-gpu-cloud-image-20200324
‣ NGC with TensorFlow Image: nvidia-gpu-cloud-image-tensorflow-20200324
‣ NGC with PyTorch Image: nvidia-gpu-cloud-image-pytorch-20200324

Contents of the NVIDIA GPU Cloud Image

‣ Ubuntu Server: 18.04 LTS
‣ NVIDIA Driver: 440.64.01
‣ Docker Engine: 19.03.6
‣ NVIDIA Container Toolkit v1.0.5-1

Includes new command to run containers: `docker run --gpus all <container>`

‣ (NGC TensorFlow Image only) nvcr.io/nvidia/tensorflow:20.02-py3
‣ (NGC PyTorch Image only) nvcr.io/nvidia/pytorch:20.02-tf1-py3, nvcr.io/nvidia/pytorch:20.02-tf2-py3

Key Changes

‣ Updated Docker Engine to 19.03.6
‣ Updated NVIDIA Driver to 440.64.01

2.1. Known Issues
2.1.1. Installing GPU drivers on the VM via a CUDA Install Succeeds Erroneously

**Issue**

Attempting to install CUDA on the VM will succeed, resulting in a potential conflict with the NVIDIA GPU driver included in the VM image.

**Explanation**

The configuration file to prevent driver installs is not working. This will be resolved in a later release of the VM image.
Chapter 3.
VERSION 19.11.3

Image Name
- NGC Image: nvidia-gpu-cloud-image-20191114
- NGC with TensorFlow Image: nvidia-gpu-cloud-image-tensorflow-20191114
- NGC with PyTorch Image: nvidia-gpu-cloud-image-pytorch-20191114

Contents of the NVIDIA GPU Cloud Image
- Ubuntu Server: 18.04 LTS
- NVIDIA Driver: 440.33.01
- Docker CE: 19.03.4-ce
- NVIDIA Container Toolkit v1.0.5-1
  - Includes new command to run containers: `docker run --gpus all <container>`
- (NGC TensorFlow Image only) nvcr.io/nvidia/tensorflow:19.10-py3
- (NGC PyTorch Image only) nvcr.io/nvidia/pytorch:19.10-py3

Key Changes
- Updated Docker-CE to 19.03.4
- Updated NVIDIA Driver to 440.33.01

3.1. Known Issues
3.1.1. Installing GPU drivers on the VM via a CUDA Install Succeeds Erroneously

**Issue**

Attempting to install CUDA on the VM will succeed, resulting in a potential conflict with the NVIDIA GPU driver included in the VM image.

**Explanation**

The configuration file to prevent driver installs is not working. This will be resolved in a later release of the VM image.
Chapter 4.
VERSION 19.10.2

Image Name

- NGC Image: nvidia-gpu-cloud-image-20190809
- NGC with TensorFlow Image: nvidia-gpu-cloud-image-tensorflow-20190809
- NGC with PyTorch Image: nvidia-gpu-cloud-image-pytorch-20190809

Contents of the NVIDIA GPU Cloud Image

- Ubuntu Server: 18.04 LTS
- NVIDIA Driver: 418.87
- Docker CE: 19.03.2-ce
- NVIDIA Container Toolkit v1.0.5-1
- (NGC TensorFlow Image only) nvcr.io/nvidia/tensorflow:19.09-py3
- (NGC PyTorch Image only) nvcr.io/nvidia/pytorch:19.09-py3

Key Changes

- Updated Docker-CE to 19.03.2
- Replaced the NVIDIA Container Runtime for Docker with the NVIDIA Container Toolkit.
  
  Includes new command to run containers: docker run --gpus all <container>

4.1. Known Issues
4.1.1. Installing GPU drivers on the VM via a CUDA Install Succeeds Erroneously

Issue
Attempting to install CUDA on the VM will succeed, resulting in a potential conflict with the NVIDIA GPU driver included in the VM image.

Explanation
The configuration file to prevent driver installs is not working. This will be resolved in a later release of the VM image.
Chapter 5.
VERSION 19.08.0

Image Name

- NGC Image: nvidia-gpu-cloud-image-20190809
- NGC with TensorFlow Image: nvidia-gpu-cloud-image-tensorflow-20190809
- NGC with PyTorch Image: nvidia-gpu-cloud-image-pytorch-20190809

Contents of the NVIDIA GPU Cloud Image

- Ubuntu Server: 18.04 LTS
- NVIDIA Driver: 418.87
- Docker CE: 18.09.8-ce
- NVIDIA Container Runtime for Docker: (nvidia-docker2) v2.1.0-1
- (NGC TensorFlow Image only) nvcr.io/nvidia/tensorflow:19.06-py3
- (NGC PyTorch Image only) nvcr.io/nvidia/pytorch:19.06-py3

Key Changes

- Updated NVIDIA Driver to version 418.87.
- Updated Docker-CE to 18.09.8
- Updated NVIDIA Container Runtime for Docker to v2.1.0-1

5.1. Known Issues
5.1.1. Installing GPU drivers on the VM via a CUDA Install Succeeds Erroneously

**Issue**

Attempting to install CUDA on the VM will succeed, resulting in a potential conflict with the NVIDIA GPU driver included in the VM image.

**Explanation**

The configuration file to prevent driver installs is not working. This will be resolved in a later release of the VM image.
Chapter 6.
VERSION 19.07.0

Image Name

- NGC Image: nvidia-gpu-cloud-image-20190628
- NGC with TensorFlow Image: nvidia-gpu-cloud-image-tensorflow-20190628
- NGC with PyTorch Image: nvidia-gpu-cloud-image-pytorch-20190628

Contents of the NVIDIA GPU Cloud Image

- Ubuntu Server: 18.04 LTS
- NVIDIA Driver: 418.67
- Docker CE: 18.09.7-ce
- NVIDIA Container Runtime for Docker: (nvidia-docker2) v2.0.3
- (NGC TensorFlow Image only) nvcr.io/nvidia/tensorflow:19.06-py3
- (NGC PyTorch Image only) nvcr.io/nvidia/pytorch:19.06-py3

Key Changes

- Incorporates updated Ubuntu kernel to address a security update.
- Updated Docker-CE to 18.09.7: Incorporates security update.
- Incorporates cloud-init fix to allow updating older images to the latest kernel without user prompts.

6.1. Known Issues
6.1.1. Installing GPU drivers on the VM via a CUDA Install Succeeds Erroneously

**Issue**

Attempting to install CUDA on the VM will succeed, resulting in a potential conflict with the NVIDIA GPU driver included in the VM image.

**Explanation**

The configuration file to prevent driver installs is not working. This will be resolved in a later release of the VM image.
Chapter 7.  
VERSION 19.05.1

Image Name

‣ NGC Image: nvidia-gpu-cloud-image-20190522
‣ NGC with TensorFlow Image: nvidia-gpu-cloud-image-tensorflow-20190522
‣ NGC with PyTorch Image: nvidia-gpu-cloud-image-pytorch-20190522

Contents of the NVIDIA GPU Cloud Image

‣ Ubuntu Server: 18.04 LTS
‣ NVIDIA Driver: 418.67
‣ Docker CE: 18.09.4-ce
‣ NVIDIA Container Runtime for Docker: (nvidia-docker2) v2.0.3
‣ (NGC TensorFlow Image only) nvcr.io/nvidia/tensorflow:19.04-py3
‣ (NGC PyTorch Image only) nvcr.io/nvidia/pytorch:19.04-py3

Key Changes

19.05.1

‣ Incorporates updated OS kernel to address a security update. Refer to https://wiki.ubuntu.com/SecurityTeam/KnowledgeBase/MDS.

19.05.0

‣ Updated the Ubuntu Server to 18.04 LTS
‣ Updated the NVIDIA Driver to 418.67
‣ Updated Docker CE to 18.09.4-ce.

7.1. Known Issues
7.1.1. Installing GPU drivers on the VM via a CUDA Install Succeeds Erroneously

**Issue**

Attempting to install CUDA on the VM will succeed, resulting in a potential conflict with the NVIDIA GPU driver included in the VM image.

**Explanation**

The configuration file to prevent driver installs is not working. This will be resolved in a later release of the VM image.
Chapter 8.
VERSION 19.03.0

Image Name

- NGC Image: nvidia-gpu-cloud-image-20190318
- NGC with TensorFlow Image: nvidia-gpu-cloud-image-tensorflow-20190318
- NGC with PyTorch Image: nvidia-gpu-cloud-image-pytorch-20190318

Contents of the NVIDIA GPU Cloud Image

- Ubuntu Server: 18.04 LTS
- NVIDIA Driver: 418.40.04
- Docker CE: 18.09.2
- NVIDIA Container Runtime for Docker: (nvidia-docker2) v2.0.3
- (NGC TensorFlow Image only) nvcr.io/nvidia/tensorflow:19.03-py3
- (NGC PyTorch Image only) nvcr.io/nvidia/pytorch:19.03-py3

Key Changes

- Updated the NVIDIA Driver to 418.40.04

Known Issues

There are no known issues in this release.
Chapter 9.
VERSION 19.02.0

Image Name
‣ NGC Image: nvidia-gpu-cloud-image-20190219
‣ NGC with TensorFlow Image: nvidia-gpu-cloud-image-tensorflow-20190219
‣ NGC with PyTorch Image: nvidia-gpu-cloud-image-pytorch-20190219

Contents of the NVIDIA GPU Cloud Image
‣ Ubuntu Server: 18.04 LTS
‣ NVIDIA Driver: 410.104
‣ Docker CE: 18.09.2
‣ NVIDIA Container Runtime for Docker: (nvidia-docker2) v2.0.3
‣ (NGC TensorFlow Image only) nvcr.io/nvidia/tensorflow:19.04-py3
‣ (NGC PyTorch Image only) nvcr.io/nvidia/pytorch:19.04-py3

Key Changes
‣ Initial release of images incorporating PyTorch and TensorFlow
‣ Updated the Ubuntu Server to 18.04 LTS
‣ Updated the NVIDIA Driver to 410.104
‣ Updated Docker CE to 18.09.2.

Known Issues
There are no known issues in this release.
Chapter 10.
VERSION 18.11.1

Image Name
- NGC Image: nvidia-gpu-cloud-image-20181121

Contents of the NVIDIA GPU Cloud Image
- Ubuntu Server: 16.04 LTS
- NVIDIA Driver: 410.79
- Docker CE: 18.06.1
- NVIDIA Container Runtime for Docker: (nvidia-docker2) v2.0.3

Key Changes
- Updated the NVIDIA driver to Release 410, version 410.79.

Known Issues
There are no known issues in this release.
Chapter 11.
VERSION 18.09.1

Image Name

‣ Basic NGC Image: nvidia-gpu-cloud-image-20180911

Contents of the NVIDIA GPU Cloud Image

‣ Ubuntu Server: 16.04 LTS
‣ NVIDIA Driver: 410.48
‣ Docker CE: 18.06.1

Key Changes

‣ Updated the NVIDIA driver to Release 410, version 410.48.
‣ Updated Docker CE to 18.06.1

Known Issues

There are no known issues in this release.
Chapter 12.  
VERSION 18.08.1

Image Name
nvidia-gpu-cloud-image-20180816

Contents of the NVIDIA GPU Cloud Image
- Ubuntu Server: 16.04 LTS
- NVIDIA Driver: 396.44
- Docker CE: 18.06-ce
- NVIDIA Container Runtime for Docker: (nvidia-docker2) v2.0.3

Key Changes
- Updated the NVIDIA driver to 396.44.
- Updated Docker CE to 18.06

Known Issues
There are no known issues in this release.
Chapter 13.
VERSION 18.07.0

Image Name
nvidia-gpu-cloud-image-20180717

Contents of the NVIDIA GPU Cloud Image

- Ubuntu Server: 16.04 LTS
- NVIDIA Driver: 396.37
- Docker CE: 18.03.1-ce
- NVIDIA Container Runtime for Docker: (nvidia-docker2) v2.0.3

Key Changes

- Updated the NVIDIA driver to 396.37.

Known Issues

There are no known issues in this release.
Chapter 14.
VERSION 18.06.0

Image Name
nvidia-gpu-cloud-image-20180613

Contents of the NVIDIA GPU Cloud Image
- Ubuntu Server: 16.04 LTS
- NVIDIA Driver: 396.26
- Docker CE: 18.03.1-ce
- NVIDIA Container Runtime for Docker: (nvidia-docker2) v2.0.3

Key Changes
- Updated the NVIDIA driver to 396.26.

Known Issues
There are no known issues in this release.
Chapter 15.
VERSION 18.05.0

Contents of the NVIDIA GPU Cloud Image

- Ubuntu Server: 16.04 LTS
- NVIDIA Driver: 384.125
- Docker CE: 18.03.1-ce
- NVIDIA Container Runtime for Docker: (nvidia-docker2) v2.0.3

Key Changes

- Includes Ubuntu 16.04 security updates
- Updated Docker CE to version 18.03.1-ce

Known Issues

There are no known issues in this release.
Chapter 16.
VERSION 18.04.0

Contents of the NVIDIA GPU Cloud Image

- Ubuntu Server: 16.04 LTS
- NVIDIA Driver: 384.125
- Docker CE: 18.03.0-ce
- NVIDIA Container Runtime for Docker: (nvidia-docker2) v2.0.3

Key Changes

- Updated the NVIDIA Driver to version 384.125
- Updated Docker CE to version 18.03.0-ce

Known Issues

There are no known issues in this release.
Chapter 17.
VERSION 18.03.0

Contents of the NVIDIA GPU Cloud Image

- Ubuntu Server: 16.04 LTS
- NVIDIA Driver: 384.111
- Docker CE: 17.12.1-ce
- NVIDIA Container Runtime for Docker: (nvidia-docker2) v2.0.3

Known Issues

There are no known issues in this release.
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