# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NVIDIA GPU Cloud Machine Image Overview</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Version 19.10.2</td>
<td>2</td>
</tr>
<tr>
<td>2.1</td>
<td>Known Issues</td>
<td>3</td>
</tr>
<tr>
<td>2.1.1</td>
<td>Installing GPU drivers on the VM via a CUDA Install Succeeds Erroneously</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Version 19.08.1</td>
<td>4</td>
</tr>
<tr>
<td>3.1</td>
<td>Known Issues</td>
<td>4</td>
</tr>
<tr>
<td>3.1.1</td>
<td>Installing GPU drivers on the VM via a CUDA Install Succeeds Erroneously</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Version 19.07.0</td>
<td>6</td>
</tr>
<tr>
<td>4.1</td>
<td>Known Issues</td>
<td>6</td>
</tr>
<tr>
<td>4.1.1</td>
<td>Installing GPU drivers on the VM via a CUDA Install Succeeds Erroneously</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>Version 19.05.1</td>
<td>8</td>
</tr>
<tr>
<td>5.1</td>
<td>Known Issues</td>
<td>8</td>
</tr>
<tr>
<td>5.1.1</td>
<td>Installing GPU drivers on the VM via a CUDA Install Succeeds Erroneously</td>
<td>9</td>
</tr>
<tr>
<td>6</td>
<td>Version 19.03.1</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>Version 19.02.1</td>
<td>11</td>
</tr>
<tr>
<td>8</td>
<td>Version 19.01.1</td>
<td>12</td>
</tr>
<tr>
<td>9</td>
<td>Version 18.11.1</td>
<td>13</td>
</tr>
<tr>
<td>10</td>
<td>Version 18.09.1</td>
<td>14</td>
</tr>
<tr>
<td>11</td>
<td>Version 18.08.1</td>
<td>15</td>
</tr>
<tr>
<td>12</td>
<td>Version 18.07.1</td>
<td>16</td>
</tr>
<tr>
<td>13</td>
<td>Version 18.06.1</td>
<td>17</td>
</tr>
<tr>
<td>14</td>
<td>Version 18.05.1</td>
<td>18</td>
</tr>
<tr>
<td>15</td>
<td>Version 18.04.1</td>
<td>19</td>
</tr>
<tr>
<td>16</td>
<td>Version 18.03.0</td>
<td>20</td>
</tr>
</tbody>
</table>
NVIDIA makes available on the Alibaba 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 Alibaba Cloud Setup Guide for instructions on setting up and using the VMI.
Chapter 2.
VERSION 19.10.2

Image Name

- NGC Image: NVIDIA-GPU-Cloud-Image-19.10.2-2019.11.01
- NGC with TensorFlow Image: nvidia-gpu-cloud-image-tensorflow-19.10.2-2019.11.01
- NGC with PyTorch Image: nvidia-gpu-cloud-image-pytorch-19.10.2-2019.11.01

Contents of the NVIDIA GPU Cloud Virtual Machine Image

- Ubuntu Server: 18.04 LTS
- NVIDIA Driver: 418.87.01
- Docker CE: 19.03.2-ce
- NVIDIA Container Toolkit v1.0.5-1
- PyTorch container (NGC with PyTorch image): nvcr.io/nvidia/pytorch:19.09-py3

Key Changes

- Updated NVIDIA Driver to version 418.87.01
- 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>
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 19.08.1

Image Name

NVIDIA-GPU-Cloud-Image-19.08.1-2019.07.22

Contents of the NVIDIA GPU Cloud Virtual Machine 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

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

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 19.07.0

Image Name
NVIDIA-GPU-Cloud-Image-19.07.0-2019.06.28

Contents of the NVIDIA GPU Cloud Virtual Machine 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

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.

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 19.05.1

Image Name
NVIDIA-GPU-Cloud-Image-19.05.1-2019.05.22

Contents of the NVIDIA GPU Cloud Virtual Machine 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

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 NVIDIA Driver to 418.67
- Updated Docker to 18.09.4-ce

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.
Image Name

NVIDIA-GPU-Cloud-Image-19.03.0-2019.03.18

Contents of the NVIDIA GPU Cloud Virtual Machine Image

- Ubuntu Server: 18.04 LTS
- NVIDIA Driver: 418.40.04
- Docker CE: 18.09.2-ce
- NVIDIA Container Runtime for Docker: (nvidia-docker2) v2.0.3

Key Changes

- Updated the NVIDIA Driver to 418.40.04
- Updated Docker to 18.09.2-ce

Known Issues

There are no known issues in this release.
Chapter 7.
VERSION 19.02.1

Image Name

NVIDIA-GPU-Cloud-Image-19.02.1-2019.02.11

Contents of the NVIDIA GPU Cloud Virtual Machine Image

‣ Ubuntu Server: 16.04 LTS
‣ NVIDIA Driver: 410.104
‣ Docker CE: 18.09.1-ce
‣ NVIDIA Container Runtime for Docker: (nvidia-docker2) v2.0.3

Key Changes

‣ Updated the NVIDIA Driver to 410.104
‣ Updated Docker to 18.09.1-ce

Known Issues

There are no known issues in this release.
Chapter 8.
VERSION 19.01.1

Image Name

NVIDIA-GPU-Cloud-Image-19.01.1-2019.01.08

Contents of the NVIDIA GPU Cloud Virtual Machine 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

Known Issues

There are no known issues in this release.
Chapter 9.
VERSION 18.11.1

Image Name

NVIDIA-GPU-Cloud-Image-18.11.1-2018.11.21

Contents of the NVIDIA GPU Cloud Virtual Machine 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 410.79.

Known Issues

There are no known issues in this release.
Chapter 10.
VERSION 18.09.1

**Image Name**

NVIDIA-GPU-Cloud-Image-18.09.1

**Contents of the NVIDIA GPU Cloud Virtual Machine Image**

- Ubuntu Server: 16.04 LTS
- NVIDIA Driver: 410.48
- Docker CE: 18.06.1
- NVIDIA Container Runtime for Docker: (nvidia-docker2) v2.0.3

**Key Changes**

- Updated the NVIDIA driver to 410.48.
- Updated Docker CE to 18.06.1

**Known Issues**

There are no known issues in this release.
Chapter 11.
VERSION 18.08.1

Image Name
NVIDIA-GPU-Cloud-Image-18.08.1

Contents of the NVIDIA GPU Cloud Virtual Machine 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 12.
VERSION 18.07.1

Image Name
NVIDIA-GPU-Cloud-Image-18.07.1-2018.07.16

Contents of the NVIDIA GPU Cloud Virtual Machine 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 13. 
VERSION 18.06.1

Image Name
NVIDIA-GPU-Cloud-Image-18.06.1-2018.06.14

Contents of the NVIDIA GPU Cloud Virtual Machine 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 14.
VERSION 18.05.1

Contents of the NVIDIA GPU Cloud Virtual Machine 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 15.
VERSION 18.04.1

Contents of the NVIDIA GPU Cloud Virtual Machine 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 16.
VERSION 18.03.0

Contents of the NVIDIA GPU Cloud Virtual Machine Image

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

Known Issues

There are no known issues in this release.
Notice

THE INFORMATION IN THIS GUIDE AND ALL OTHER INFORMATION CONTAINED IN NVIDIA DOCUMENTATION REFERENCED IN THIS GUIDE IS PROVIDED “AS IS.” NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY, OR OTHERWISE WITH RESPECT TO THE INFORMATION FOR THE PRODUCT, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF NONINFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE. Notwithstanding any damages that customer might incur for any reason whatsoever, NVIDIA’s aggregate and cumulative liability towards customer for the product described in this guide shall be limited in accordance with the NVIDIA terms and conditions of sale for the product.

THE NVIDIA PRODUCT DESCRIBED IN THIS GUIDE IS NOT FAULT TOLERANT AND IS NOT DESIGNED, MANUFACTURED OR INTENDED FOR USE IN CONNECTION WITH THE DESIGN, CONSTRUCTION, MAINTENANCE, AND/OR OPERATION OF ANY SYSTEM WHERE THE USE OR A FAILURE OF SUCH SYSTEM COULD RESULT IN A SITUATION THAT THREATENS THE SAFETY OF HUMAN LIFE OR SEVERE PHYSICAL HARM OR PROPERTY DAMAGE (INCLUDING, FOR EXAMPLE, USE IN CONNECTION WITH ANY NUCLEAR, AVIONICS, LIFE SUPPORT OR OTHER LIFE CRITICAL APPLICATION). NVIDIA EXPRESSLY DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR SUCH HIGH RISK USES. NVIDIA SHALL NOT BE LIABLE TO CUSTOMER OR ANY THIRD PARTY, IN WHOLE OR IN PART, FOR ANY CLAIMS OR DAMAGES ARISING FROM SUCH HIGH RISK USES.

NVIDIA makes no representation or warranty that the product described in this guide will be suitable for any specified use without further testing or modification. Testing of all parameters of each product is not necessarily performed by NVIDIA. It is customer’s sole responsibility to ensure the product is suitable and fit for the application planned by customer and to do the necessary testing for the application in order to avoid a default of the application or the product. Weaknesses in customer’s product designs may affect the quality and reliability of the NVIDIA product and may result in additional or different conditions and/or requirements beyond those contained in this guide. NVIDIA does not accept any liability related to any default, damage, costs or problem which may be based on or attributable to: (i) the use of the NVIDIA product in any manner that is contrary to this guide, or (ii) customer product designs.

Other than the right for customer to use the information in this guide with the product, no other license, either expressed or implied, is hereby granted by NVIDIA under this guide. Reproduction of information in this guide is permissible only if reproduction is approved by NVIDIA in writing, is reproduced without alteration, and is accompanied by all associated conditions, limitations, and notices.
Trademarks

NVIDIA, the NVIDIA logo, and Volta are trademarks and/or registered trademarks of NVIDIA Corporation in the United States and other countries.

Docker and the Docker logo are trademarks or registered trademarks of Docker, Inc. in the United States and/or other countries.

Other company and product names may be trademarks of the respective companies with which they are associated.

Copyright

© 2019 NVIDIA Corporation. All rights reserved.