

# **DGX Access Guidelines**

## General Guidelines

### User Account

- Only one user account will be dedicated to each team. The members within the team will share this account and password.
- The team members will mutually agree and understand among themselves for sharing the account, managing the individual data within their home directories etc.

### Purpose of DGX

- DGX will act only as a processing server for the users and not for other purposes such as storage.

### Connection

- The connection between user and DGX will happen through Putty (command-line execution) and or WinSCP (file sharing).
- **Putty tutorial:** Installation and connecting your local PC to remote server (our DGX) using Putty is explained in <https://www.youtube.com/watch?v=UcT2aulKcn8>
- After connecting using Putty using the Host name (or Public IP), Username and Password, all operations can be done using ubuntu command line arguments.
- **Note: Host name (10.6.0.143), Username (dgxuser10x) and Password (\*\*\*\*\*)** is already with the mentors.
- **WinSCP tutorial:** Installation and connecting your local PC to remote server (our DGX) using WinSCP (using same Host name/Public IP, Username and Password) is explained in [https://www.youtube.com/watch?v=e7AgOFS\\_g8Q](https://www.youtube.com/watch?v=e7AgOFS_g8Q)

### Storage

- Home directory is expected to be used only for storing small files, such as code, reports, etc. Datasets and other research data will be stored on a specific directory (/raid/research/Intern18) in a folder dedicated for you.
- Administrator will hold all rights to move the files and further notify the user or even remove temporary or large sized files with prior notice.

### Sudo Privilege

- By default each user account will run commands in non-sudo mode.
- In case of any need for sudo privilege, DGX admin will help you out in any command that needs sudo privileges such as for installation of software packages.

### Declaration

- DGX Administrator will hold all rights for managing both stored data and processes happening in DGX. Bennett University will not be responsible for any loss or damage in the user's code/ data.

## **Do's and Don'ts**

### **Software Installation**

- The users should not try to either install or remove a software.
- Installation/modification/removal should be done only through the DGX administrator.

### **Folder Access**

- The users should only access the folders /home/dgxuser and /raid/research/data, where the following folders in the root directory should not be accessed (bin, boot, dev, etc, initrd.img, lib, lib32, lib64, lost+found, media, mnt, opt, proc, research, root, run, sbin, srv, sys, tmp, usr, var).
- The users should not try to read/modify the data in those restricted folders too.

### **Data Privacy**

- By default, the private data of each user is accessible only to them and visible to administrator.
- However, one should not try to access/modify other user's data in any situation.

### **Account Privacy**

- The DGX user account is dedicated only to the them for research purpose. Hence it should not be shared with other researchers either outside the research group or institution.
- It should be noted that details such as frequencies of access, connection type, login duration, IP address from where the DGX is accessed are logged and continuously monitored by the admin and GPUS analytics Softwares.

### **GPU Access**

- The users should work only on the GPUs dedicated to them.

### **Storage**

- Home directory is dedicated to be used only for storing small files, such as code, reports, etc.
- So, large sized files/data will be either moved/removed with prior notice from the administrator.

### **Sudo Access**

- The users should not run any sudo privileged commands that can potentially modify the system files for all users.
- In case of sudo privilege for any research/experiment purpose, the user should contact DGX administrator.

### **Support**

- For any other query/doubts/technical issues, the user should contact Mr. Arun Kumar (arun.kumar@bennett.edu.in) or Dr. Sridhar (sridhar.swaminathan@bennett.edu.in)

### DGX for Deep Learning

After connecting using Putty using the **Host name**, **Username** and **Password** shared in the email, you have to use Nvidia-docker service to access the GPU-enabled deep learning platforms. To utilize the GPUs in DGX for deep learning training, you must load the docker image and work within that environment. After logging in to DGX using Putty, execute the following command to load the docker image. The command for loading tensorflow image will look like

```
NV_GPU='GPU ID' nvidia-docker run -it -v /home/dgxstud1:/home/dgxstud1/data  
nvcr.io/nvidia/tensorflow:17.11
```

In the above line

- **0/1/2..7**- is GPU ID
- **dgxstud1** - is your DGX user name
- **nvcr.io/nvidia/tensorflow:17.11** - is deep learning framework image name

The general syntax will look like: **NV\_GPU=GPU-ID** nvidia-docker run -it -v /home/**Username**:/home/**Username**/data nvcr.io/nvidia/**framework**:17.11

**Note:** You must replace the **GPU-ID** with the ID given to you, **Username** should be replaced by your DGX user name, and **framework** name should be replaced by framework you want to work on. The following are the frameworks supported by DGX now and their corresponding image names.

S.No	Framework	Image name
1	Tensorflow	nvcr.io/nvidia/tensorflow:17.11
2	Caffe	nvcr.io/nvidia/caffe:17.11
3	Pytorch	nvcr.io/nvidia/pytorch:17.11
4	Theano	nvcr.io/nvidia/theano:17.11
5	Mxnet	nvcr.io/nvidia/mxnet:17.11

After loading the docker image, you will be inside the docker environment. Execute the following commands to go to your home directory again

```
> cd /  
> cd home/Username/data
```

Now, you will be inside your home directory (named as your DGX user name) where you copied your programs. From here you can execute any python program as

```
> python cnn.py
```

This will run the python code where the GPU computations will run in DGX's GPUs. If you are not running the python code within the docker environment, the training or computations will run in CPU.

### GPU Allocation for Teams

Team Number	Mentor	GPU ID
1	Dr. Deepak	0
2	Dr. Suneet	0
3	Ms. Nisha	0
4	Ms. Shambhavi	0
5	Dr. Gaurav	1
6	Dr. Indrajeet	2
7	Mr. Sahibnoor	2
8	Mr. Tejalal	2
9	Ms. Divya	2
10	Dr. Sridhar	3
11	Ms. Smita	3
12	Dr. Tanveer	4
13	Dr. Tapas	5
14	Ms. Surbhi	5
15	Dr. Vipul	6
16	Ms. Kanak	6
17	Ms. Navya	6
18	Mr. Anugrah	7
19	Mr. Balmukund	7
20	Mr. Cairo	7
21	Mr. Mohit	7
22	Mr. Rohit	7

Sample Command (single line)

```
NV_GPU='0' nvidia-docker run -it -v  
/home/dgxstud1:/home/dgxstud1/data nvcr.io/nvidia/tensorflow:17.11
```

## Important Ubuntu Commands

### Basic Tutorial:

Our DGX can be accessed only using command line SSH connection tool such as Putty. For more on how to use basic ubuntu, watch the two following videos.

1. [Introduction to Linux and Basic Linux Commands for Beginners](#)
2. [Linux Terminal Tutorial Episode 1: Back to Basics](#)

S.No	Command	Purpose
1	<b>cd</b>	cd (change director”) Linux command also known as chdir used to change the current working directory. You can use full paths to folders or simply the name of a folder within the directory you are currently working. Some common uses are: <ol style="list-style-type: none"><li>1. cd / – Takes you to the root directory.</li><li>2. cd .. – Takes you up one directory level.</li><li>3. cd – – Takes you to the previous directory.</li></ol>
2	<b>pwd</b>	To print the absolute path of your current directory
3	<b>ls</b>	ls (list) command lists all files and folders in your current working directory. You can also specify paths to other directories if you want to view their contents.
4	<b>cp</b>	cp (copy) Linux command allows you to copy a file. You should specify both the file you want to be copied and the location you want it copied to – for example, cp xyz /home/myfiles would copy the file “xyz” to the directory “/home/myfiles”.
5	<b>mv</b>	mv (move) command allows you to move files. You can also rename files by moving them to the directory they are currently in, but under a new name. The usage is the same as cp – for example mv xyz /home/myfiles would move the file “xyz” to the directory “/home/myfiles”.
6	<b>rm</b>	<ol style="list-style-type: none"><li>1. rm (remove) command removes the specified file.</li><li>2. rmdir (“remove directory”) – Removes an empty directory.</li><li>3. rm -r (“remove recursively”) – Removes a directory along with its content.</li></ol>
7	<b>mkdir</b>	mkdir (make directory) command allows you to create a new directory. You can specify where you want the directory created – if you do not do so, it will be created in your current working directory.
8	<b>clear</b>	This command clears the screen.
9	<b>help</b>	With almost every command, ‘--help’ option shows usage summary for that command.
10	<b>file</b>	The file command determines the file type of a given file. Example: file /etc/passwd.txt
11	<b>nvidia-smi</b>	to view status of running process in GPU
12	<b>python program.py</b>	Runs python code in the program.py
13	<b>nano filename.txt</b>	Nano command opens a file named filename.txt where you can add edit remove your content.

		To save the file press Ctrl+O then press enter to save. To exit the editing press Ctrl+X then press enter to exit.
14	<b>wget url</b>	This command will download the file from internet Ex: wget <a href="https://www.w3.org/TR/PNG/iso_8859-1.txt">https://www.w3.org/TR/PNG/iso_8859-1.txt</a> will download the iso_8859-1.txt file from the URL and put in the local directory
15	<b>tar -xzf sample.tar</b>	Will extract tar file
16	<b>gcc program.c</b>	Execute C/C++ program program.c
17	<b>Ctrl+C</b>	To stop any execution