**DEPARTMENT OF PEDIATRICS**
**ALL INDIA INSTITUTE OF MEDICAL SCIENCES**

| | |
|---|---|
| **Equipment:** | Graphics Processing Units for Deep Learning applications with Peripheral Component Interconnect Express (PCIe) Interconnect |
| **Requirement:** | 02 Units |
| **Warranty/Guarantee** | 3 years comprehensive warranty (including spare and labour) |

**Technical Specifications:** The Graphics Processing Units (GPU) are required specifically for Deep Learning applications and with optimized libraries, benchmarks and proof of use in Deep Learning. The specifications for the units are as below:-

1. Compute Unified Device Architecture (CUDA) Core architecture.
2. >3000 CUDA cores
3. >4 TeraFlop Double Precision Performance on Peripheral Component Interconnect Express (PCIe)
4. >9 TeraFlop Single Precision Performance on PCIe
5. >18 TeraFlop Half Precision Performance on PCIe
6. Memory Capacity: 16GB
7. Memory Bandwidth >700 GB/s
8. Error Correction Codes (ECC) enabled
9. Unified Page Migration Engine which enables scaling beyond the GPU's physicalmemory size
10. Server optimized
11. Compatibility with PCIe and NVLink (a high-bandwidth, energy-efficient interconnect that enables ultra-fast communication between the CPU and GPU) technologies
12. Optimized cuDNN (CUDA Deep Neural Network), cuBLAS (CUDA Basic Linear Algebra Subprograms)libraries for Deep Learning applications such as Deep Convolutional Neural Nets (Deep CNNs), Deep Long Short-term memory units (LSTMs), Autoencoders, Generative Adversarial Networks
13. Compatible and optimized for Python NumPy, Tensorflow and Keras
14. Strong community Support for libraries and troubleshooting in the form of forums and use cases.
15. Must have proven application use cases and support for Tensorflow, Keras, Caffe, and PyTorch platforms. Specific applications would include common deep learning architectures such as Recurrent Neural Networks (Long Short Term Memory Networks, Generative Adversarial Networks, Segnets for image segmentation etc).
16. Compatibility with our existing Huawei RH 2288H V3 server.

**MEGAHERTZ INFOTECH PVT. LTD.**
Address :
608, Eros Appartment, 56 Nehru Place,
New Delhi- 110019 Ph.: 46644000, 28898276
E-mail : madhu@megahertzinfotech.com

MEGAHERTZ Infotech

To,

10th Aug 2017

**Dr. Rakesh Lodha, M.D**
**Additional Professor**
**Department of Pediatrics**
**All india Institute of Medical Sciences**
**Ansari Nagar, New Delhi-110029**

**Subject:- Quote for Nvidia GPU Card**

With reference to the above said subject that we are pleased to quote our best price for Nvidia GPU card along with all the required documents & Commercial terms and condition for your kind perusal.

| S.No | Description | Qty | Unit price | Total Price |
|---|---|---|---|---|
| 1 | Nvidia Tesla P100 16GB | 1 | 549000 | 549000 |
| 2 | PCIe Riser Card,2 slot(x16,x16),only for GPU,used for RH2288H V3 | 1 | 45959.80 | 45959.8 |

**Commercial Terms & Condition:-**

- Price Basis : FOR Destination
- Taxes : GST 18% extra
- Delivery Period : 6 week from the date of Purchase order
- Warranty : As per OEM Standard warranty
- Validity : 45 days

We are looking forward for your valuable order at the earliest.

Thanking & anticipating for your positive response.

Yours Sincerely

Megahertz Infotech Pvt. Ltd. New Delhi-110019

**Sanjeev Kumar**
**Mb#8373916824**
sanjeev@megahertzinfotech.com
**For MEGAHERTZ INFOTECH PVT. LTD.**

29 July 2017

Dr. Rakesh Lodha
All India Institute of Medical Sciences
New Delhi.

Dear Sir,

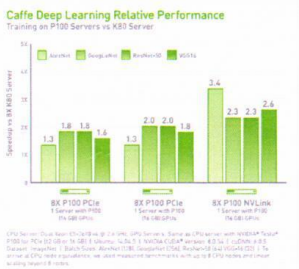
**Sub:** Proprietary Certificate for NVIDIA TESLA P100 GPUs.

We would like to bring to your kind notice that the "NVIDIA TESLA P100" GPU is a proprietary product of NVIDIA Corporation, USA and is sold through a network of distributors and partners worldwide. CUDA architecture and cuDNN libraries are also proprietary products of NVIDIA Corporation, USA.

The CUDA architecture with its AI offerings from NVIDIA delivers a comprehensive hardware plus software stack for Deep Learning and Artificial Intelligence research. Developing deeper models with larger datasets like U-Nets, ResNet or stacked autoencoders require the ability to highly parallelize the training phase either by splitting the datasets or models. In such environments, the NVIDIA Tesla P100 crafted with the below mentioned hardware advancements are suitable.

Certain points to consider as a hardware performance guide:

- The new Pascal architecture delivers up to 21.2 TFLOPS of native half precision floating point.

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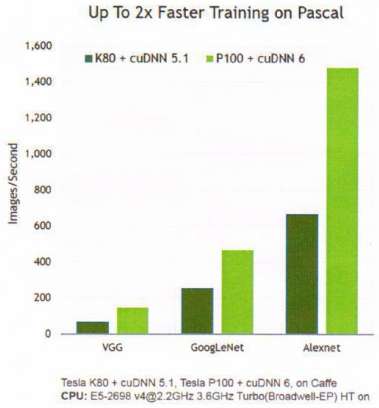
- Caffe, TensorFlow, and CNTK are up to 3x faster with Tesla P100 compared to other offerings [a K80 vs P100 benchmark attached]
- Unified Page Migration Engine - Page Migration Engine frees developers to focus more on tuning for computing performance and less on managing data movement.

The present state of art Deep Learning techniques need both optimized hardware and software in this regard, the NVIDIA Deep Learning SDK comes which with packages/primitives like cuDNN, TensorRT, cuSPARSE NCCL that are essential for building deep learning applications and allow seamless integration with frameworks to supercharge development of models. These optimized libraries are proprietary products of NVIDIA and are available exclusively in our hardware and software offerings.




Kindly revert in case any clarifications are needed. Thanking you and assuring you of our best support always.

Yours Sincerely,
For NVIDIA Graphics Pvt. Ltd.

Sundara Ramalingam N
Head – Deep Learning Practice

Email: snagalingam@nvidia.com

# All-India Institute of Medical Sciences
# Ansari Nagar, New Delhi-29
**(RESEARCH SECTION)**

**Ref. No. 25/Stores/Pead/RL/2017-18/RS**.

**Dated: 06.10.2017**

**Subject: Purchase of Graphics Procesing Unit, for the Deptt. of Peadiatric,AIIMS, New Delhi-29 on proprietary basis- Inviting comments thereon.**

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The request has been received from Dr. Rakesh Lodha,Prof. Deptt.of Pediatrics, AIIMS to purchase the subject item from M/s Megahertz Infortech Pvt. Ltd. on proprietary basis. The proposal submitted by M/s Megahertz Infortech Pvt. Ltd. and Performa Invoice and Departmental PAC certifications are attached.

The above documents are being uploaded for open information to submit objections, comments, if any, from any manufacturer regarding proprietary nature of the equipment/item within issue of 15 days giving reference **No. 25/Stores/Pead/RL/2017-18/RS**. The comments should be received by office of Stores Officer (RS), Research Section at AIIMS on or before **23.10.2017 upto 12:00 p.m.,** failing which it will be presumed that any other vendor is having no comment to offer and case will be decided on merits.

**STORES OFFICER (RS)**

**Encl: Related documents enclosed.**

1. **Departmental PAC Certificate enclosed.**
2. **Performa Invoice**