

Dear Technion researcher

We are pleased to announce the availability of a new High Performance Computing (HPC) facility, TAMNUN. TAMNUN is a computer cluster of over 1000 cores that has been recently purchased by the Technion from the SGI-TNN company, and is available for the use of all researchers at the Technion. This new cluster was funded by the Minerva Foundation and the Russell Berrie Nanotechnology Institute, and their researchers will have first-priority of use. The existing NANCO HPC cluster will be turned off in the near future.

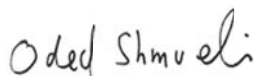
Initially, this new cluster can be freely used by all Technion researchers (while estimated cost reports will be emailed to users, monthly). If/when the use of the machine will become significant, actual charges might commence. Additional users can join this cluster by purchasing additional cores, having first-priority on their own cores, while being able to use other TAMNUN cores based on availability.

We have a unique offer made to the Technion by [ScaleMP](#), a provider of virtualization software for HPC. ScaleMP tools enable one to run non-parallelized programs like MATLAB on a cluster, practically as if it were one computer - 16 nodes (192 cores) of this computer contain over a Terabyte of memory, two orders of magnitude more than what your typical strong PC has! Users of COMSOL or FLUENT will not need this solution, because those have distributed computation capabilities, but many other programs will. If you are interested in this solution, and also willing to partially sponsor its purchase, please alert Yulia (see below).

Two training sessions for potential users are planned, to be conducted by an SGI representative, one in the coming weeks and a second one in about six months. A preliminary Linux essentials workshop is also planned.

Numerous people at the Technion, including Dr. Joan Adler and Prof. Simon Brandon, and staff from the Division for Computing and Information Systems, and other Technion departments, have been involved in the lengthy and thorough process that culminated in the agreement with SGI/TNN, and we thank them all.

The attached appendix describes the technical details of the system. Please contact [Yulia Halupovich at extension 2654 or by e-mail \[hpc-support-1@listserv.technion.ac.il\]\(mailto:hpc-support-1@listserv.technion.ac.il\)](#), for details on any of the above and/or further information regarding the use of this new cluster. Note a [LISTSERV mailing list](#) has already been established for TAMNUN, and you are invited to join it. Finally, TAMNUN has a dedicated WEB site at <http://hpc.technion.ac.il>



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Technical information

The cluster of choice contains 1056 compute cores, which makes it one of the most powerful civil computing facilities in Israel currently.

TAMNUN is composed of 88 compute nodes, each consisting of two 2.40GHz Six Core Xeon Processors with 8GB DDR3 memory per core. The local storage available (per node) includes 500 GB 1 TB SATA drives, and the total storage raw capacity is 50 TB.

In addition TAMNUN includes 4 compute nodes with fast 1200 GB drives for running [the Gaussian software](#), and 4 servers with NVIDIA Tesla M2090 GPU Computing Modules.

Interconnection between the nodes is implemented by six 2:1 blocking topology [Mellanox](#) switches, as well as two GiGE switches for the management network.

The TAMNUN cluster is delivered in a high density rack units (63 units in 2 racks). The modularity and flexibility of the hardware installation allows for the extension of the cluster by additional compute nodes, either to the main cluster, or as additional clusters purchased by Technion researchers. For a limited time, additional nodes purchased by researchers, as our agreement with SGI/TNN states, will benefit from the same attractive terms by which TAMNUN has been purchased.

Software installation includes the [Linux RH EL6](#) operating system, SGI management system, [PBSPro](#) Scheduling system and [Intel Cluster Studio](#) (including [MPI Library](#)). Various commercial and open source applications suitable for parallel and/or multi-core computations will be installed at users request, depending on licensing issues. Among them, [MATLAB](#), [Gaussian](#), [VASP](#), [ANSYS-FLUENT](#), [COMSOL](#), [OpenFOAM](#) and other applications according to demand, will be installed. Post-processing and visualization software will be installed on a separate server connected to the cluster local network.

The [PBS](#) queuing system will take care of resource allocation and users priorities. During the first year of TAMNUN's operation, or until the server is significantly loaded, usage of the server will be free of charge. A PBSPro based billing system will be established, however, from the beginning of the operation to give users a sense of what the costs will be, if/once charging is applied.

As stated, there will be two training sessions by SGI. The topics that will be covered by these sessions include:

- Parallel Computer Architectures
- Compilers and Monitoring Tools
- Program Analysis and Optimization
- Performance Tuning
- Shared Memory Parallel Programming using OpenMP
- Parallel Programming in Distributed Memory using MPI

Operation details of the cluster, referral links, etc., to be announced shortly.