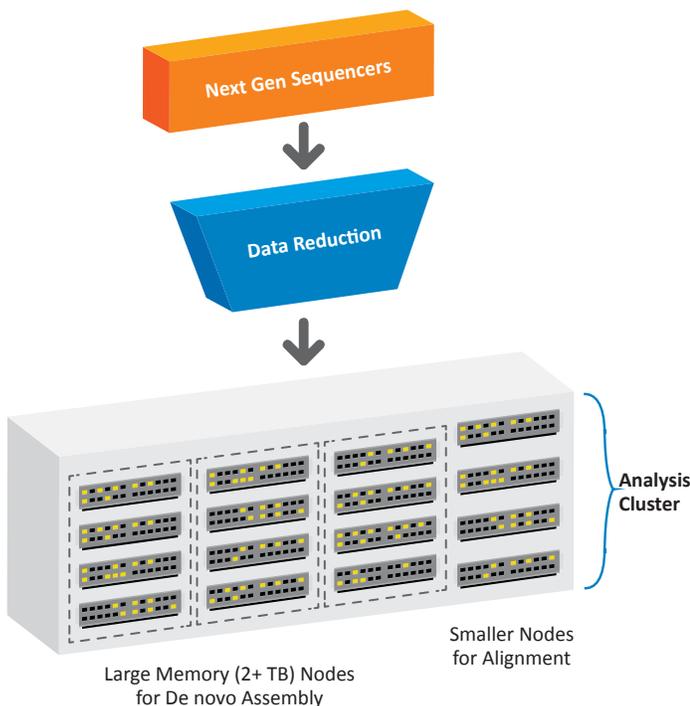


INDUSTRY BRIEF

Life Sciences



Life science researchers today are embarking on a long journey of big data projects, including efforts to analyze the genomes of different cancers, to map the human brain, and to develop better crops and biofuels. This quest is producing massive genomic and proteomic datasets that are expanding exponentially.



With the introduction of more sophisticated and effective scientific instrumentation including more affordable next generation sequencers from a number of suppliers, the amount of data being generated, managed, and interpreted is exploding.

High Performance Computing (HPC) technologies has ignited a revolution in life sciences in recent years because gene sequencing and genome assembly, as well as complex modeling and analysis, require state-of-the-art high performance compute capability not available with industry standard, low resource servers.

“It’s the largest system around and it is being used by researchers from all over, including the state of Rhode Island, which is conducting genomics research on marine life,” explains Fulcomer. “It has also been instrumental in helping us to attract new faculty hires and graduate students who know that Brown has the high-performance computing solution they will require for their research.”

Sam Fulcomer, associate director for the Center for Computation and Visualization, Brown University

“vSMP Foundation gives us the ability to run very large scale de novo sequencing applications without having to deal with the complexities of managing a cluster. We get full performance from the servers, and we can scale our applications like never before”.

Kazuharu Arakawa, Project Assistant Professor (Bioinformatics, Systems Biology), Keio University

With various scientific instruments generating more than 1 TB of raw data per day, new solutions must be developed that can not only store this massive amount of data, but also analyze it within reasonable amount of time to then act on it. When as much of this scientific data is held in the computer’s memory, it can be more readily analyzed and used with simple programming models, revealing new discoveries.

Life sciences applications and workflows can benefit greatly from large memory systems, where more data can be held in high speed memory than before. Access to more memory means faster calculations, without having to rely on relatively slow hard disk drives.

Because of the rapid improvements in cost and quality of sequencing data, de novo sequencing and assembly is possible not only in large sequencing centers, but also in small labs. The availability of large memory systems at industry standard server pricing enable this transformation.

These genome assembly algorithms complete faster, as more of the data can be held in fast memory. Very large memory systems, along with large parallelization algorithms will excel in performance on SMP type systems.

“Thanks to vSMP Foundation memory aggregation technology, we experienced a significant increase in performance for many heavy tasks. We are now able to use a variety of applications on a single system and are able to enhance our research” .

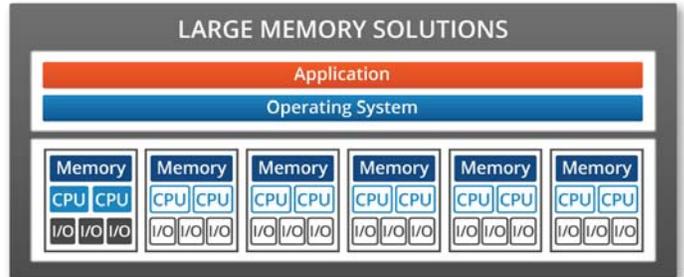
Professor Leonid Brodsky, Ph. D., Senior Lecturer, Department of Evolutionary and Environmental Biology and Tauber Bioinformatics Research Center, University of Haifa

With vSMP Foundation software from ScaleMP, together with leading x86 server providers, users get the following benefits:

- Flexibility to run a variety of applications on the same servers. Large scale SMPs can be created as needed, based on user workflow demands
- Fast Performance for all applications is guaranteed, as the latest and most powerful CPUs can be utilized from leading hardware vendors

- Scalability is built in, as more amounts of computing power and memory availability can be utilized, based on workloads
- Simplicity of managing the computing resources is achieved by using lower number of logical entities (reduce number of OS instances)

vSMP Foundation from ScaleMP aggregates the resources of industry standard servers to create a large scale SMP. Users and applications can then leverage the large amount of memory in an easy to use system.



Applications

Comp. Chemistry	Molecular Dynamics	Bio-Informatics
AMBER	Schrödinger Glide	454/Newbler
CFOUR	SCM ADF	Abyss
DOCK	VASP	Tuxedo
GAMESS	Molecular Dynamics	CLC Bio
Gaussian	GROMACS	FASTA
GOLD	MOLPRO	HMMER
NWChem	NAMD	Illumina
Octopus	OpenEye ROCS	mpiBLAST
OpenEye FRED	Schrödinger	SOAPDenovo
OpenEye OMEGA	Desmond	Velvet
Schrödinger	Turbomole	
Jaguar		

Example customers using vSMP Foundation from ScaleMP



About ScaleMP

ScaleMP is the leader in virtualization for high-end computing, providing maximum performance and lower total cost of ownership. The innovative Versatile SMP™ (vSMP) architecture aggregates multiple independent systems into a single virtual system, delivering an industry-standard, high-end symmetric multiprocessing computer.

ScaleMP™
CREATING THE POWER OF ONE

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