

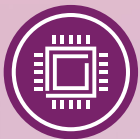


Smarter
technology
for all

Lenovo

Accelerating the Promise of Genomics with Lenovo and Intel®

Genomic analytics as a medical discipline is at the forefront of modern medicine and is quickly becoming more of a crucial asset for predicting disease, anticipating future health concerns, and planning effective treatments for health issues. Processing genomic data, however, requires dedicated computing resources, advanced software applications, and lots of time. Tools that allow scientists, researchers, and medical professionals to effectively process data faster and arrive at insights quicker are essential.



Access to reliable, high-performance computing solutions helps accelerate discovery to meet and solve current and future challenges.



intel.
xeon®

Use Cases for Genetic Testing

As emerging technology continues to allow us to interpret and learn more about our genomes, this information is quickly becoming a part of everyday life. Genetic testing has a variety of use cases and is especially relevant in the fields of oncology, pharmacology, rare and undiagnosed diseases, and infectious diseases.¹

- **PREDICTIVE TESTING**

Helps people determine their risk of developing a specific genetic disorder, especially if this disorder happens to be present in a family member.

- **DIAGNOSTIC TESTING**

Confirms or rules out a suspected genetic disorder and drives health and treatment decisions.

- **REPRODUCTIVE TESTING**

Helps parents grow their families, and make decisions before, during, and after pregnancy.

- **FORENSIC TESTING**

Identifies biological family members, suspects, and victims of crime and disaster.

- **PHARMACOGENOMIC TESTING**

Helps determine how patients might react to certain medications.

- **DIRECT-TO-CONSUMER TESTING**

Allows consumers to collect DNA at home and have companies analyze it for ancestry, kinship, lifestyle factors, and potential disease risk information.¹



Challenges:

DATA LOADS

The massive amounts of data generated by genome sequencing are more challenging to process and require high-performance workstations that can break massive data sets apart and perform segmented analyses to understand them.

TIME

The time it takes to sequence a single whole genome can be anywhere from 60–150 hours. This proves to be a challenge for entities in the business of saving lives who need to analyze genomes faster to uncover insights that lead to medical breakthroughs.

The Lenovo Genomics Optimization and Scalability Tool (GOAST)

Bioinformatic-optimized Lenovo GOAST solutions powered by 4th Gen Intel® Xeon® processors allow researchers to analyze an entire human genome in 18 minutes and whole exomes in a matter of seconds. In a standard cloud or on-prem environment, the same analysis takes 40-150 hours. What's more, our hardware and software bundle costs up to 50% less than other solutions.

Lenovo GOAST solutions are validated, pre-configured, and built on reliable, high-performance Lenovo ThinkSystem servers. The hardware is specially tuned to accelerate open-source GATK software - the gold standard for researchers—while the pre-configured software maximizes the architecture's performance. Our system is also multi-purpose so users can install any other bioinformatics or HPC tools they need. Lenovo GOAST's high-core, fast I/O and high memory specs excel at running parallel applications and sequential workflows common in Bioinformatics.

Optimize, scale, and accelerate your analytics with Lenovo.



OPTIMIZE MULTIPLE WORKFLOWS

A single Lenovo GOAST architecture optimizes Genomics, Transcriptomics, Molecular Dynamics and CryoE



INCREASES LAB PRODUCTIVITY

Utilizes AI and machine learning to speed up information to achieve insights faster.



SUPPORT HIGH THROUGHPUT VOLUMES

From single research lab (single sequencer) to population-level efforts (hundreds of thousands of genomes per year).



SUPPORTS MULTI-PURPOSE BIOINFORMATICS USE

Leverage BOSS's high-core, fast I/O, and high-memory specs to run any Bioinformatics or HPC tools or scripts.



SCALE MODULARLY

Prioritize performance and affordability with scalable configurations.



COST-EFFECTIVE SOLUTIONS

Up to 50% less than similar boutique solutions relying on GPUs or FPGAs without additional licensing fees.



RUN EXTREMELY FAST ANALYTICS

Lenovo GOAST is up to 200x faster than standard environments enabling more samples to be processed.



EASY TO USE

GOAST systems can be easily integrated into new or existing clusters and can be fully customized from an architecture, system, or software perspective.

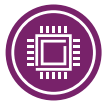


Optimize genomic projects with Lenovo Workstations powered by Intel® Xeon® processors.



RELIABILITY

- Lenovo Premiere Support manages routine support tasks, boosts end-user productivity, and limits downtime with direct access to elite Lenovo engineers.
- Unlock the benefits of hybrid and multi-cloud environments, infinite storage, and high-performance computing with TruScale Infrastructure-as-a-Service.



HIGH-PERFORMANCE COMPUTING

- Accelerated workflows for faster data capture and accurate analysis
- Device as a service (DAAS) to upgrade sooner to stay competitive
- Supports NVIDIA® Clara™ Parabricks - the only GPU-accelerated computational genomics toolkit delivering fast and accurate analysis



SECURITY

- End-to-End Protection



AFFORDABILITY

- High-powered workstations for high-power computing can save you money



Lenovo Solutions

ThinkStation P7

- Powered by Intel® Xeon® W processors
- Up to 3X NVIDIA® RTX™ 6000 Ada Generation GPU
- Up to 60 Tensor Cores
- Up to 1TB DDR5 memory
- More lanes for more multi-threaded applications on a single processor
- Superfast NVMe storage



ThinkStation PX

- Powered by 4th Gen Intel® Xeon® scalable processors
- Up to 4X NVIDIA® RTX™ A6000 Ada Generation GPU
- Up to 60 Tensor Cores
- Up to 2TB DDR5 memory
- Superfast NVMe storage



Ready to Take Genomics Analytics to the Next Level?

Partner with Lenovo and Intel® to accelerate workflows and plan your HPC resources more effectively to meet the increasing demands of future genomic research.

Contact your Lenovo Health Account Representative or Local Business Partner. Visit www.lenovo.com/health and follow us on Twitter @Lenovo.



¹ <https://www.genome.gov/About-Genomics/Introduction-to-Genomics>

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