AI-powered diagnostics accelerate test results for Fulgent Genetics

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Fulgent Genetics transformed its medical test results with Dell Technologies infrastructure and AI, enabling real-time clinical insights and affordable genetic testing that bring clarity to life's critical moments.

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Business needs

In an industry where a quick patient diagnosis can lead to life-saving medical intervention, Fulgent Genetics sought to integrate AI into its genetic testing procedures to improve the speed and accuracy of its results. The company also needed to handle the vast quantities of data associated with each test.

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Solutions at a glance

- Dell PowerStore
- Dell PowerEdge Servers
- Dell AI Solutions
- Dell HPC Solutions

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Business results

⚙ **Increases** processing speed by 30%, reducing pathology results turnaround time.

👤+ **Nurtures** human connection, bringing clarity and faster answers to the most critical moments of patients' lives.

🏢 **Provides** robust, scalable backend support for handling large-scale data and integrating other systems.

💲 **Achieves** higher data compression rates — reaching 8:1 and 9:1 — leading to reduced infrastructure needs and cost savings.

⟷ **Reduces** infrastructure footprint by 90% by using Dell's PowerStore storage and AI solutions.

Providing accurate answers for patients in need

When patients turn to Fulgent Genetics, they're often facing serious questions about their health. The results of a cancer screening, carrier screening, prenatal test or pharmacogenetics test could be life changing. Any delay or inconclusive finding can be excruciating for people seeking answers and some measure of hope.

Thankfully, Fulgent has found a way to lessen the stress of the wait by swiftly and efficiently delivering the reliability, affordability and care patients need when seeking customized health care centered around personalized medicine and gene therapy. By leveraging cutting-edge technology in its genetic testing solutions, Fulgent is doing far more than conducting tests. It is providing peace of mind.

Founded in 2011 by a team of experienced geneticists and scientists, Fulgent is a leading genomic testing company dedicated to transforming patient care through innovative diagnostics and therapeutics. Its advanced genetic testing solutions, such as next-generation sequencing (NGS), significantly improve early detection and personalized treatment plans for a wide array of conditions, including cancer and rare genetic disorders.

By processing genetic data quickly and accurately, Fulgent is advancing precision medicine. It is also empowering individuals and healthcare professionals with valuable genetic information to make informed decisions about health and treatment options.

"We're part of the patients' medical journey," said Mike Lacenere, VP, Applications at Fulgent. "You have to give them as much information as possible."

Fulgent conducts thousands of tests each day, which eventually began to strain the capabilities of their previously existing infrastructure and resources.

Each test could take up to three days to process, had a greater margin for error, and produced gigabytes of data that needed to be analyzed and stored.

Shattering limitations by transforming genetic testing

Fulgent needed a proven, powerful and scalable backend system that could handle this large-scale data, while supporting AI-enabled state-of-the-art genomic services that would enhance productivity and efficiency.

Enter Dell Technologies. The combined power of PowerStore, PowerEdge servers and modernized Fulgent infrastructure greatly improved speed, throughput, and overall security posture. Fulgent is now well positioned to advance the deployment of AI solutions to improve cancer diagnoses.

By combining Fulgent's testing with artificial intelligence, they can improve how accurately and quickly cancer can be detected and treated, bringing clarity to pivotal moments of patients' lives.

"Our collaboration with Dell Technologies and our AI vendors has been transformative," Lacenere said. "It has enabled us to leverage PowerEdge servers

and PowerStore to enhance cancer detection by using advanced tools like heat maps, image quality assessments, and facilitation for cell counting and tumor measurement. We've significantly improved data exchange and minimized errors. This has led to more precise diagnoses and faster result times – a 30% increase in processing speed to support our pathologists in the fight against cancer.

"Additionally, Fulgent doesn't just conduct tests; it nurtures human connection through faster and more accurate results. Every sequence decoded and every pathology slide analyzed marks a vital step toward understanding the unique story of an individual's health."

Robust backend support and data efficiency

Dell's reliable and scalable solutions position Fulgent for greater success in the dynamic healthcare industry by providing a complete, centralized backend infrastructure capable of handling large-scale data and integrating various systems.

PowerEdge servers process raw genetic sequencing data, converting it to a readable format using HPC clusters. PowerStore's adaptive architecture then provides critical storage and scalability, while its in-built security risk mitigations help to reduce ransomware and zero-day attacks. This combination of speed, scalability, and enhanced security has greatly improved Fulgent's storage reliability and overall resiliency.

Enhanced processing speeds and much quicker pathology result times have resulted in considerable cost savings for Fulgent Implementing PowerStore and PowerEdge server AI solutions have significantly reduced its server footprint by 90%, while also saving on associated power and cooling costs. The company has also seen impressive data compression rates of 8 and 9 to 1 by using PowerStore. This performance greatly exceeds Dell's 5:1 DRR guarantee.

"Dell PowerStore and PowerEdge have both been very important pieces to the puzzle to help us succeed," Lacenere said. "It's definitely saved us time and processing. It has also saved us financially."

Patient data must be secure

Data security is vital for the healthcare industry. It's paramount to safeguard all patient medical records. Dell helps provide protection and peace of mind with advanced, built-in data protection.

Fulgent Genetics' processing speed increased by 30%, with a 90% decrease in its data center footprint.

"From a security standpoint, healthcare is a very guarded area," Lacenere said. "We do a number of different things to safeguard all of our patient medical records. One of the key things is being sure you're working with vendors and partners that are in line with you, and Dell Technologies, and using PowerStore and PowerEdge, is key. That's really helped us."

Creating human connection with cutting-edge technology

Fulgent doesn't just conduct tests; it nurtures human connection through faster and more accurate test results. Every sequence decoded and every pathology slide analyzed marks a vital step toward understanding the unique story of an individual's health. Fulgent's AI capabilities promise consistency, speed and care during the critical moments of our lives.

Together, Fulgent Genetics and Dell Technologies are transforming pathology to provide essential answers, insights and results when we most need them.

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> **Dell has been an excellent partner. Their scalability is incredible, and it has provided us with the flexibility to expand and shape the future of our business."**
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> **David Yu**
> VP, IT Infrastructures
> Fulgent Genetics

Learn More about PowerEdge and PowerStore

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