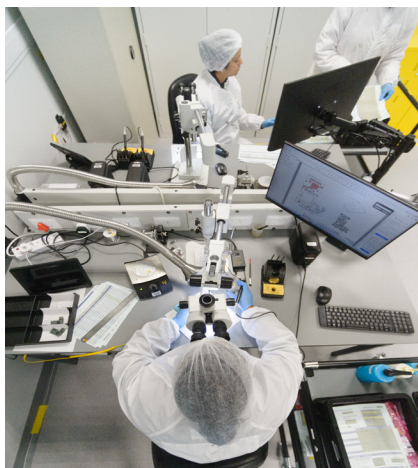




Western Digital®

Case Study

Western Digital Helps Chemist's Quest to Develop Lifesaving Drugs with High-Density Data Storage



Challenge

Legacy storage systems were nearing peak capacity, causing fears of data loss which could threaten the development of lifesaving drugs.

Solution

Upgraded existing storage systems with new Western Digital Ultrastar® Data Center HC590 hard drives to deliver high-density cost-effective data storage capacity.

Key Results

Enabled team to focus on developing new life-saving drugs without worrying about data loss and delivered the following improvements:

- More than doubled the capacity used to store potentially irreplaceable data
- Significantly increased performance and reliability without major changes to existing storage infrastructure
- Flexibility to easily upgrade to higher capacity and/or more performance in the future by simply upgrading to higher-capacity HDDs

Data Helps Save Lives

Dr. Charles Chase, PhD, is a highly regarded expert in synthetic organic chemistry and process research, with more than 25 years of comprehensive experience in developing new chemical entities for drug evaluation. Throughout his distinguished career, Dr. Chase has demonstrated a profound understanding of the complexities involved in synthesizing innovative compounds, employing advanced methodologies to optimize processes and enhance efficiencies in the manufacture of novel active pharmaceutical ingredients (APIs). His expertise encompasses the entire drug development lifecycle, from initial concept and clinical evaluation through to regulatory approval and commercial manufacturing.

One of Dr. Chase's primary objectives is improving the methods used in capturing, refining, and processing the continuous flow of vast amounts of analytical and process data. This data is essential for the manufacturing, safety evaluation, and regulatory approval of innovative, lifesaving drugs. The substantial data generated from various instruments, including high-performance liquid chromatography (HPLC), gas chromatography (GC), mass spectrometry (MS), liquid chromatography-mass spectrometry (LC-MS), and nuclear magnetic resonance (NMR), necessitates swift retrieval and processing on validated and reliable systems. To support the drug development lifecycle effectively, robust data storage solutions must be scalable, secure, and compliant, ensuring data is reliably stored, protected, and accessible at all stages.

As raw data is acquired, it is stored in real time on massive storage arrays before being transferred to local servers for processing and analysis. Periodic archiving frees the local server space for new data acquisition. Dr. Chase's team cannot afford to lose any of the data they collect as each bit of data has the potential to be the key to developing lifesaving drugs.

Second Chances Come at a Steep Price

In the data collection process, if the server doesn't have the capacity to store the data, the data is lost. Although it might be possible to repeat the experiments, assuming materials are available, this comes at a high cost in terms of time, resources, money, and program delays. And there is no assurance this option will always be available. Therefore, it is critical to avoid any data loss. So, when the legacy storage system started nearing peak capacity and fears of data loss started to escalate, Dr. Chase turned to Western Digital for answers on how to increase storage capacity without busting his team's budget.

Western Digital Helps Chemist's Quest to Develop Lifesaving Drugs with High-Density Data Storage



Applying Resources to Research, Not Equipment

Dr. Chase needed a cost-effective solution that would greatly expand the capacity of his team's data storage repository. With a limited budget, every dollar spent on storage infrastructure took away from funding advanced research in drug development. Dr. Chase also needed to significantly improve performance and reliability to process the relentless flow of data efficiently. His team evaluated various solutions including replacing the existing storage systems with flash storage arrays or high-capacity DAS systems, but these solutions ended up being much costlier and much more disruptive than they could afford.

High-Capacity Hard Drives to the Rescue

Western Digital presented the simplest, least disruptive, and least costly solution of all the various options considered. The idea was simple, replace the existing collection of HDDs with new Ultrastar® Data Center HC590 26TB¹ hard drives.

"Rollout was simple," noted Dr. Chase. "Our team methodically went through each of our storage systems, replacing drives during down times to avoid any major interruptions. Western Digital field engineers helped with integration efforts to make sure that everything was working properly, which we appreciated."

Western Digital helped to install hundreds of Ultrastar DC HC590 HDDs into their data storage infrastructure. Referencing the reliability and ease of use, Dr. Chase commented, "It is amazing to see over 4600TB of free space available to us now. For the first time in the history of the project we can efficiently collect data from all our instruments and high-throughput screening experiments. We are no longer capacity-constrained, and it feels great." Dr. Chase went on to say, "Western Digital hard drives offer the ability to seamlessly expand storage and allow for the continuation of our time-tested process without interruption. Western Digital has given our team the confidence and capacity to expand their collection and advance their mission."

Improving the Odds of Savings Lives

During the analysis stage, the processing servers look for certain types of information in the collected data. For example, sequencing data of DNA and peptides can easily generate terabytes of raw LC-MS data as FASTQ and VCF files and processed data as compressed binary alignment map (BAM) files. The associated metadata also consumes a large amount of data storage capacity. Compromised data results in an unacceptable loss that requires repeating an experiment—assuming a sample is still available. It is absolutely vital to his team's operations that they collect and save all the data possible: every bit has the potential to lead them to success.

In partnering with Western Digital, Dr. Chase's team was able to significantly increase their ability to store and have confidence in the fidelity of potentially irreplaceable data. This increased storage capacity has allowed his team to reliably grow data collection rates required for high-throughput analyses, greatly increasing the possibility of finding information that could lead to the development of new life-saving drugs.



¹One TB equals 1,000GB (one trillion bytes). Actual user capacity may be less due to operating environment.