

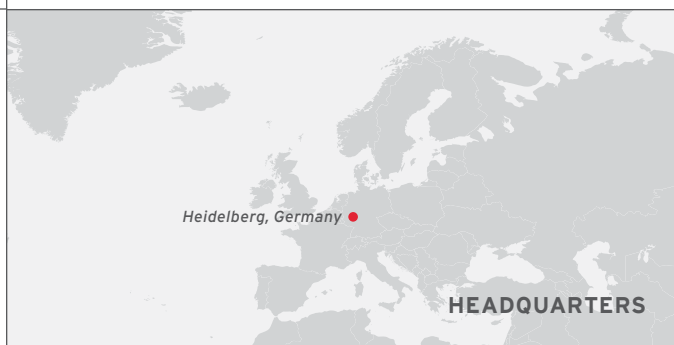
MOLECULAR HEALTH SUPPORTS SAP HANA CLINICAL DATA WAREHOUSE WITH RED HAT



SOFTWARE

Red Hat® Enterprise Linux®
for SAP® HANA®

Molecular Health, a leading biomedicine company, uses big data analytics to provide comprehensive medical and therapeutic services. The company previously used a SUSE Linux platform to support its SAP HANA environment for its clinical data warehouse but faced availability issues. By deploying Red Hat Enterprise Linux for SAP HANA—supported by backup software from Bacula Systems, a Red Hat partner—Molecular Health gained a high-performance, cost-efficient solution that helps doctors create individualized cancer therapies. In addition, the company simplified operations and management for its IT department.



BIOTECHNOLOGY

AROUND **100** EMPLOYEES

“We chose Red Hat because our tests showed that it was the most technically proven, stable, and user-friendly operating system.”

RALF STECHER
SENIOR DATABASE ADMINISTRATOR, MOLECULAR HEALTH

BENEFITS

- Deployed highly stable, scalable, and reliable platform for its data warehouse, supporting clinical analysis and decisions
- Gained robust, reliable data backup and restoration
- Reduced IT operational costs using open source software in consolidated hardware environment



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MASSIVE DATA WAREHOUSE CREATES STABILITY AND MANAGEMENT CHALLENGES

Molecular Health, a leading computational biomedicine company, provides comprehensive medical and therapeutic services to a variety of customers—including physicians, hospitals, research networks, labs, regulators, and pharmaceutical companies—using big data insight.

Its data analytic product, Molecular Health Guide (MH Guide), supports decision-making related to cancer treatments with a highly reliable knowledge database, Dataome. This database hosts curated biomedical data from 26 million scientific and medical publications, as well as data on 273,000 drug interactions, 7,000 biomarkers for drug efficacy and safety, 85,000 gene variants, 56,000 drugs, 126,000 clinical trials, 270,000 protein interactions, 9 million patient medical records for drug safety, and more.

MH Guide connects individual patient data with this body of relevant biomedical knowledge through a cloud-based interface tailored to the needs of various target groups—such as clinical interpretation and recording genetic changes in next-generation sequencing (NGS) at laboratories and hospitals.

Ensuring the stability and consistency of its operating system and backup environments is key to completing long-term batch processing and data storage for Molecular Health's complex IT environment, including its cloud environment.

"We use a diverse range of processor and memory configurations for physical and virtual servers," said Ralf Stecher, senior database administrator at Molecular Health. "Depending on the dynamic application profile, we use various databases like PostgreSQL or SAP HANA and run various cluster setups for genomic interpretation. All of these processes need a reliable system foundation."

Molecular Health had used SAP HANA on SUSE Linux Enterprise Server to process clinical and medical data. However, due to occasional availability issues and challenges with consistent operation, the company sought out a new solution for its SAP HANA environment that would offer greater stability and simplify operations and management for its small IT department.

ENTERPRISE SOLUTION SUPPORTS ROBUST DATA MANAGEMENT AND BACKUP

Due to specializing in precision medicine and operating a heterogeneous IT system environment, Molecular Health considered many criteria to select a solution. After comprehensive testing using existing data, the company chose to replace its SUSE solution with Red Hat Enterprise Linux for SAP HANA and Bacula Enterprise Edition, open source backup software from Bacula Systems, a Red Hat partner.

"We chose Red Hat because our tests showed that it was the most technically proven, stable, and user-friendly operating system," said Stecher. "For instance, we can use Red Hat Enterprise Linux for SAP HANA on a server with 80 CPUs without experiencing any issues."

Red Hat Enterprise Linux for SAP HANA combines the reliability, scalability, and performance of the leading enterprise Linux platform with SAP HANA's robust in-memory database. With this technology, Molecular Health created a high-performance, open environment that offers the necessary consistency and security for its critical data analysis and treatment proposals.

NEW DATA WAREHOUSE IMPROVES SUPPORT FOR CLINICAL ANALYSIS

GREATER STABILITY AND SCALABILITY

Server stability and security are critical to the IT environment that hosts and manages Molecular Health's patient data. With the new Red Hat and Bacula solution, the company can ensure critical reliability and stability for current application scenarios—such as clinical decision-making processes—as well as new use cases, such as collecting, integrating, and analyzing molecular patient results from peer-reviewed publications.

For example, MH Guide provides an overview of potentially effective treatment options, including potential risk of undesired side effects and reactions. It also provides patient-specific, clinically relevant data and treatment options—including reports on clinical and evidence-based treatment options, clinical studies, as well medication interaction data and other supplementary data.

“Red Hat and Bacula's solution offers an organized and stable operating system with markedly lower maintenance overhead,” said Stecher. “Combining Red Hat Enterprise Linux for SAP HANA and Bacula Enterprise Edition has significantly increased our efficiency and saves us considerable time.”

ROBUST DATA BACKUP AND RECOVERY

To ensure necessary availability, MH Guide requires backup support that includes the option to secure data on different media types, such as disks or tapes. With Bacula Enterprise Edition, Molecular Health can quickly back up its network file systems (NFS), as well as its physical and virtual Windows and Linux servers. In addition, Molecular Health uses this solution to remotely monitor and control data backup at its other locations, ensuring users can recover data at any time and that company-wide data backup policies are followed.

As a result, Molecular Health can effectively recover data on demand, faster and more reliably than before.

LOWER I.T. OPERATIONAL COSTS

With the Red Hat and Bacula solution, Molecular Health can streamline its IT environment to reduce ongoing operational expenses and other related costs.

Previously, the company's R&D employees used SAP HANA on servers with 128 CPUs and maximum main memory, but these highly integrated servers were very costly to operate. Now, the company primarily uses servers with just 24-30 CPUs.

The annual subscription models of solutions from Red Hat and Bacula provide more flexibility than proprietary vendors with costly lock-in. Without data volume-related charges, Molecular Health can more easily predict operating costs for future IT activities.

INITIAL SUCCESS BUILDS CONFIDENCE IN FUTURE OPPORTUNITIES

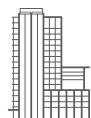
Red Hat Enterprise Linux for SAP HANA, combined with Red Hat Virtualization and Bacula Enterprise Edition, has proven to be an efficient, easy-to-manage, and highly stable operating system for Molecular Health. Thanks to this powerful solution, the company is positioned to continue supporting an increasing number of healthcare patients, professionals, and organizations with timely, relevant data and analysis.

ABOUT MOLECULAR HEALTH

Molecular Health is a computational biomedicine company focused on big data curation, integration, and analytics to enable precision medicine. The company has developed Dataome, a top-quality curated, interoperable technology system comprising a large set of databases and analytics that allow the integration and referencing of clinico-molecular drug and disease data to generate novel and actionable insights on drug outcomes for stakeholders across the healthcare ecosystem. These include physicians, hospitals, research networks, commercial labs, regulators, and pharma companies. The company is compliant to all relevant regulatory certification and accreditation standards. Molecular Health's scientific and commercial teams are based in Heidelberg, Germany, and Boston, MA, USA.

For more information, visit www.molecularhealth.com

ABOUT RED HAT



Red Hat is the world's leading provider of open source software solutions, using a community-powered approach to provide reliable and high-performing cloud, Linux, middleware, storage, and virtualization technologies. Red Hat also offers award-winning support, training, and consulting services. As a connective hub in a global network of enterprises, partners, and open source communities, Red Hat helps create relevant, innovative technologies that liberate resources for growth and prepare customers for the future of IT.



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