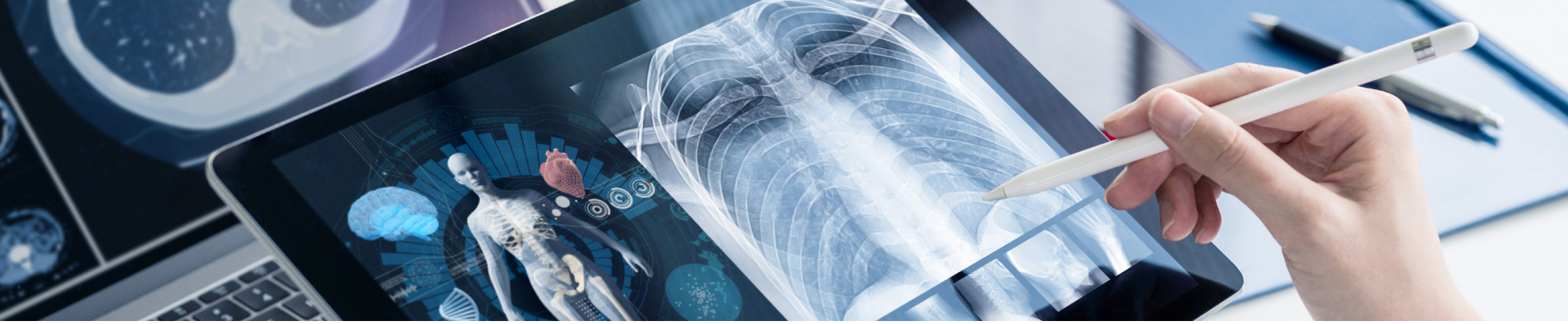
NetApp for healthcare and life sciences: Serving data at life-saving speed

NetApp



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Introduction

Data is the lifeblood of healthcare and life sciences. It flows through big pharma, hospitals, treatment centers, insurers, payer-providers, and medical research facilities, and it advances genomics, prescriptive analytics, precision medicine, and many other fields of study. Both public and private healthcare and life sciences organizations generate, store, and analyze data with the goal of improving the products or services they provide.

All of this data requires proper management and analysis to derive meaningful insight. However, much of it is simply being held in silos, often insecurely, and processed manually. Healthcare and life sciences professionals, plagued by poor data management and legacy infrastructure, are unable to extract full value from the large amounts of siloed data available, and care teams can't access information that could help them reach better diagnoses faster.

By bringing together data across hospitals and treatment facilities, research and testing sites, administrative and corporate offices, NetApp's many patented technology solutions and end-to-end view can spot problems and determine what aspects need improvement.

NetApp delivers industry-leading hybrid-cloud data-management capabilities to the healthcare and life sciences industry. The result is stronger collaboration and more meaningful research, faster time to market for pharmaceuticals and vaccines, more accurate diagnoses, better patient care, more effective resource usage, advances in precision medicine, and substantial cost savings.

In today's world of COVID-19, the race is on for faster and more accurate insights. Real-time monitoring and intelligent resource planning, optimal use of equipment, and workflow enhancements can all provide insights that make a real difference when analyzed and acted on appropriately. NetApp® data management capabilities will help you extract these critical insights to achieve your goals.

Chapter 1

Data is the new black: What's trending in healthcare and life sciences

The healthcare and life sciences industry is embracing intelligent technologies to advance human understanding, treatment, and care.

We get why.

The right technologies can help you do more with less, speed up diagnoses, and decrease manual processes for already stretched staff—and that's just the start.

Data-heavy extended reality for training and surgery simulation is becoming an important part of patient care and treatment. The virtual-, augmented-, and mixed-reality healthcare market is expected to reach $5.1 billion by 2025.[1] Another data-heavy area is genomics. By 2025, human genomic data alone will require an estimated 40 exabytes of storage capacity.[2]

From electronic health records (EHRs) to the Internet of Medical Things (IoMT), the healthcare and life sciences industry is amassing information at an incredible rate. Researchers project that data in healthcare will grow faster than in media, manufacturing, or financial services.

Predictions are that healthcare and life sciences data will experience a compound annual growth rate of 36% through 2025.[3]

That's a lot of data. But don't worry, the data and cloud storage specialists at NetApp are innovating in step with your industry.

Yours is a vertical in the throes of digital transformation. So, we keep creating modern data management solutions that support what's trending in healthcare and life sciences.

The three trends making innovation waves:

- Loosening FDA (and other governing body) restrictions
- Hybrid, multicloud enablement
- Deployment of artificial intelligence and machine learning

The loosening of FDA (and other governing body) restrictions

In today's COVID-19 reality, the race is on for faster and more accurate insights (as well as the race for a vaccine).The FDA—the U.S. agency that governs drug development, reviews, and approvals—has authorized many pharmaceutical companies to target and accelerate a treatment or vaccine for COVID-19. The FDA is giving approvals and authorizations that they normally would not.

A good example of this situation is Illumina, a big player in the genomics space. They are the largest genomic sequencer machine-maker in the world, with roughly 70% of the market. The FDA just gave Illumina a waiver to start doing more COVID-19 diagnostic and detection testing.

"Using next-generation sequencing means that the test can generate information about the genomic sequence of the virus present in a sample, which can be also used for research purposes."[4]

As a result, other companies are jumping into overdrive to take advantage of the funding, and the leniency. There is also a push from pharma for the FDA to continue their flexibility beyond the pandemic.[5]

Hybrid, multicloud enablement

As *HealthTech Magazine* reported, “After years of tentative adoption, the cloud is finally starting to take off in healthcare.”[6] More big pharma companies, hospitals, and large medical and research facilities are investing in hybrid, multicloud models to reduce costs, increase collaboration between research teams, and avoid delays and outages.

Hybrid cloud environments offer flexibility, scalability, agility, and control. You can expand or contract with ease, move workloads to the public cloud, and pull them back on your premises as needed.

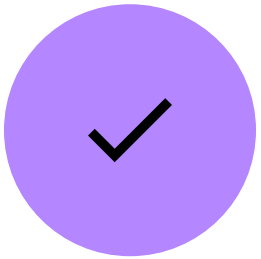
Additionally, there is substantial growth in genomic cloud services. For example, in June of 2020, Illumina acquired BlueBee, a cloud-based software company that provides genomics analysis solutions for research and clinical customers.[7] All of this is to say that the healthcare and life sciences industry is moving even their most highly sensitive data to the cloud because the cloud offers capabilities that on-premises infrastructure never will.

Artificial intelligence (AI) and machine learning (ML) deployment

AI and ML promise more effective ways to recognize disease, crowd source and develop treatment plans, monitor health epidemics and pandemics, increase efficiencies in medical research and clinical trials, and make operations more effective to handle the increased stressors on the healthcare system.

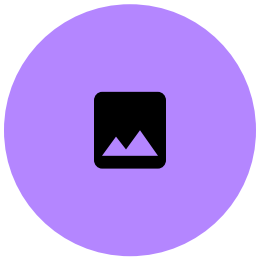
The speed that AI and ML provide means that data scientists and researchers can make new discoveries, publish results faster, speed up testing processes, and ultimately help medical practitioners save more lives. A recent report forecasts the global market for artificial intelligence in healthcare to reach US$31.3 billion by 2025.[8]

Here are some popular AI and ML use cases:

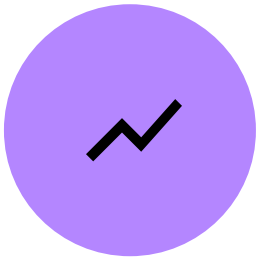


Big pharma companies use AI to design drugs as well as to identify the most appropriate drugs for specific conditions, far faster than humans could, while also cutting costs.

Prescriptive Analytics improves patient care and health outcomes by using AI to anticipate what will happen, when it will happen, and why it will happen. It also suggests options for taking advantage of future opportunities or mitigating future risks, and shows the implications of each decision option.

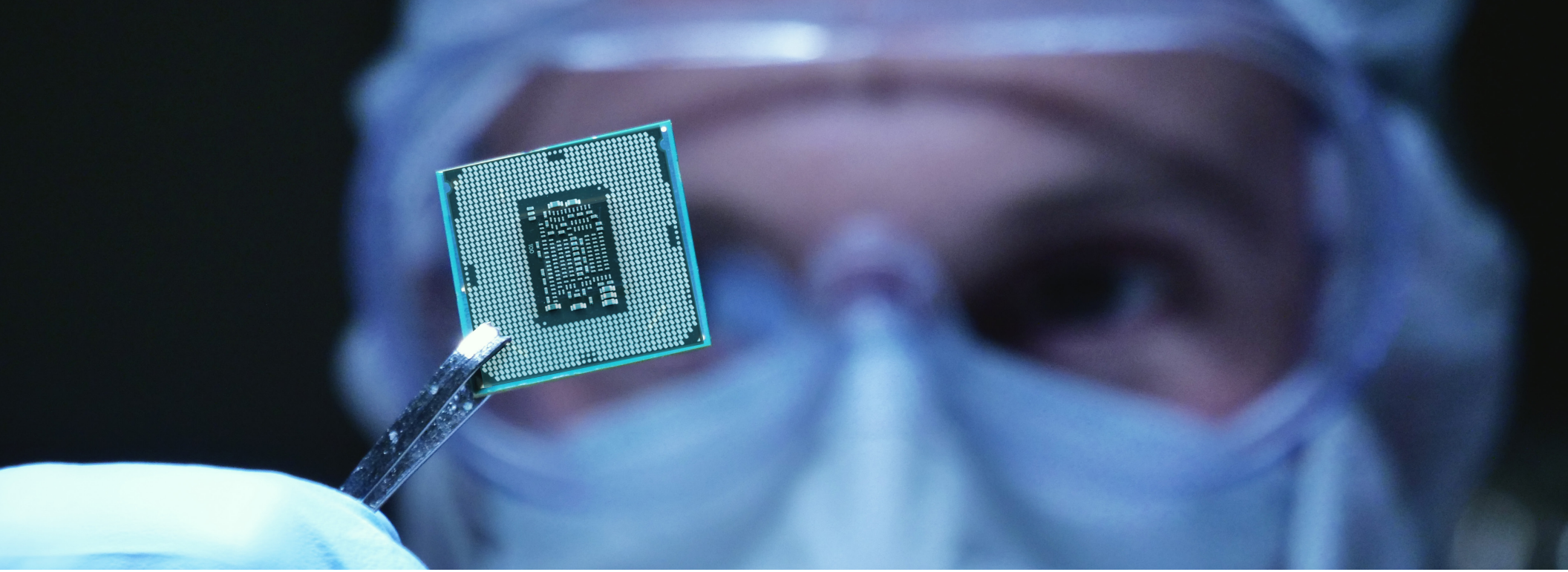


Medical imaging benefits from AI because as computer-aided diagnostics can see and analyze beyond what a human eye can.



Genomics uses AI to accelerate analytics, trace and diagnose deadly diseases such as COVID-19 and cancer, speed discovery of illness and disease, and advance precision medicine.

The healthcare and life sciences industry is focused on the future and shaped by the diminishment of geographic boundaries, the evolution of better-informed health consumers, and the advancement of intelligent technologies.



Chapter 2

Data: You can never have too much of a good thing if it's managed properly

More data can mean more problems for healthcare and life sciences. If it's not managed properly, data can actually impede innovation and care.

Widespread adoption and implementation of electronic health records means that when data sources are connected, clinicians have an excess of data—although much of it is unstructured and hard to access and decipher, especially at the point of care. The percentage of office-based physicians using EHR systems is quite high, at 85.9%, while 89% of all hospitals have implemented in-patient or ambulatory EHR systems.[9]

The sheer size of EHR datasets suggests massive potential for learning, research, and treatments; but only if the data is protected, stored, and analyzed properly. Herein lies the great challenge—how to do all of that in a simple and straightforward manner that is also cost effective.

"Healthcare has been sitting on a mountain of data for decades, and we really haven't used it to its fullest until lately. Mercy now has ways to get that data to physicians and nurses instantaneously to make decisions that can save lives."[10]

Gil Hoffman,
Senior Vice President and Chief Informational Officer, Mercy Hospital

In medical research and treatment, collaboration is king

Data, such as genomic or genetic profile data, is often siloed and dispersed across various technologies within a hospital or health system, impeding research, discovery, diagnosis, and treatment. Researchers need to be able to see the whole picture, which often crosses borders and spans large populations. To combat a pandemic—like COVID-19—researchers around the world need to share data.

When COVID-19 began, cough and fever were considered the primary symptoms. By May of 2020, researchers had discovered that decreased smell and taste were often better indicators of the illness. They came to that discovery by studying the data generated by millions of COVID-positive people around the world. Now, “researchers are extracting the massive amounts of data they gather to anticipate COVID-19 outbreaks in particular communities and to explore different risk factors for the disease.”[11]

The challenges of compliance and collaboration

However, when storing and sharing data between facilities, security and speed of access become significant concerns. You need to be able to access and manipulate datasets in a timely manner, and also to ensure that sensitive information is protected at all points. In addition, your organization needs to comply with HIPAA, the GDPR, and other regulatory bodies that require healthcare and genomic data to stay within regional borders. Of course, compliance measures can also impact application performance—another hindrance to discovery and innovation.

Using data in a responsible way includes intelligent and secure data management, and with datasets that enormous, it also means using automation and analytics. Time-consuming manual processes slow down diagnostics and increase the chance of error. Human error is the only contributing factor to data breaches that has consistently increased year over year since 2015.[12] In the healthcare industry, the average cost of a data breach is $6.45 million, up from $3.92 million in 2019.[13] The more manual processes can be reduced, the safer your data is.

"We may transform the way clinical science is done, leveraging the tools and resources of big data and data science in ways that have not been possible. We hope that this opportunity demonstrates that the sky does not fall if we actually leverage the data in a responsible way."[11]

Chris Chute,
Health Informatics Researcher, Johns Hopkins University

Cold data will cost you

The growing data footprint incurred by healthcare and life sciences pursuing new technologies can result in out-of-control IT costs, data insecurity, and an inability to analyze larger quantities of data. In fact, 75% to 90% of unstructured data sits siloed and unused, often eating up top-tier storage costs to no purpose.[14] Moving infrequently accessed data to an archive tier can slash storage costs by up to 95%.[15] However, determining what data to store where can be a laborious process—unless you have the right data management solution.

NetApp cloud-connected solutions are designed to support an organization's journey to higher quality patient care and to more cost-effective IT solutions and services. With NetApp cloud and hybrid cloud solutions, you can significantly cut overhead, storage, and maintenance costs.

Chapter 3

Pave the way to the future for healthcare and life sciences—it's what we do

We know data. Massive, high-quality datasets are the future of healthcare, and the public cloud is one of healthcare's most significant enablers. Electronic medical records (EMRs) and picture archiving and communication systems (PACS) support research, education, detection, and treatment, while enhancing the experience of both patients and practitioners. The ability to share patient data between medical parties around the world can help thwart epidemics and pandemics, treat and cure diseases, trace and predict medical phenomena, support research and genomics, and train the medical practitionersof tomorrow.

NetApp solutions accelerate the data- driven healthcare that underpins exceptional patient treatment. Lives depend on the right people having critical information immediately. Most healthcare and research facilities select a hybrid cloud/multicloud environment. NetApp offers the flexibility you require, from on your premises to the cloud and everywhere in between.

We're Agile

NetApp is agile. We are partnered with three major cloud providers – Google Cloud Platform (GCP), Amazon Web Services (AWS), and Microsoft Azure – for service at hyperscale. We solve data challenges with hardware, software, and cloud services, on-premises and in the cloud.

We're secure

We're like bodyguards for your data. Data security is embedded in NetApp technology, whereas competitors offer this feature only as an add-on. We are HIPAA compliant, and although there's still no such thing as "GDPR-compliance-in-a-box," our solutions (NetApp Cloud Compliance service, NetApp ONTAP® Data Security, and NetApp Cloud Insights) make compliance simpler.

We're available (you should see our dating profile)

Our full-stack AI data and experiment management solution, NetApp AI Control Plane, provides extreme scalability, streamlined deployment, and nonstop data availability, when and where you need it. The AI Control Plane addresses the AI data management needs of the enterprise. Data scientists no longer need to wait for copies of datasets, and your organization no longer has to dedicate so much costly high-performance storage to store many copies of the same data.

We think outside of the box (in the cloud actually)

The NVIDIA and NetApp partnership is a key differentiator in advancing AI, ML, and deep learning (DL) initiatives in healthcare and life sciences. We are the first storage vendor to bring to market an integrated medical-imaging solution based on NVIDIA Clara Train SDK v2.0 with NVIDIA DGX-2 systems and NetApp AFF storage. In addition, NetApp and NVIDIA are delivering AI, ML, and DL solutions that help healthcare and life sciences leaders accelerate AI adoption and manage projects more easily. Our attention to optimizing data pipelines amplifies the rapidly expanding ecosystem of NVIDIA AI hardware and software.

And we partner with the best

Beyond NVIDIA, we have strong partner ties with the top Healthcare & Life Sciences technology providers to ensure seamless solutions for each client. For example: for medical imaging, we partner with industry leaders such as Agfa, Fuji Film, Change, and more.

For genomics, we have partnered with PetaGene for technology that decreases the size of genomic data, further reducing both storage costs and data transfer times without compromising data quality.

Our solutions are built to be the ideal aids to some of the largest providers of health information technology (HIT) in the world, helping organizations to access, organize, store, and share EMR/EHRs and PACS.

Our solutions are also Epic-, MEDITECH-, and EHR-certified. You can be sure that your applications will run quickly and efficiently, with excellent support. Since 2010, Epic and NetApp have maintained a technical alliance to continuously confirm that our storage systems meet Epic customer requirements. Even Allscripts itself runs Azure NetApp Files on its back end—a testament to our ability to support health information technology (HIT).

Chapter 4

Talk with a healthcare and life sciences cloud storage specialist

We can’t save lives. You also don’t want us removing anyone’s appendages. What we can do is remove legacy systems and help you streamline your data storage. In healthcare and life sciences, everyone has a specialty. Ours is cloud.

NetApp solutions provide immediate access to critical data, enabling exceptional patient care and the opportunity to fulfill mandates for research, safety, governance, security, compliance, resilience, and more. Our data management solutions make it possible to integrate data on the fly to deliver unprecedented computational efficiency, while our systems set the global standard for organizing, mining, and sharing the large-sequence datasets that are transforming medical care.

Let us help you simplify data management with a single-platform solution for all applications – clinical and enterprise – running on the premises, in the cloud, or anywhere in between.

Talk to an EHR specialist.

Get strategy and design insights into your current EHR workloads with actionable recommendations for improvement.

Talk to a data magician.

Get strategy and design insights to manage, secure and present your data anywhere, anytime, and elevate data-driven knowledge, decision making, and insights.

Discuss medical image management.

Learn best practices. Explore proven technology solutions for simplifying medical image management, including vendor-neutral archiving.

Explore NetApp solutions for payers.

Discuss infrastructure solutions that support complex payer analytics and claims management.

Book a consultation with a NetApp specialist today.

Book Now

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About NetApp

In a world full of generalists, NetApp is a specialist. We’re focused on one thing, helping your business get the most out of your data. NetApp brings the enterprise-grade data services you rely on into the cloud, and the simple flexibility of cloud into the data center. Our industry-leading solutions work across diverse customer environments and the world’s biggest public clouds.

As a cloud-led, data-centric software company, only NetApp can help build your unique data fabric, simplify and connect your cloud, and securely deliver the right data, services, and applications to the right people—anytime, anywhere.