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GE HEALTHCARE AND AWS

Collaborating to shape the future of medical imaging

How cloud solutions are transforming healthcare delivery

Meeting the future with a new model of healthcare

Healthcare decisions are no longer confined to the four walls of a hospital. To keep pace with the emerging needs of patients and clinicians as well as the telehealth revolution, healthcare organizations are seeking ways to reinvent how they collaborate, innovate, and use data to make better decisions—all while decreasing the cost of care. Healthcare that is more efficient, more secure, more integrated, and more precision-tuned to the individual patient is not some ideal future scenario. It is here—now.

Using cloud innovation to improve outcomes

Cloud-based tools can answer multiple challenges faced by radiology teams every day, such as updating and managing protocols, securing health data, maintaining regulatory compliance, and other time-intensive tasks that distract from the primary job of patient care. Amazon Web Services (AWS) and AWS Partners offer solutions that make it easy for healthcare organizations to migrate their clinical and operational workloads to the cloud.

Healthcare organizations of all sizes leverage AWS solutions and its industry expertise to transform the healthcare experience by improving efficiencies system-wide to increase the pace of innovation and save time, cost, and resources—all in service of the ultimate goal: improving patient outcomes.

Solving urgent radiology challenges with new models of care delivery

While technology has enabled many improvements in healthcare delivery for both clinicians and patients, hospitals are still a long way from having the tools they need to solve their most pressing challenges, including:

- **Limited telehealth infrastructure:** While telehealth has come into the mainstream, many hospitals lack the infrastructure to handle virtual care, still dependent on legacy systems, disjointed tools, and time-intensive manual tasks
- **Doctor burnout:** In a survey question, nearly two-thirds of doctors cited bureaucratic demands (such as paperwork) as the most common cause of burnout, while only 1 in 12 named COVID-19 caseloads as a cause[1]
- **Patient expectations:** Patients increasingly expect high-quality healthcare experiences that match retail and tech for convenience, ease, and personalization

Organizations are discovering innovative solutions at the intersection of technology and human expertise. As an example, GE Healthcare (GEHC), a leading global medical technology and digital solutions innovator, collaborates with AWS to help providers move from a traditional model of care to a more virtualized, distributed model—a transformation that can help to accelerate the evolution to high-quality, personalized care and drive better outcomes for more patients, regardless of where they live.

[1] Kane, L., "'Death by 1000 Cuts': Medscape National Physician Burnout & Suicide Report 2021," Medscape, January 2021

GE Healthcare and AWS: Collaborating to transform care delivery

To accomplish its mission of "providing clinicians with cloud-enabled applications and services that help provide the best odds of success," GEHC embarked on a journey of digital transformation with AWS. The goal: to help hospitals and healthcare providers improve operational efficiency and patient outcomes using cloud-based imaging solutions, integrated data, and artificial intelligence (AI)-powered insights.

A significant majority of physicians say that access to the right data at the right time will help them improve patient care.[2] GEHC aims to help providers put this data to work for the benefit of caregivers and patients. This will happen by helping providers scale their ability to aggregate a wide span of types and formats of healthcare data and extract insights from the data securely and compliantly.

For GEHC, achieving this mission depends on innovative solutions that combine deep clinical experience with technological expertise. It also requires delivering these solutions to providers at a cost that makes transformation possible on a global scale—not only for large enterprises but for smaller market customers as well.

Working with AWS is a natural fit. Both companies are deeply committed to—and uniquely capable of—turning industry-leading prowess into solutions that can pave the way for the future of healthcare.

"This is an exciting opportunity to combine the forces of GE Healthcare and AWS to help customers improve patient care. Hosting patient data in proven applications, coupled with advanced analytics and AI, leveraging the most secure, reliable and agile cloud, will enable care givers to deliver better and more personalized experiences for their patients."

— **Dr. Rowland Illing,** Director & Chief Medical Officer, International Public Sector Health, AWS

Improving clinician and patient experiences with cloud-enabled imaging

The first cloud-enabled imaging solution produced from its collaboration with AWS is GE Healthcare's Edison™ True PACS (Picture Archive and Communication System). Edison True PACS provides healthcare providers with an AI-enabled diagnostic imaging cloud solution and a secure alternative for gaining critical insights and improving access to care. By enabling radiologists to harness AI to do more, faster, while maintaining accuracy, Edison True PACS helps them keep up with their increased workflow and growing complexity of scanning and imaging.

Implementing or upgrading a PACS has traditionally been a slow, expensive, and resource-intensive undertaking for hospitals and imaging centers. Leveraging a secure, cloud-based PACS solution will help reduce the need for lengthy and complicated PACS implementations and upgrades in the future. This means Edison True PACS helps radiologists have the latest tools to benefit their patients while helping them keep pace with growing workloads, complexity, and ultimately lowering the total cost of ownership.

GEHC also plans to offer its Edison™ Digital Health Platform[†] on AWS to make it easier for developers to build, test, and validate new AI models and then deploy them into existing clinical workflows. The company also envisions making additional products within its imaging portfolio available[†] on AWS. This includes AI-based advanced visualization[†] that assists radiologists with diagnoses and helps clinicians better understand the patient's condition.

* Edison™ True PACS is a solution made up of Universal Viewer, Enterprise Archive, Centricity™ Universal Viewer Zero Footprint Client and 3rd party AI applications via Edison™ AI Orchestrator. Available in the U.S.A. only.

† Technology in development that represents ongoing research and development efforts. These technologies are not products and may never become products. Not for sale.

Reinventing radiology in the cloud

Cloud-based services such as medical imaging are transforming radiology on several key fronts:

1. Expanding patient access

In rural areas where patients live far from major medical centers, cloud-based imaging tools and services afford access to high-quality care anywhere, at any time.[‡] By connecting local providers to the larger partner ecosystem, cloud solutions enable more patients to receive the expert diagnosis and treatments they deserve.

2. Supporting decisions with data

The Edison™ Digital Health Platform on the AWS Cloud is designed to give hospital customers the ability to integrate and assimilate large amounts of data from disparate sources. The platform aims to help healthcare systems build solutions for greater clinical efficiency and productivity with the goal of better patient outcomes.

3. Enabling personalization

Hospitals currently perform 3.6 billion imaging procedures and produce 50 petabytes of data per year worldwide, 97 percent of which goes unused.[3] Cloud access unlocks imaging data, allowing clinicians to access patient prior history so as to get a more holistic view of the patient.

4. Saving time and cost

Leveraging a cloud-based PACS solution frees up IT staff from on-premises maintenance to focus more on other priorities. It also streamlines updates, making the latest technology available to clinicians, reducing operational complexity, and optimizing IT resources for providers.

Increased business agility, data-driven insights, and optimized cost: The Edison True PACS on AWS is a blueprint for the future of radiology—a future that GE Healthcare and AWS are creating today.

"By allowing GE Healthcare and AWS to handle the backups and duplication of the data, we can reduce our backup workload on site while knowing our data is secure. From our perspective, this presents an opportunity for significant savings by eliminating the costs associated with onsite hosting and data storage."

– **Richard Duemmling,** Chief of Business Operations, Neuro Imaging, Winter Park

[‡] Anywhere internet is available.

[3] "The Digital Universe Driving Data Growth in Healthcare," published by EMC with research and analysis from IDC (12/13)

Clearing the obstacles to optimal imaging protocol management

Imaging protocols can play a vital role in the patient experience. An incorrect or suboptimal protocol can reduce, and sometimes negate, the value of imaging to a patient's overall care. For radiologists, optimally and uniquely tailoring each exam while dealing with regulatory challenges requires an overwhelming amount of time, resources, and expertise. Sufficient and seamless clinical data is often not available—a problem that can lead to variations, even within the same department.[4] Moreover, inefficiencies and hidden costs in managing protocols can turn into a significant financial burden.

Optimal, precision-tailored imaging requires consistent and streamlined protocol management and a transformation to cloud-based solutions. GEHC and AWS together have achieved that transformation with the GE Healthcare Imaging Protocol Manager (IPM).

[4] Boland, G., Duszak Jr., R., Kalra, M., "Protocol Design and Optimization," American College of Radiology, May 2014
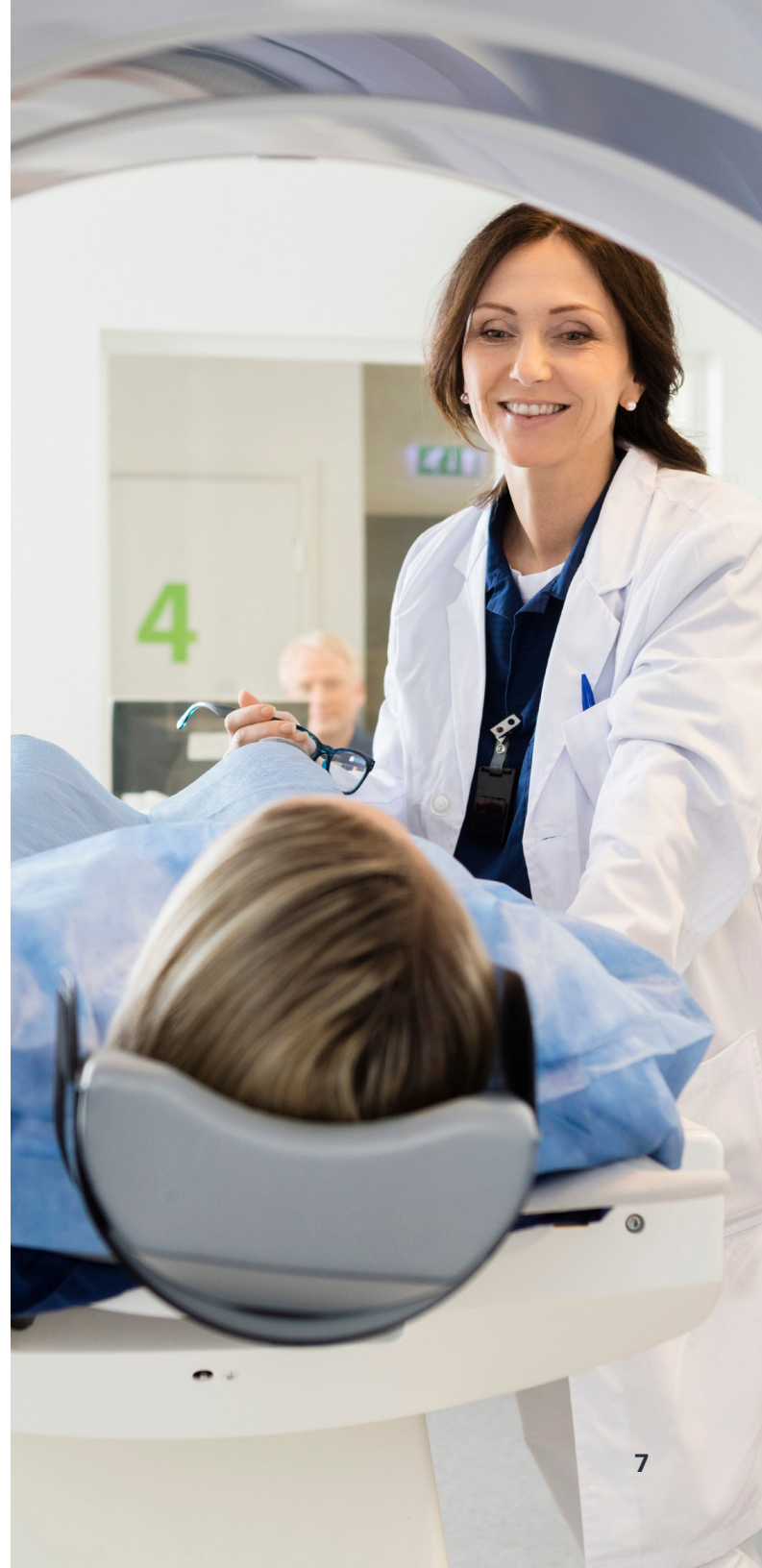
Automated protocol management on the AWS Cloud

The GE Healthcare IPM is a cloud-based, multimodality, protocol-management solution that provides access, insight, and governance for protocols on imaging devices. It helps providers effortlessly deliver the right exam for each patient and meet regulatory and accreditation requirements in the most efficient way possible.

Running the IPM application on the AWS Cloud transforms protocol management by allowing providers to:

- Improve consistency across their enterprises by empowering their protocol teams to develop, edit, optimize, manage, and download protocols to their devices with an easy-to-use app
- Support improved adherence to regulatory standards and help satisfy the accreditation process
- Ease the financial strain of managing and updating protocols by reducing a major source of hidden costs and inefficiencies
- Save costs and reduce time spent on low-value protocol tasks, allowing clinicians to focus on patient care

By empowering healthcare providers to streamline, standardize, and optimize protocol management across imaging devices, departments, and the organization at large, the GEHC IPM application on AWS defines the future of protocol management. It is a significant step forward in precision medicine and, most importantly, in achieving better care for patients.

AWS services used

Amazon CloudWatch for real-time visibility of your resources, applications, and services; **Amazon Cognito** for fast, easy setup of user access to applications; **Amazon Elastic Compute Cloud** (Amazon EC2) for access to scalable, on-demand infrastructure and compute capacity

"With the solution from GE Healthcare and AWS, the need to physically go from facility to facility, and the need to actually stop a site from scanning patients because it needs to be programmed instead, evaporate. And I can sit in my office and manage all the scanners."

– **Timothy Szczykutowicz,** Associate Professor, University of Wisconsin-Madison School of Medicine and Public Health

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Final notes

The strategic alliance of GE Healthcare and AWS is bringing precision diagnostics into the future. By hosting its imaging applications on AWS, GE Healthcare can more effectively support providers in achieving the best care possible on a global scale—more efficiently, securely, and reliably than ever.

"With the strong collaboration between GE Healthcare and AWS, we can help clinicians deliver consistent, high quality imaging services to their organizations— for every patient everywhere, every time."

– **Yaxi Shen,** Senior Product Manager, GE Healthcare

Learn more about AWS for Health solutions ›

Learn more about GE Healthcare ›