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*CARECLARITY™ ON AWS:*

# ***TRANSFORMING PRIOR AUTHORIZATION USING GENERATIVE AI***

*"We're managing an average of 45 prior authorizations per physician every week—turning paperwork into one of our top pain points and delaying patient care."*

In today's healthcare landscape, prior authorizations (PAs) serve as a critical bridge between health plans and healthcare providers, ensuring appropriate service utilization and quality care delivery. However, the reality on the ground tells a challenging story. Healthcare practices are drowning in paperwork, managing an overwhelming average of 45 prior authorizations per physician every week. This staggering volume, combined with the intricate complexity of administrative requirements, has created a perfect storm of challenges. Both healthcare providers submitting these requests and health plans processing them are feeling the strain of this labor-intensive process, leading many to seek innovative solutions in an increasingly digital healthcare environment.

Health care providers continually cite PAs as one of their top administrative burdens, with 88% of physicians describing the burdens as "high" or "extremely high," according to recent data from the American Medical Association (AMA). More than a third (35%) have staff members exclusively dedicated to processing PAs, with the average practice spending more than 14 hours per week on the task.

And there's more to the PA problem than the administrative impacts. Excessive PAs are also correlated with patient care delays, bringing frustration to providers - and potential harm to patients.

In 2023, 94% of physicians participating in an AMA survey said that PAs have led to care delays in their experience, while 78% report that the requirements can at least sometimes lead to patients abandoning a recommended course of treatment due to the administrative hurdles involved.

There's no question that health care organizations need faster, more efficient, and more effective strategies for managing the PA process, including tools that can quickly determine individual health plan requirements and automate the process of creating PA submissions that meet those criteria.

With these digital capabilities, built on reliable cloud-based architecture, providers can reduce denials based on incomplete or inaccurate data and dramatically speed up the process of getting approvals to deliver appropriate care to patients in a timely, evidence-based manner.

In this blog post, we explore how AWS and Converge™ by Deloitte have joined forces to revolutionize the prior authorization landscape. Through their collaboration, they've developed CareClarity™ - an innovative cloud-based SaaS solution that transforms the traditional PA process. Built on AWS's robust cloud infrastructure, CareClarity™ employs a sophisticated rules engine leveraging AWS Bedrock and Deloitte's GenAI innovations to streamline workflows, lighten provider workloads, and expedite payor responses — enabling scalable, measurable impact across the enterprise.

# SOLUTION OVERVIEW

CareClarity™ operates as an intermediary between provider and payor systems, utilizing HL7 Davinci Industry guidelines through a comprehensive three-stage approach.

## STAGE 1

### COVERAGE REQUIREMENTS DISCOVERY (CRD)

When providers initiate an order in their Electronic Health Record (EHR) system, CareClarity™ intelligent workflow springs into action. The solution seamlessly captures the order details through standardized HL7 transactions and automatically triggers its PA determination engine. Drawing from an extensive knowledge base of pre-configured rules - carefully mapped from payor policies and clinical guidelines - CareClarity™ swiftly analyzes the order details to determine whether a prior authorization is required. This automated, real-time evaluation process eliminates manual policy lookups and reduces the risk of unnecessary PA submissions.

## STAGE 2

### DOCUMENT TEMPLATE & RULES (DTR)

Utilization Management(UM) users access the CareClarity™ dashboard to review and manage open PA cases. While users prioritize their workload, the system automatically retrieves essential clinical documents and medical findings from the EHR through FHIR APIs, guided by payor-specific DTR rules. CareClarity™ streamlines the process with user-friendly questionnaires and interfaces, automatically identifying and requesting any missing documentation not found in the EHR. This intelligent automation reduces manual effort, minimizes documentation errors, and accelerates the PA workflow. The system's real-time validation ensures all required information is captured before submission, significantly improving first-pass approval rates.

## STAGE 3

### PRIOR AUTHORIZATION SUPPORT (PAS)

As a UM Operational User submits a case, CareClarity™ runs a validation to check for mandatory details in the PA request and then invokes the automated electronic submission based on pre-configured payor communication preferences. The PA request will be sent via X12/FHIR transaction via clearing house or direct to payor.  As a payor makes the PA decision and communicates the response via X12/FHIR, our application extracts the required information and communicates the same to the users in real-time which can be viewed in our CareClarity™ PA dashboard.

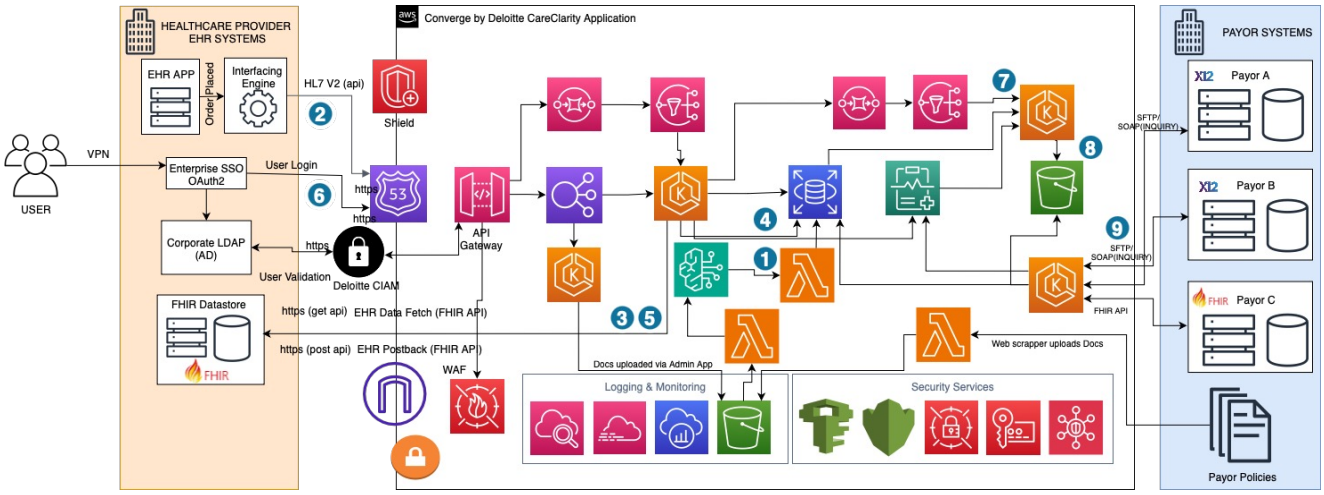


Figure 1 – CareClarity™ Architecture

# THE WORKFLOW STEPS ARE AS MENTIONED BELOW

## 1

### LOADING PAYOR POLICIES AND GUIDELINES

The process begins with Healthcare Business Administrators uploading payor policies and utilization management (UM) guidelines into the PA Admin App. This is powered by a microservice running on Amazon Elastic Kubernetes Service(EKS), which loads the Payor Policies into Amazon S3 bucket which then invokes Amazon Bedrock GenAI Model to help extract payor rules directly from policy documents and loads them into an Amazon Relational Database Service(RDS). To streamline this step, we also leverage an automated web scrapper tool to read payor portals for policy documents changes and load the updated policy documents into Amazon S3 which again invokes Amazon Bedrock for Payor Rule extracts and update them accordingly into Amazon RDS DB.

## 2

### ORDER INITIATION BY PROVIDER

When a provider creates an order in the EHR application, it triggers an HL7 ORM message. This message is routed through an interface engine and sent to an external API provided by CareClarity™. The API then forwards the data to Amazon Simple Notification Service(Amazon SNS) and SQS, where it is picked up for further processing by the CRD Engine (running as a microservice in AWS EKS)

## 3

### GATHERING ADDITIONAL CLINICAL INFORMATION

The CRD Engine makes FHIR API calls to collect any additional clinical information needed to create the case. This data is securely stored in AWS HealthLake.

## 4

### DETERMINING PRIOR AUTHORIZATION REQUIREMENTS

Once all necessary data is gathered, the CRD Engine consults the rules engine (also running in Amazon EKS) to retrieve business rules from the Amazon RDS database. This step determines whether a PA case is required for the order.

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### *COLLECTING REQUIRED DOCUMENTATION*

If PA is needed, the CRD Engine creates a new case in the Amazon RDS database and interacts with the Rules Engine to identify which questions and documents are required. It then retrieves these items from the EHR's FHIR Store.

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### *CASE REVIEW AND SUBMISSION*

Health care operational users access CareClarity™'s web interface to review case details, complete questionnaires, and upload necessary documents. Once ready, they initiate the PA submission to payors via Amazon SNS and Amazon SQS.

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### *PREPARING SUBMISSION STANDARDS AND ROUTING*

The PAs Engine, running in Amazon EKS and subscribed to SQS, pulls case data from Amazon RDS and AWS HealthLake. It determines the appropriate submission standard and routing—such as X12, FHIR, or a custom API—by referencing the Amazon RDS database.

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### *CREATING AND SENDING PA REQUESTS*

Based on the identified standards, the system generates the appropriate PA request (X12, FHIR, or custom API) for the payor and sends it to Amazon S3

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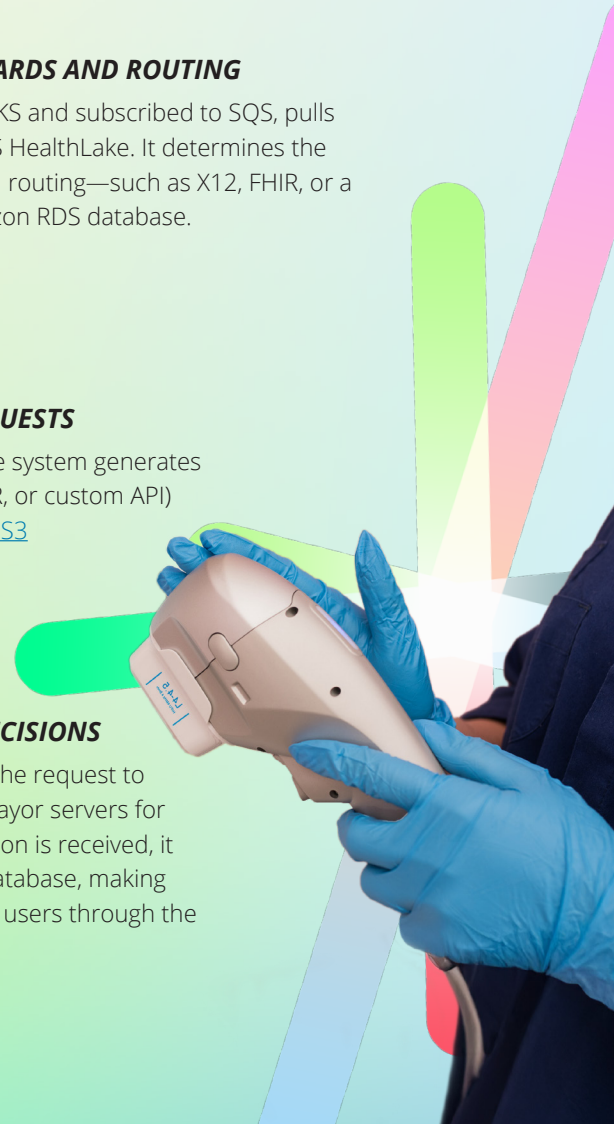
### *TRACKING AND UPDATING PA DECISIONS*

A polling engine in AWS EKS submits the request to the payor and continuously queries payor servers for authorization decisions. Once a decision is received, it updates the response into the RDS database, making the latest status visible to operational users through the CareClarity™ web application.



## BENEFITS AND RESULTS

CareClarity™ delivers significant improvements to the PA process through real-time PA necessity identification, automated form population, and streamlined submission processes. The solution provides centralized tracking capabilities and enhanced error prevention, effectively reducing administrative burden while improving patient care timing. By leveraging AWS's robust cloud infrastructure, the system ensures reliable, secure, and scalable operations that meet healthcare industry standards.

## CONCLUSION

As healthcare organizations face growing PA challenges, CareClarity™ emerges as a comprehensive solution powered by AWS cloud infrastructure. The platform effectively addresses the administrative burdens of PA processing while ensuring timely patient care delivery. By combining Deloitte's healthcare expertise with AWS's advanced cloud capabilities, CareClarity™ provides a scalable, secure, and efficient solution for modern healthcare organizations.

Contact us to learn more about how Converge by Deloitte's CareClarity™ application can assist your health care organization with reducing the burdens of prior authorizations.

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