Synthetic Test Data Scaled to Simulate Real-World Healthcare Transaction Volumes

In the United States, over 329 million people rely on a complex system of professionals, hospitals, and facilities for their healthcare needs. In this system, data is exchanged from multiple touchpoints: patient encounters, procedures, IoMT, pharmacies, hospitals, medical facilities, laboratories, private insurance companies, Medicare, and Medicaid.

The volume of electronic communications transmitting sensitive patient data is staggering. For example, as of 2021, CAQH reported 14,202,000 medical verification transactions of eligibility and benefits. In that same year, electronic claims submissions topped 7,219,000 million transactions.

Stringent HIPAA privacy policies prevent the use of actual patient data to test systems transmitting healthcare data. Heavy penalties abound for mistakes, thus necessitating thorough testing to prevent as many mistakes as possible.

How can companies developing healthcare technology systems reconcile the need for realistic patient records, formatted according to X12 EDI standards, that also comply with HIPAA policies?

How can systems that support healthcare interoperability be tested when actual patient records aren't available?

GenRocket Synthetic Test Data Solution: X12 EDI Standards

For over 40 years, the American National Standard Institute (ANSI) has provided the guidance needed to create standardized systems. Such systems enable cross-communication among many platforms. One of the most important of these standards is ANSI ASC X12 EDI standard for the healthcare industry.

Through a partnership announced in October 2019 with X12, GenRocket developed an EDI accelerator that automates 90% of the setup of EDI test data projects, such as X12 EDI 837 Institutional claims, in less than 10 minutes. These EDI test data projects allow GenRocket to generate the exact volume, variety, and format of test data in accordance with X12 EDI Standards.

The GenRocket X12 EDI accelerator provides access to valid test data for all of the HIPAA mandated EDI transaction sets such as the 834 (enrollment), 835 (payment), and 837 (claims) data. GenRocket's X12 EDI accelerator also allows synthetic data and enumerated (real) data values to be queried and blended together. For example, synthetic data claims can include real ICD-10 procedure codes and Member ID's so that the test claims flow properly, without failure, through healthcare systems.

The result is secure test data that provides the volume, variety, and precise format required for testing health insurance systems with 100% HIPAA compliance since no sensitive patient data is used. Single claim, batch claims, primary payer and secondary payer, negative claims and edge-case claims can easily be generated allowing testing teams to test every single possible permutation and combination of data in claims transactions.

The benefits of using GenRocket's process to build X12 EDI transaction sets include:

- 100% secure synthetic data that meets HIPAA mandated requirements
- Better testing - ability to test every part of any claims processing or healthcare data processing system
- Generate valid test data that integrates into internal healthcare systems (e.g. Facets, Edifecs)

Through a continuing partnership with X12, GenRocket currently supports the 5010 standard and provides support for new EDI standards such as the upcoming 8020 standard.

Major Health Insurance Company Deploys GenRocket

Goal Is to Reduce Losses, Improve Systems with HIPAA Compliant, X12 EDI Formatted Synthetic Test Data

The accuracy of insurance claims processing is an industry-wide problem with estimates of up to 80% of submitted claims containing errors (or fraud). Such inaccuracies in claims result in revenue losses for health insurance companies and delayed payments to providers.

A major health insurance company decided to undertake a complex in-house software development effort to achieve numerous goals. As part of this undertaking, they chose to move to a fully automated software test environment. **It was mandated that no Protected Health Information (PHI) would be used in any phase of the software development and testing process.** As a result, a comprehensive synthetic test data solution became a critical component of this software migration initiative.

The DevOps team implemented the GenRocket Methodology of Model, Design, Deploy, and Manage, working from a small team of test data engineers in a Center of Excellence (CoE) for synthetic data. TTest Data Cases deployed to the test environment were accelerated by the use of GenRocket's X12 EDI Solution Accelerator ensuring the precise data model for the associated transaction set was used to generate realistic and accurate synthetic data. However, because GenRocket produces synthetic test data, the testing team now had access to the precise format required, along with the volume and variety of fresh synthetic test data for every testing need. This distributed self-service environment offered fast access to secure synthetic test data while maintaining centralized control. The data was fully HIPAA compliant, formatted to the precise X12 EDI XSD needs, and available in the volume and variety required. **As a result of the GenRocket deployment, they were able to accelerate test cycles, reduce defects that escape to production and drastically increase the efficiency of the DevOps staff allowing more time for development and testing.**

Read an Example

Ready to get started? Learn more about GenRocket's Synthetic Test Data Automation enterprise solution.

[GenRocket: EDI X12 Data Format](#)

REQUEST A DEMO