ACCELERATE ICD-10 MIGRATIONS WHILE CUTTING COSTS AND RISK
# TABLE OF CONTENTS

- **EXECUTIVE SUMMARY** ................................................................. 3
- **ICD-10 MIGRATION TESTING CONSIDERATIONS AND CHALLENGES** .................................................. 4
  - WIDESPREAD IMPACT ........................................................................ 5
  - DUAL PROCESSING OVERHEAD .......................................................... 6
- **MIGRATION TEST INFRASTRUCTURE COSTS** .................................................. 7
- **DATA MANAGEMENT PROCESS OVERHEAD** .............................................. 7
- **DELPHIX FOR ICD-10 OVERVIEW** .......................................................... 9
  - CONTINUOUS SYNC WITH ICD SOURCE DATA ........................................ 10
  - INTEGRATED ENVIRONMENTS FOR END-TO-END TESTING ...................... 10
  - SIMPLIFY MIGRATION TEST COPY MASKING .......................................... 11
- **CASE STUDY** .................................................................................. 12
EXECUTIVE SUMMARY

The migration from ICD-9 to ICD-10 codes is an enormous undertaking. With an adoption deadline of October 1, 2015 for HIPAA covered entities, healthcare IT departments are tasked with enabling the migration and mitigating risks, all while ensuring continuity for all aspects of their business.

Before the deadline, every element of the process, every database, and every transaction needs to be individually tested. Due to the sheer volume of effort and complexities involved, organizations need to develop an optimal ICD-10-centric testing environment. The stakes are high. Financial risks have payers concerned. Early testing with external providers has resulted in unexpected delays and significant cost overruns.

This paper highlights some of the key challenges and demonstrates how the Delphix Agile Data platform introduces significant agility and cost reduction benefits that help organizations overcome ICD-10 migration hurdles.
ICD-10 MIGRATION TESTING CONSIDERATIONS AND CHALLENGES

ICD (International Classification of Diseases) is an international standard for the classification of medical conditions and procedures. ICD-9, published over four decades ago, no longer adequately reflects advances in disease detection and treatment such as biomedical informatics, genetic research and international data sharing.

ICD-10 fully replaces the code set using new taxonomies to provide greater detail and granularity when coding diagnoses and inpatient hospital procedures. In the process, ICD-10 increases the number of codes from 18,000 to over 140,000 and also changes their underlying structure.

The expanded classification enabled by ICD-10 is expected to deliver benefits such as:

- GREATER DIAGNOSTIC AND PROCEDURAL GRANULARITY AND ACCURACY
- STREAMLINED CLAIMS SUBMISSION AND REIMBURSEMENT
- HIGHER QUALITY MEDICAL RESEARCH AND DATA ANALYSIS
However, the challenges are many. ICD-10 migration testing is expensive and complex.

- The HayGroup projects system implementation costs of up to $25M (excluding productivity losses or redundant work due to errors)
- Gartner estimates that development and testing costs alone may account for a staggering 70% of all system implementations

During a survey conducted at the 2012 ICD-10 summit, over a third of the respondents indicated they expect total costs to exceed $30M.

Combining those findings suggests that large healthcare payers are like to bear over $20M in migration testing costs alone. Clearly ICD-10 projects are creating an unhealthy bottom line.

WIDESPREAD IMPACT

The staggering costs of ICD-10 projects are a result of several factors including:

- UPDATING AND TESTING SCHEMAS, TABLES, INPUT FIELDS, GUI INTERFACES, AND OLD SOFTWARE LOGIC
- SUPPORTING OLD AND NEW CODE SETS TO HANDLE PRIOR CLAIMS
- OVERHAULING AND TESTING REPORTING PROCESSES
  - QUERIES QUALIFYING ON SPECIFIC CODES MUST BE MAPPED AND UPDATED
  - REPORTING OUTPUT AND FORMATTING NEEDS TO BE TESTED AND ADJUSTED
- TESTING AT CODE MODULE, APPLICATION, AND CROSS APPLICATION LEVELS TO ENSURE OPERABILITY ACROSS ENTIRE BUSINESS PROCESSES E.G. BILLING, CLAIMS PROCESSING
- VALIDATION OF NEW CODE IN ALL TRANSACTIONS BETWEEN EVERY BUSINESS PARTNER
DUAL PROCESSING OVERHEAD

For many entities, dual processing is inevitable. In an ICDWatch Readers Poll, 86% of covered entities will need to support both ICD-9 and ICD-10 based systems beyond the October 2015 deadline. This doubles the testing load, which significantly increases costs. By virtualizing your data, Delphix can help reduce the high price of testing.

Meet the dual processing challenge by virtualizing your database with Delphix.
MIGRATION TEST INFRASTRUCTURE COSTS

Such extensive internal and external testing requires the creation of a new migration test infrastructure. Consider just 10 applications, each with a 2TB production footprint. If 5 full copies per application are needed to conduct parallel testing and meet the migration deadline, the storage impact is 10 (applications) x 2 (TB) x 5 (copies) = 100TBs, which could easily cost in excess of $1M. Training all users (physicians, nurses, claims coders, billing teams, claims processing teams, etc.) on the new codes is another major cost burden as the number of production copies needed for that exercise multiplies.

Using partial data sets in development, or fewer copies to control costs, simply reduces test quality and increases the risk of missing the deadline. Business processes may fail and that could have a significant impact on productivity and financials.

DATA MANAGEMENT PROCESS OVERHEAD

While ICD-10 test infrastructure costs will be significant, they pale in comparison to the high cost of data management. Development cycles involve a constant flow of data across downstream copies and production source environments. That can take days or weeks of coordinated effort across teams just to refresh data in a single test environment. With ICD-10 migrations, there are other complicating factors like HIPAA compliance that require masking of sensitive data in downstream copies. This adds more complexity and time to each refresh or provisioning task, which can easily add months of delay.

The Delphix Agile Data platform streamlines the data flow process, which reduces the high cost associated with delays.
For end-to-end internal and external testing of ICD-10 codes, data also needs to be integrated across applications.

Different groups may own the data sources awaiting integration, yet their disparate efforts can inhibit the process. For example—one system owner might deny access to the production environment until a project is completed, resulting in stale data of questionable quality.

Wait times for data access, and the challenges associated with synchronizing data extracts, impacts data quality and lengthens test times, which in turn increase the risk of migration failures.
DELPHIX FOR ICD-10 OVERVIEW

The Delphix Agile Data platform offers significant agility and cost reduction benefits to ICD-10 migration projects by enabling:

- **UNLIMITED COPIES TO PARALLELLIZE TESTING AND ACCELERATE ICD-10 MIGRATIONS**

- **INDEPENDENT ON-DEMAND DATA ACCESS TO MINIMIZE IMPACT ON PRODUCTION TEAMS**

- **FULL COPIES, FRESH DATA, INSTANT ROLLBACK AND RECOVERY FOR HIGHER TESTING QUALITY**

- **90% LOWER STORAGE COSTS FOR ICD-10 MIGRATION TEST ENVIRONMENTS**

The platform is delivered as a software virtual appliance, which can be deployed in minutes in any location, on premise or in the cloud. As a virtual appliance, Delphix works with any hardware and storage so it can easily be added to an ICD-10 migration mid-project with minimum disruption or change.

*NOTE: This section highlights key capabilities of the Delphix technology stack relevant to ICD-10 projects. A comprehensive technical overview of the Delphix Platform can be downloaded from the Delphix website.*

Delphix connects to application instances, file systems, or databases using standard (agentless) APIs and loads compressed copies into the Delphix Engine, which shrinks the data by an average of 3x. By compressing and filtering data blocks, Delphix minimizes the footprint of data storage, which is critical to improving efficiencies in ICD-10 migrations.
ICD-10 migrations introduce the need for more test copies. To ensure data quality, full copies are usually created. However, this is costly and highly inefficient considering that the data is largely redundant across project copies. Instead of making and moving data copies repeatedly, Delphix provides a virtualized view of databases, apps, and files by sharing the underlying data across all application environments and storing changes as new, unique blocks. As a result, each Delphix virtual appliance can deliver over 20 virtual copies of an ICD-9 application source. With fast, automatic refresh and virtual databases that provide full, representative datasets, Delphix can dramatically improve the pace and quality of ICD-10 migrations.

CONTINUOUS SYNC WITH ICD SOURCE DATA

After the initial data load, Delphix maintains synchronization by collecting changes and tracking all versions for as long as required (e.g. weeks or months). From any point in time, Delphix can open one or more virtual app instances (VAIs), virtual file systems (VFSs) and virtual databases (VDBs) for ICD-10 migration testing.

VAIs, VFSs, and VDBs look and perform like normal, physical copies (e.g. for VDBs, users can add/drop tables, make schema changes, and run reports against the data), but include powerful features designed to accelerate ICD-10 projects like virtual branching and fast data rollback or refresh.

INTEGRATED ENVIRONMENTs FOR END-TO-END TESTING

During the end-to-end testing phase of ICD-10, Delphix can have an equally big impact through its support for “integrated” data refreshes. On-demand data access can return months of project time consumed by process and approval overhead.

Integrated data refreshes help keep projects on time and within budget.
SIMPLIFY MIGRATION TEST COPY MASKING

Since ICD codes flow through applications that handle sensitive PHI data, masking of data in migration test environments is important. Normally, this adds considerable overhead to each request for a new environment of fresh data. However, Delphix can create a virtual copy of a production database, mask it using any third-party tool, and then deliver multiple virtual secure branches to ICD-10 project teams in minutes.

Using virtualized copies, Delphix can mask sensitive data in minutes.
CASE STUDY

ORGANIZATION
A regional hospital system and health plan serving the southwest region of the United States. The provider side of the business alone serves over 1,000,000 patients annually.

ICD-10 MIGRATION PROJECT
ICD codes are the foundation this healthcare organization’s application landscape and most of its business processes. As such, the migration to ICD-10 is a massive project that touches everything from planning new services and billing to claims processing and data mining. Seven full-time project managers are dedicated to the ICD-10 initiative alone.

During the planning phase, the project team estimated that three incremental copies of each production source would be needed for testing. For some applications, the need doubles because both code sets must be supported in parallel past the compliance date. The cost of storage alone was prohibitive, but a bigger challenge and concern was that existing processes for provisioning and refreshing copies would delay ICD-10 migration along with other projects.

DELPHIX SAVES $1.3 MILLION
The organization is using Delphix to virtualize 20 downstream copies of this organization’s 10TB claims processing environment. They expect to realize the following benefits with Delphix across the ICD-10 migration and other projects:

- 50% INCREASE IN PROJECT OUTPUT INCLUDING ACCELERATION OF THE ICD-10 PROJECT
- $1.3M IN HARD SAVINGS FROM VIRTUALIZATION OF PRE-PRODUCTION COPIES (AND BACKUPS)
- BUILT-IN ELASTICITY FOR 2X PROJECT ENVIRONMENTS, WITHOUT ANY ADDED STORAGE COST

40% OF THE TOP HEALTHCARE PAYERS IN THE U.S. USE DELPHIX
Four of the top 10 U.S. healthcare payers, and 100 of the Fortune 500, currently use Delphix to improve the quality, diversity and time-to-market of products and services.

The Delphix Agile Data platform can help you implement ICD-10 while enabling risk-free end-to-end testing across the healthcare network. To learn more, visit delphix.com/healthcare.