

# Real World Transformation with Z Digital Integration Hub

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## Digital shift in financial services underway

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**Systems** 

of Record

AVERAGE COST TO ACQUIRE NEW CURRENT ACCOUNT CUSTOMERS

**Pre-Digital Transformation** 

vs. Post

DAYS FROM APPLICATION TO CURRENT ACCOUNT FUNCTIONALITY BEING ACCESSIBLE

TIME TO LAUNCH A NEW FEATURE

RETAIL BANKING CUSTOMERS PER FTE

EMPLOYEES RATING THEIR COMPANY AS A 5-STAR EMPLOYER

#### Integration and Interaction with Core Systems of Record is key to Successful Transformation

#### Profitability Pressures

Competitive

expectations

Non-traditional FIs

Customer experience

Digital interaction & social

media driven complaints

Pressures

- More inspection of marketing budgets
- Limited insights across entire organization (cross product, cross region, ...)

### Business Operations Risk

Increasing regulations

Personnel shortages

Changes in regulations

Regulatory

Pressures

Non-common

data standards

- Transformation disruption
- New business model agility
- Flexibility to leverage new technologies
- Skills

## The Challenge

#### Limited cloud integration

Core systems which run the business today are the source of highly valuable information — yet there is limited integration between new cloud applications and existing core transactional and batch systems

#### **Information Delays**

Existing data access methods, such as ETLs to a data lake for off-platform consumption, delay information flow to cloud applications which often require more up to date, accurate information

#### **Complex information needs**

To meet business requirements and client expectations, consuming applications require information which is composed and aggregated across data from multiple systems of records

#### **Tightly coupled applications**

New cloud applications consuming information from core systems are required to know the underlying data format and contexts from systems of record -- resulting in elongated cloud development cycles and barriers to application changes



## Raw Data vs. Information Flow



## Z Digital Integration Hub technical details



## Z Digital Integration Hub as part of progressive modernization



#### Today's Landscape

- Many enterprise clients are modernizing core, but doing so progressively to mitigate risks
- A number of core applications have not been modified in 20 years or more, leading to complex and long modernization journeys

#### Parallel Paths to Modernization

- Modularize core applications, introduce APIs for interaction and re-write as possible
- Modernize DevOps processes and tool chains
- Introduce Z DIH for agile & simplified information flow between core systems & hybrid cloud

#### **Benefits**

- Facilitates the co-existence & interchange between components deployed in hybrid cloud and existing applications
- Does not first require application or data restructure, leading to faster ROI

## Z Digital Integration Hub With Multi-Cloud Cache



## Z Digital Integration Hub Example: Accelerate Ecosystem



#### Z Digital Integration Hub

Computation engine & memory store with optimized data virtualization for Z

Subset of raw data & events

ZAFIN

Real-time computed information, decoupled from data context



#### Today's Landscape

- Zafin is a financial product and pricing SaaS application for fees, rates, rewards, etc
- Zafin services typically consume raw data originating from z/OS & stored off-platform = Data as of yesterday
- Integration with core is custom and tied to specific data formats

#### Zafin + Z Digital Integration Hub

- Pre-built APIs returning real-time computed information from core systems for Zafin services
- Zafin services are decoupled from core data context, increasing flexibility

#### Benefits

- Transform core incrementally by adopting industry best practices & ecosystem
- Real time information for rates and pricing: Data as of yesterday vs Data as of now
- Reduce risk by limiting raw data exposure
- Ease of integration and maintenance through standard interfaces & data decoupling

Future: Automatic Refresh Z DIH Information using Most Current Data



- Many use cases benefit from continual refresh of information
- Change capture of all raw data to send off platform creates performance issues for many large clients
- Most clients want the captured change to re-drive business logic and update results to in-mem cache

## **Z** Digital Integration Hub: Key Value Propositions



Faster ROI for Cloud Transformation Initiatives without impacting Core Processing

Better agility to expand ecosystems & create new channels delivering faster time to value

 Leverage significant high-value investments in HW, SW, applications while modernizing and transforming incrementally



## M&T Bank – Who we are

- Headquarters in Buffalo NY
- One of the 20 largest independent commercial bank holding companies in the U.S.
- □ \$140 billion in assets
- \$114 billion in assets under management
- \$98 billion in loans and leases
- □ \$115 billion in deposits
- Consistent profitability for the past 176 consecutive quarters



# M&T Bank: Current Architecture/Challenges with integrating systems of record & hybrid environments

#### **High-level Architecture**

- Data Majority applications use VSAM, think basic Key Value Data Store, no metadata
- Core Banking CICS Transaction Processor, think Application/Web Server

#### Accessing Data

- ReST and MQ for Real Time
- FTP for non-Real Time

#### Challenges

- No streaming/event processing capabilities
- FTP is the only method to pull large amounts of data
- Raw Data is not intelligible in application specific contexts
- · Limited access methods
- Moving all raw data not viable based on transaction volumes



## M&T Bank – Solution Objectives

#### **Event Centric**

Key objective is enabling z/OS applications to become more event driven, using modern familiar technologies and without disrupting our current Core Banking Transaction Processing environments.

#### **Data Delivery & Presentation**

M&T has a vast IT ecosystem made up of many different technologies. It is critical to be able to meet the needs of all, whether you are a Linux/.NET application, Data Scientist, Tester/Business Analyst.

#### **Performant and Cost Effective**

A solution that runs completely on z/OS, so data and compute can be co-located, ensuring lowest latency.

Workloads that are zIIP eligible (specialty Z processors) for greater cost efficiency and performance.



## M&T Bank – Choosing a Solution



**Z Digital Integration Hub** runs 100% on z/OS and is 99+% eligible to run on specialty CPUs (zIIP), allowing for greater cost efficiency & performance.

Comprised of two components that allow for flexible design/architecture

#### **IBM Data Virtualzation Manager**

- Virtualize any data asset on z/OS(VSAM, DB2, Sequential(GDG), logger) allows for highly parallelized access
- JDBC/ODBC
- ANSI SQL Compliant

#### GridGain for z/OS based on Apache Ignite

- In-memory Key-value/Relational DMBS with persistence option
- Feature rich runtime, which supports many different languages, API's and access methods.
- ANSI SQL Compliant with secondary index support

## M&T Bank – Use Case



# Key Advantages Leveraging Z DIH

<b>Results with Current Approach</b>	Results with Z DIH
<ul> <li>Payments Decisioning Application</li> <li>Daily load (~20gig raw data): 45 mins</li> <li>Daily batch CDC 3hr increments</li> </ul>	Payments Decisioning Application+ Daily load (~20gig raw data): 4 mins+ Continual CDC for real-time cache
Query via ReST API to source data – Avg elapsed time: 94ms	Query via SQL to Ignite Cache + Avg elapsed time: 31ms
Data access via Batch Reporting Tools <ul> <li>Accessing 4.3 Million records,</li> <li>average elapsed time: 3 min 54 secs</li> </ul>	Data access via IBM Data Virt Manager + Accessing 4.3 Million records, average elapsed time: 41 secs
<ul> <li>Price performance         <ul> <li>Minimal use of specialty cores (cost disadvantage)</li> </ul> </li> </ul>	Price performance + 99+% use of specialty cores (cost advantage)

Performance measures derived from combination of M&T environment & IBM Lab Z DIH pilot for M&T



## M&T Bank – Architecture based on Z Digital Integration Hub



✓ Event streaming

- Limited data movement
- ✔ Real-time & current Information flow ✔
- Consuming applications decoupled from underlying data contexts

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## **Comments & Questions**

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