WHAMTECH ANY CLOUD USE CASES SUMMARY	REVISION 1.3

Introduction

WhamTech is in discussion with various technology and services companies on a synergistic combination of capabilities offered as an ecosystem to combined customers. A few of the large Cloud Platform-as-a-Service (PaaS) companies are potential sponsors and partners. This discussion is focused on the initial implementation of the fundamental virtual data management layer.

SmartData Fabric® offers security-centric distributed data, master data and eventual graph data virtualization and management.

Bandwidth is becoming very fast, allowing rapid data communications to and from platforms, including to and from the Cloud and other Clouds. Such communications take advantage of fiber backbones offered by some Cloud platforms, and compression and other techniques used to increase throughput rates.

There are several vendor products and services that are already replicating data for like-to-like systems from on-premises, data center and third-parties, to the Cloud. Some of these vendor products include options for maintaining target Cloud systems in-sync with source systems using near real-time changed data capture (CDC).

There are perceived gaps in current Cloud platform and other vendor produscts and services and the following use cases are based on current opportunities as WhamTech sees them.

1. **HYBRID CLOUD 2.0: SMARTDATA FABRIC® MANAGED AND RUN IN THE CLOUD, BUT ACCESSING AND INTEGRATING DATA SOURCES THAT ARE NOT IN THE CLOUD**

   These data sources could be running on-premises, in data centers and/or Open source or commercial systems, plus, can be combined with data sources in the Cloud.

   Open source or commercial vendor products greatly increase the rate at which data updates can be read from on-premises and other non-Cloud data sources, to be indexed in the Cloud for data and query processing, and to read raw data from original data sources for either drilldown or as part of result-sets. The open source or commercial vendor products significantly minimize a data transfer performance bottleneck and, therefore, a past communication hurdle between non-Cloud and Cloud systems.

2. **NEAR REAL-TIME (DISTRIBUTED) DATA LAKE IN THE CLOUD, replicated from on-premise and other data sources, with SmartData Fabric® running on top of the Data Lake, in the Cloud**

   Open source or commercial vendor products enable rapid near real-time CDC from on-premise systems and other non-Cloud data sources to a Data Lake in the Cloud, upon which SmartData Fabric® securit-centric virtual data, master and eventual graph data management, can be layered. Also, makes available the option of a Distributed Data Lake – do not try to force-fit disparate source data types into a single Data Lake storage type or location, otherwise, customers may face the schema and data transformation issues typically associated with conventional ETL/DW/DM. Also, in many cases, for audit, traceability and/or compliance reasons, many customers do not want or cannot modify original operational/transactional data. This use case may also fit customers that already have multiple data sources and Data Lakes in multiple Clouds – similar to Use Case 4.

3. **SMARTDATA FABRIC® RUNNING ACROSS ALL CLOUD DATA SOURCES, including Office 365, email, unstructured and structured data, and offer multiple views of data, including data object/services, relational, hierarchical, NoSQL/single table and semantic/ontological**

Data, master data and eventual graph data virtualization and management offered as a paying service option to Cloud customers. The availability of this use case may accelerate and encourage customers to migrate data to the Cloud and/or add Use Case 1.

4. **SMARTDATA FABRIC® RUNNING ACROSS ALL CUSTOMER'S DATA IN MULTIPLE CLOUD INSTANCES AND PLATFORMS, ON PREMISES, DATA CENTERS, THIRD-PARTIES AND ELSEWHERE – universal virtual data access, integration and interoperability**

Take advantage of managed Cloud "hub" services, and maybe even access and integrate these services running on multiple Clouds.

5. **TRANSITION-MIGRATION OF MAINFRAME AND OTHER DATA SOURCES TO THE CLOUD, with options to retain original data and file formats, and offering SmartData Fabric capabilities on the Cloud**

There are a few scenarios and variations that WhamTech has reviewed for potential customers and can enable, all involving new apps accessing migrated data sources, with and without mainframe app emulation, and with and without integration with other data. WhamTech has worked with IBM mainframe Cobol-generated VSAM files as a data source in the past.

Variation	Static/ Archive	Data Unchanged	Format Unchanged	Comment
1	Yes	Yes	Yes	For compliance and risk reasons, data needs to be preserved "as is" and be integrated with other data in new workflows and apps. Use block-level pointers to retrieve smaller sets of results data from these very large data files.
2	Yes	Yes	No	For audit reasons, data needs to be retained "as is", but can be in a different target data store from source, which makes access easier.
3	Yes	No	No	Effectively, ETL into a different target data store.
4	No	Yes	Yes	As per Variation 1. Use some form of CDC/replication/sync from data source.
5	No	Yes	No	As per Variation 2. Use some form of CDC/replication/sync from data source.
6	No	No	No	As per Variation 3. Use incremental or near real-time ETL.

6. **CLOUD-BASED M&A SOLUTIONS that are vertical-specific and enable rapid and comprehensive pre- and post-merger intial reporting, BI and analytics, and eventual workflow-based interoperability**

Open source or commercial vendor products enable rapid copy of data from on-premises, other non-Clouds, or other Clouds for storage and/or indexing to enable use cases listed previously. Existing applications can continue to work with existing data sources, but maybe some data sources can be combined/integrated and offered as a service for extended transitions/longer-term beyond the initial

merger period. One of the many advantages of SmartData Fabric® is that the same SQL queries are executed on all External Index and Query (EIQ) Adapters with indexes, regardless of the support for SQL in data sources themselves. This allows advanced SQL query execution in a "live query" on any data source vs. the very common "data extract" mode, and also allows SmartData Fabric® to monitor data changes in near real-time and trigger events to support microservies, workflows, interoperability, drive operational dashboards, and support and greatly reduce the liabilty associated with GRC (governance, risk and compliance). This would minimize the disruption caused by the merger. Additional interoperability could be enabled for operations and new workflow support. This could be a Cloud service offering, managed by an IT service provider, and used by companies that perform a lot of M&A and M&A consultants.

7. COMBINATIONS OF USE CASES

There may be other use cases that involve a combinations of use cases, e.g., eDiscovery solutions that could be forensic when litigation is involved or preemptive to avoid litigation in the first place. A reference to reasons to support GRC is listed in Use Case 6. WhamTech developed a near-commercial eDiscovery solution in the past with the goal of offering both forensic and preemptive solutions in combination with compliance and other regulations.

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