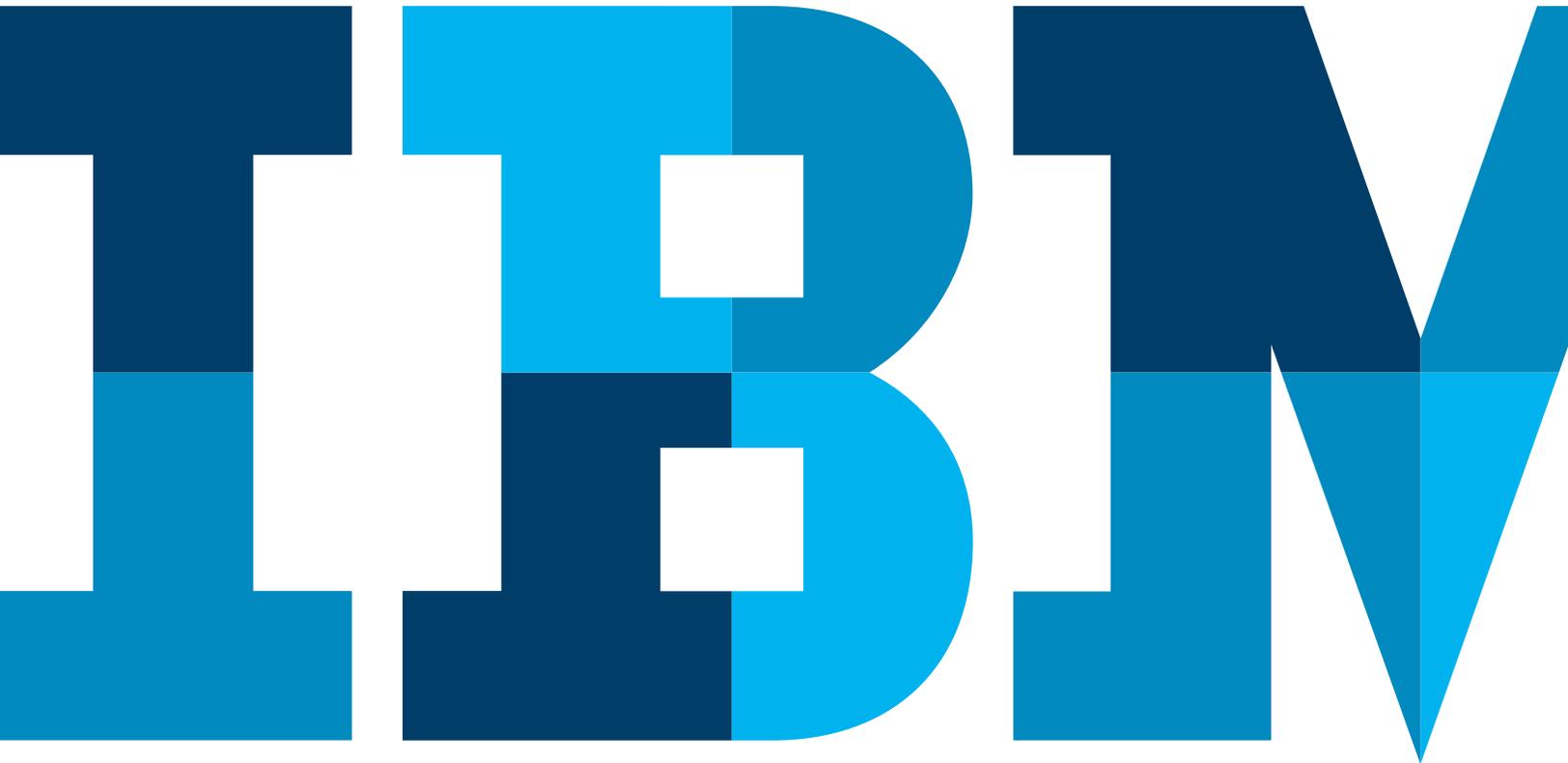


Impact of Hybrid Cloud Implementation on Master Data Management Strategies



Christophe De Melio

Executive Analytics Architect - Governance & Entity Analytics,
IBM Analytics, Center of Excellence





Contents

- 3 Introduction
- 4 Data Transfer Costs
- 5 Service Level Agreements (SLA)
- 6 Information Management
- 6 Data Integration
- 7 Security & Compliance
- 8 Return on Investment
- 9 Conclusion

Introduction

The purpose of this white paper is to discuss how hybrid cloud strategies can impact the way companies are and will be implementing Master Data Management (MDM) solutions. First, a set of definitions to ensure consistent understanding on the topic:

Master Data: the consistent and uniform set of identifiers and extended attributes that describe the core entities of an enterprise (such as existing/prospective customers, products, services, citizens, suppliers, sites, hierarchies and the charts of accounts).

Master Data Management: a technology-enabled discipline in which business and IT work together to ensure the uniformity, accuracy, stewardship, semantic consistency and accountability of an enterprise's official, shared master data assets.

Master Data Hybrid Cloud: a combination of one or more public cloud(s), one or more private cloud(s) and on-premise environments.

While the definitions are clear, companies are mixing up the concept of Management of the master data and the usage of master data across the Information Technology(IT) landscape. Master data usage is most commonly either in the context of analytical systems (Business Intelligence, Reporting, ...) or operational systems (System of Engagement, or traditional Enterprise Resource Planning (ERP) applications).

The usage of Master Data, while being important, is not the same as Information Governance (definitions, data quality, data lifecycle, data usage...). For instance, any order placed by customers will require some master data to be consumed (either locally stored or from an MDM instance) but will most probably not involve any updates / validation of the master data itself.

Another typical example is the use of master data in a data warehouse or Big Data environment. But, there are no validation or management processes in the data warehouse. The master data is mainly used as dimensions for providing context to the analytical data.

The main reason for mixing these two concepts is linked to the fact that MDM is always tied to a set of broader business requirements where it plays a role (but is not the only component of the solution). For instance, "Know Your Customer" (KYC) strategy will require an MDM system but also require other components like Search Engines, Marketing Management Systems or Reporting tools to be solved.

Gartner has identified four MDM Implementation Styles, Consolidation, Registry, Centralized and Coexistence¹. We believe these will have to evolve to consider the emergence of cloud and hybrid cloud.

When looking at Hybrid Cloud implementations of MDM, there are two main implementation topologies that will occur.

1. The MDM system is in the cloud and applications using the master data (analytical or operational) are either on-premise or in a cloud environment
2. The MDM system is on-premise and applications using the master data are either on-premise or in a cloud environment

While the emergence of the Cloud is undoubtedly impacting the way MDM solutions are implemented, most of the considerations that are looked at in a “traditional” MDM implementation are still valid. For instance, implementation pattern (synchronous, asynchronous), information governance setup, security, etc. are still an important part of an MDM implementation in the cloud. There will, though, be cloud specific aspects that will need to be added to the scope of the project.

Data Transfer Costs

When implementing any solution in the cloud, an aspect often underestimated from a Total Cost of Ownership (TCO) perspective is the fact that data must flow from “inside the firewall” to the cloud infrastructure. Depending on the domain managed, the considerations of data transfer volumes will differ substantially.

a. Customer domain consists predominantly in structured data (by design small), whereas the implementation of Party domain that goes beyond customer data often requires a transactional style where ERP’s and other System of Engagements solutions will result in high volume and velocity interactions with MDM. Some examples of this include, for governance actions like data quality, having interactions between a CRM and the MDM system for each customer data creation or updates. In addition, implementing an MDM as system of Record will also lead all business processes that require customer profile information to access the MDM system. All these actions will lead to very high number of data transfers and result in high costs of data transfers.

b. Product Data, on the other hand, will often involve higher volumes because of the number of images, documents, videos that are part of the “360° view of the product”. This will result in very high volume of data transfers; would it be for the governance processes or transactional usage of the Master Data. Worth mentioning is the fact that, due to the implementation styles of the Product Domain, data volumes and the associated costs might be more linked to integration flows to and from the MDM solutions.

Furthermore, the architecture decision on where to install run the MDM solution will heavily depend on where the different systems integrated with MDM are located. Having mainly on-premise solutions vs cloud-based applications will have an impact on the overall TCO of the IT landscape.

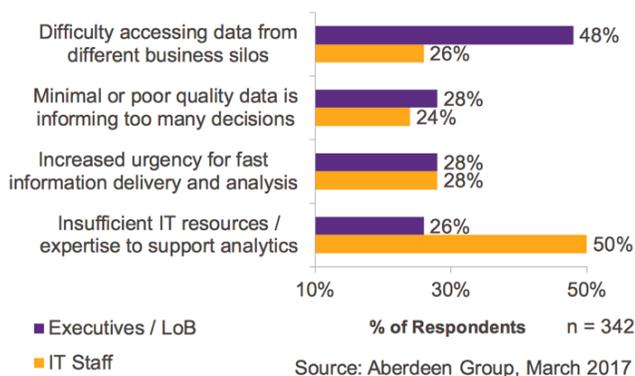
¹ Gartner. “A Comparison of Master Data Management Implementation Styles.” *Lyn Robinson*. 06 Nov. 2017, <https://www.gartner.com/doc/3824466/comparison-master-data-management-implementation>

This means that, deciding whether to have MDM in the cloud or not is also impacted by the way the system is integrating with external applications, would there be loading data into the MDM or using data from the MDM application.

Service Level Agreements (SLA)

As the goal of MDM systems is to store and manage critical company data (customers, products, etc.), access to the system must be ensured always with very high SLA's. If this is not the case, companies might encounter situations where enterprise applications and processes are blocked due inability to retrieve customer or product data. In fact, difficulty accessing data from different business silos tops the list of Line of Business challenges executives face.²

Figure 1: Data Disparity Tops the List of LoB Challenges



When looking at the Product domain, the way it's often implemented can have a lower impact on the company's business continuity. In a traditional Product Information Management(PIM) implementation, the MDM system is working as a stand-alone application where the different

end-users (would they be part of the company or external) are collaborating on the completeness and quality of the product information. If that application is available because of connectivity issues with/from the Cloud, this will have no impact on transactional systems, enterprise processes or analytic engines.

This means that companies should carefully plan the contracts with cloud providers to ensure that access to master data from critical business processes is guaranteed.

Information Management

The implementation of the MDM system in a Hybrid cloud environment, with the MDM in the cloud or connecting applications to the MDM system located in the cloud, should not have major impacts on the way the governance processes are set up.

The data steward processes, applications, information flows, along with information security will have to be defined the same way and will require the same type of roles. Potential impact might be on the synchronicity of data movements resulting from the governance processes as these might be impacted by data integration and connection SLA's.

Companies need to make sure they keep the ownership on the data model of their MDM system to avoid any data discrepancy

What can be of added value, when implementing MDM following a hybrid cloud strategy, is the flexibility to expand the management processes beyond a single application and use the cloud as an easier way to extend collaboration with external parties involved.

² Lock, Michael. "Modern MDM: The Hub of Enterprise Data Excellence." Modern MDM: The Hub of Enterprise Data Excellence, Aberdeen Group, 31 May 2017, www-01.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=IML14581USEN.

Another aspect of Information Management, when working on MDM solutions is the management of Meta Data. When implementing an MDM solution, companies often struggle to come to a global data model. Having to cope with cloud based solutions, having tools to register all the different data definitions and the lineage of information between each application feeding or fed by the MDM is critical. In addition, as often the case with software as a service solutions, companies need to make sure they keep the ownership on the data model of their MDM system to avoid any data discrepancy.

This shows that, while providing added value, (hybrid) cloud implementation will add some complexity in the way the solution is designed and maintained.

Data Integration

When looking at Hybrid Cloud implementations, effective data integration is key. As part of the governance processes linked to Master Data, there will be different types of data integration required.

Initial loads in the MDM system will require high volume transfers involving time and computing power. Hybrid Cloud implementation will surely require customization to traditional data integration approaches. Would this concern the import data to the MDM cloud infrastructure, offloading data from cloud applications to the on-premise MDM implementation or moving data between Cloud infrastructure. Software providers start to offer high speed transfer for loading data into cloud environments but these will require to include data transformation and data quality components. Implementations might also require “temporary” repositories to ease data migration processes

Asynchronous data integration mechanisms will also be required for all applications requiring a physical copy of the Master Data (like most of the traditional legacy applications) or for loading Master Data attributes to be consolidated or validated in the MDM system.

Synchronous data integration will be required in any implementation where the Master Data is only stored and managed in the MDM system. For instance, when Party data is to be created or updated in a transactional system but data quality checks are done against the MDM system to ensure data validation, deduplication, standardization are performed.

In addition, as part of the Master Data Management processes or the enrichment of the Master Data, additional integrations can provide added value. These are even more easily accessible when implementing in a (hybrid) cloud infrastructure. Typical examples are when validations are performed against external systems (for instance when integrating with Dun & Bradstreet®) or when data is augmented using cognitive, artificial intelligence or machine learning capabilities. For instance, when managing product information, it can be relevant to enrich the data by making correlation with external applications like social media, media databases.

Complexity in MDM projects always include data integration patterns. Having a hybrid cloud strategy will not deviate from that trend. Even more, cloud specific aspects, like bandwidth, data format, and data localization will surely have to be dealt with to ensure successful project results.

Security & Compliance

When implementing an MDM strategy, data access definition becomes a critical requirement. Outside of the data stewardship processes, access to the Master Data will often be via services. This means that the underlying connectivity to and from the MDM solution will require additional security protocols (encryption, masking, ...) to ensure a correct level of security. In addition, cloud infrastructure providers will have to ensure platform security as the data stored in MDM environments are business critical and often business confidential.

More and more countries are imposing clear compliance rules for data localization

Therefore, strategies of “private clouds” or at least some level of data fencing will most probably be part of the non-functional requirements. This is even more true for customer data as more and more countries / geographies are imposing clear compliance rules for data localization. For instance, in Luxembourg, even inside the same company, customer data from an insurance division and a banking division MUST be stored on separate servers.

Another example is that data must or should be stored within specific countries while other countries are not allowed. For example, laws for cloud environments in South Africa allow data storage in South Africa or the Netherlands but not in France. Looking at compliance aspects, regulations like GDPR will also add complexity to the implementation of Hybrid Cloud environments for MDM projects (when managing customers, employees, citizens ...).

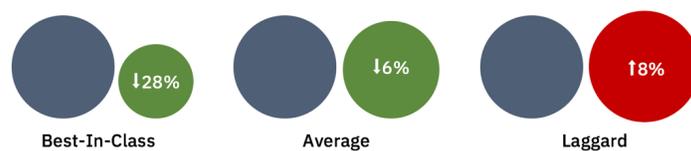
The above security and compliance topics will for sure impact the TCO and the selection of cloud providers for many companies.

Return on Investment

From a ROI (Return on Investment) perspective, deciding to have the MDM solution placed in the cloud must be taken carefully as the system is often part of critical business processes. Balancing the cost of non-availability, added compliance requirements and SaaS (Software as a Service) monthly costs versus lowering the internal CAPEX & OPEX (Capital and Operational Expenditures) for buying and managing on-premise servers will be needed before any decision.

Year-Over-Year Operation Costs

Source: Aberdeen Group



An efficient flow of clean and usable data throughout the organization offers a multitude of opportunities to identify and act upon ways of doing business better. Research by the Aberdeen Group found that Best-in-Class companies, on average, saw a 28% year-over-year reduction in operation cost, compared with a 6% reduction for Average companies and an 8% increase in operating cost for Laggard organizations.³

³ Lock, Michael. “Modern MDM: The Hub of Enterprise Data Excellence.” Modern MDM: The Hub of Enterprise Data Excellence, Aberdeen Group, 31 May 2017, www-01.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=IML14581USEN.

In addition, most of the MDM implementations (even more when talking about the Product Domain) require a fair amount of customization that cannot be lowered too much to represent significant savings. Several SaaS vendors include, on top of the license costs, implementation/customization costs to the monthly fee to cover these expenses.

Another factor that is often part of a business case for cloud is the fluctuation of processing power required during the year (for instance, having “Black Friday” peaks). MDM solutions are not excluded from these unless only used for Analytical purpose. When used for Analytical purpose, the load on the solution can be foreseen or planned to allow correct sizing of the solution.

Hybrid cloud strategies can be interesting when implementing MDM as it will provide a level of flexibility, sustainability while lowering the cost of both installing and managing the solution. We start to see software vendors providing combination of exploratory, analytical and transactional capabilities that can be used faster if the whole solution is made available in a cloud environment.

Conclusion

It’s clear that companies, in the current trend to global regulations and emergence of the use of Cloud-based environments (Public, Private, Hybrid), will have to work on managing their Master Data Entities more efficiently and, depending on the cases look at the added value of moving some or all the management of in the cloud.

Looking at the data usage of the Master Data, Hybrid Cloud strategies will have a bigger impact as data movement, data localization and the associated risks (Compliance with GDPR, ...), data security requirements (potential

requirements for Private Cloud instance) and costs (network bandwidth, data storage, historization).

In analytical landscape, Master Data refresh will be required for accuracy while in operational usage of the Master Data, the number of transactions per second combined with the critical nature of the data for transactions to proceed will require a lot more considerations for successful projects.

If the move towards a (Hybrid) cloud is made carefully and takes into account the points detailed above, companies will be able to get additional value from their MDM strategies while embarking in an innovative journey.

[Watch this webcast](#) to learn how you can manage data on the cloud with IBM’s MDM solutions.

For More Information

To learn more about IBM Master Data Management solutions, contact your IBM representative or IBM Business Partner, or visit: ibm.com/analytics/master-data-management

Additionally, IBM Global Financing can help you acquire the software capabilities that your business needs in the most cost-effective and strategic way possible. We’ll partner with credit-qualified clients to customize a financing solution to suit your business and development goals, enable effective cash management, and improve your total cost of ownership. Fund your critical IT investment and propel your business forward with IBM Global Financing. For more information, visit: ibm.com/financing



© Copyright IBM Corporation 2018

IBM Corporation
Route 100
Somers, NY 10589

Produced in the United States of America
January 2018

IBM, the IBM logo and ibm.com are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at www.ibm.com/legal/copytrade.shtml.

This document is current as of the initial date of publication and may be changed by IBM at any time. Not all offerings are available in every country in which IBM operates.

THE INFORMATION IN THIS DOCUMENT IS PROVIDED "AS IS" WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY OR CONDITION OF NON-INFRINGEMENT. IBM products are warranted according to the terms and conditions of the agreements under which they are provided.
