Analytics in the Cloud

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1. Executive Summary

Cloud-based applications have been mainstream since Salesforce.com brought customer relationship management to the masses in the 2000s. Cloud implementations had the advantage of providing faster time to provisioning and a significantly different cost structure from traditional software implementations based on on-premises installations. However, analytics and business intelligence in the cloud were slower to reach widespread acceptance. First, analytical and business intelligence applications have different data schema implementations from traditional operational applications. These applications can be uniquely configured for individual organizations and are often more difficult to implement on a mass basis than they might be for an operational system.

To determine the status of Analytics and Business Intelligence in the Cloud, Enterprise Management Associates (EMA) embarked on an end-user research study to look at the current state of cloud-based analytics. For this research, EMA invited pre-qualified business stakeholders and information technology professionals to complete an extensive web-based survey. As part of the survey, 257 panelists responded to an invitation to provide their insights on cloud-based analytics and business intelligence strategies and implementation practices. To offer a neutral enterprise view, the respondent pool was also balanced. Business stakeholders represented 44% of respondents. Technologists were 56% of the panel. The survey was executed in November 2014 with respondents from around the world including North America and Europe.

As part of the study, survey panelists were asked to identify the depth and extent of their participation in cloud-based strategies for analytics and business intelligence. More than 32% of respondents indicated that they had adopted cloud-based strategies and those strategies were an important part of their business. Another 24% of respondents indicated those strategies were adopted and essential to their businesses. This places a majority (56%) of the EMA panel into an extensive cloud-based strategy category or classification.

EMA panelists were asked to share the industry with which they identify. A wide range of industries was included in the survey panel with eight separate industries representing at least 6% of the panel respondents including manufacturing, finance, retail, and health care. Looking at industry segments based on their self-identification associated with their cloud strategy, the retail industry segment has a significant percentage associated with an extensive cloud strategy, closely followed by utilities providers and public services.

Key components of cloud-based analytics and business intelligence strategies are the attributes of implemented cloud-based analytic projects. These projects are the embodiment of the organization’s budgets, financial drivers, and technical requirements. Their goal is to meet the objectives of the business stakeholders and line of business departments who will ultimately be the data consumers of these analytical applications.

EMA panel respondents were also asked about the depth of their implementation experience with cloud-based projects. Organizations reporting a limited number of projects are still attempting to understand how cloud-based solutions for analytics impact their organization and how they can establish and implement best practices. While a larger number of projects can indicate that an organization fully realizes the strengths of cloud-based implementations, this level can also indicate that the organization has established a mature approach to those projects and may have created a center of excellence to manage and advise on those projects. Approximately 18% of EMA panel respondents indicated that
either one or two projects were associated with their cloud-based analytical initiatives. Over 41% of respondents said they had three to four projects within their organization. The remaining 40% indicated their organizations had over five projects associated with their cloud-based analytics strategies. In total, over 800 individual projects were detailed by the 257 respondents, which is an average of just over three projects per respondent. A scale of implementation maturity was established based on project implementations with Robust, Maturing, and Early Stage levels.

Looking at the overall project sponsors for the implementations above, information technology stakeholders are the primary sponsor. The next four sponsors, or line of business stakeholders, by percentage—Sales (14.2%), Finance (13%), Human Resources (10.3%), and Marketing (10.2%)—have significant influence on the implementation of cloud-based projects. This finding is reflected in the type of project goal and objectives associated with individual projects. Sales needs insight into sales analytics projects. Finance desires to have controls and visibility into risk management projects. Marketing requires actionable intelligence into the activities associated with cross-sell/up-sell. As organizations become more mature with their implementations, line of business stakeholders have an increasing impact on project sponsorship. For organizations at the Robust level of cloud implementation maturity, corporate executives have the most influence.

Various options for the implementation of a cloud-based analytical environment are available, whether it be a data warehouse, data mart, discovery environment, or data integration platform. This includes infrastructure as a service (IaaS), platform as a service (PaaS), software as a service (SaaS), and managed services. Each of these options has value to an organization implementing cloud-based infrastructure. IaaS not only allows organizations to maintain control of their infrastructure, but to move the physical location and administration of the underlying hardware outside the data center. PaaS provides the opportunity to continue the encapsulation of technical implementation aspects from their development and implementation teams. SaaS allows for the complete encapsulation of implementation and allows an organization to focus on operation of the environment. Managed services move all of the operation and administration elements to a third party and provide an organization with the opportunity to focus on the value that comes from the functionality being “outsourced” to the service provider.

All of these components come together to provide an excellent view of cloud-based analytics and business intelligence strategies around the globe in terms of strategy, project implementation, and horizontal infrastructure.

1.1. Key Findings

- **Cloud-Based Strategies Are Important** – 56% of respondents have identified their organization as having cloud-based analytics as Currently Adopted and Essential or Currently Adopted and Important in their organization.

- **Not Just A Single Project** – Over 40% of organizations indicated they had over five projects associated with their cloud-based analytics strategies.

- **Locking Data Down** – Security was the single most critical component (54.5% of respondents) to cloud-based analytics implementations, according to panel respondents.

- **Speed and Dependability** – Outside of Security, respondents ranked Reliability, Performance, and Costs as the most critical components for the cloud-based analytics implementations. Developer Support, Manageability, and Self-service and Vendor Brand were, relatively, the least critical components.
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• **Cost Certainty and Length of Engagement** – Organizations prefer to utilize annual or multi-year subscription agreements with their cloud service providers. Most often vice presidents will approve this type of expense, but approval is moving “downstream” to lower levels of the organization.

• **Budgets are Expanding** – Over 56% of the respondents indicated that their budgets fell within a band of $1 million to $25 million on an annual basis for 2014. Over a quarter of respondents indicated that this was an increase of 10-25% over 2013.

• **Line Of Business Is Bringing The Checkbook** – Over half of organizations indicated that they were receiving funding from sources outside of the IT department budget. These line of business contributors were most likely to contribute 21-25% of the cloud-based analytics and business intelligence budget.

• **Businesses Want Speed to Value, Not Time to Heartbeat** – The primary business driver is to decrease the time to delivery of analytical and business intelligence. Most important is Improved Speed to Implementation on Analytical Projects (16.5%). The second is Adaptable/Flexible Implementations (15.7%) associated with cloud-based analytical initiatives.

• **Technical Agility Drives Requirements** – Aside from Data Security, the most important Technical Drivers are time-to-value for cloud-based analytical initiatives. Improved Technical Agility (15.2%) and Improved Software Availability (13.4%).

• **Leading Project Objectives** – Sales Analytics (19.3%) was the leading Project Goal for organizations implementing cloud-based analytics and business intelligence. Risk Management (15.1%) and Marketing Analysis (13.1%) are ranked second and third.

• **Who Is Sponsoring Projects** – Line of business departments, Sales (14.2%), Finance (13.0%), Human Resources (10.3%), and Marketing (10.2%), all have significant influence on the cloud-based analytics projects implemented by the survey panel.

2. **Business Intelligence and Analytics in the Cloud**
Cloud-based applications have been mainstream since Salesforce.com brought customer relationship management (CRM) and sales operations to the masses in the early 2000s. Cloud implementations had the advantage of providing faster time to implementation and a significantly different cost structure from traditional software implementations based on on-premises data center installations.

However, analytical and business intelligence installations in the cloud were slower to reach widespread implementation and acceptance due to several factors. First, analytical and business intelligence applications have vastly different data model implementations from traditional operational applications such as CRM or enterprise resource planning (ERP). These applications can be uniquely configured for individual organizations and are often difficult to implement on a mass basis than they might be for an operational platform.

Next, the configuration of the “front end” of business intelligence platforms such as reports, dashboards, and self-service data discovery components often do not follow a standard process. Each organization and department within the organization may have individual configurations based on their business model and/or individual analytical requirements. Again, this type of individualized configuration does not lend itself easily to implementation on a mass customization basis favored in cloud-based infrastructures.
Finally, the amount of information passing between source systems and analytical platforms makes security of information in transit to a cloud-based infrastructure and within that cloud-based infrastructure a much larger issue than those of strictly operationally-based applications. The high volume of data comes from the fact that analytical applications generally have much larger datasets than those associated with operational platforms. The increase in overall data usage increases the likelihood that a security issue may occur.

2.1. Cloud-based Strategy and Maturity
How organizations look at cloud-based strategies is important. For organizations that embrace cloud-based approaches, there are a number of opportunities to expand their processing, storage, and distribution options beyond their on-premises data center. For those that do not adopt cloud-based strategies, there are fewer options.

As part of the 2014 EMA Cloud-Based Analytics and Business Intelligence study, survey panelists were asked to identify the depth of their strategies on cloud-based strategies for analytics and business intelligence. More than 31% of respondents indicated that they had adopted cloud-based strategies and those strategies were an important part (Currently Adopted and Important) of their business. Another 24% of respondents indicated those strategies were Currently Adopted and Essential to their businesses, placing 56% of the EMA panel into an extensive cloud-based strategy.

The remaining 44% of EMA panel respondents were distributed into the Currently Adopted and Supplemental, Planned for Adoption, and Being Researched categories. These categories are banded into the following cloud strategy segments.

- **Full Cloud Coverage** – This category encompasses the Currently Adopted and Essential and Currently Adopted and Important strategy categories and is meant to identify those organizations that have fully embraced cloud-based strategies as part of their business.

- **Partly Cloudy** – This category encompasses the Currently Adopted and Supplemental and Planned for Adoption strategy categories. The Partly Cloudy strategy represents organizations that have made the initial steps toward the implementation of a cloud-based strategy.
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• **Scattered Clouds** – This category encompasses the **Being Researched** and **Not Planned for Adoption** strategy categories. **Scattered Clouds** denotes organizations that are still in the midst of making a decision on their implementation of cloud strategies.

Associated with the vision associated with cloud-based analytical and business intelligence strategies is the actual implementation of those strategies. EMA panelists were asked about their individual cloud-based projects for analytics and business intelligence. Through these projects, you can see the maturity of cloud-based implementations as an extension of the panelists’ cloud-based strategies.

Organizations reporting a limited number of cloud-based analytical or business intelligence projects show that they are still attempting to understand how cloud-based solutions for analytics impact their organization and how they can establish and implement best practices. A large number of projects can indicate that an organization fully realizes the strengths of cloud-based implementations. This level can also indicate that the organization has established a mature approach to those projects and may have created a center of excellence to manage and advise on those projects.

Approximately 18% of EMA panel respondents indicated that either one or two projects were associated with their cloud-based analytical initiatives. Over 41% of respondents said they had three to four projects within their organization. The remaining 40% indicated their organizations had over five projects associated with their cloud-based analytics strategies.

These individual project indicators are banded into the following **Cloud Maturity** segments.

- **Robust** – This segment incorporates the **5-7 Projects**, **8-10 Projects**, and the **11+ Projects** categories. It designates those organizations that have fully embraced cloud-based implementations just as an organization whose strategies implement the **Full Cloud Coverage** strategy category.

- **Maturing** – This includes the **3 Projects and 4 Projects** categories. The **Maturing** segment and the **Partly Cloudy** strategy characterize organizations that have cloud-based strategy that is developing and sets the stage for entry into the **Robust** maturity segment.

- **Early Stage** – This segment contains the **1 Project and 2 Projects** categories. **Scattered Clouds** and **Early Stage** indicate an organization that is working through the initial components of cloud-based strategy and implementation.
2.2. Mature Features and Functions

There was a time when utilizing a cloud-based platform meant that compromises relating to functionality and features were required. However, that time is behind us. Cloud-based implementations of analytical and business intelligence platforms have matured to the point where both in terms of feature/function lists and end-user sentiment they are on a par with their on-premises licensed counterparts.

In terms of platform value and high level architecture, members of the EMA survey panel indicated that cloud-based platforms had a significant advantage over on-premises solutions. Cloud-based platforms lead in all areas of these core components.

EMA survey respondents indicated there is parity between On-Premises platforms and Cloud-based implementations for Total Cost of Ownership and Technical Distribution. This parity of platform types is even stronger than the end-user opinion about the value of on-premises platforms in these areas.

With cloud-based platforms starting to be a favored implementation strategy for high-level platform value, the question becomes:

How do end-users view individual components of platforms as part of their importance to a cloud-based platform?

The following graph shows the overall importance of individual features to a cloud-based implementation. The bars that trend to the right side of the graph indicate a higher importance to end-users of the implementation of features for cloud-based solutions.
Naturally, for cloud-based platforms that are outside of the control and “influence” of an on-premises data center, Reliability and Performance are the top two feature/functions for cloud-based analytical platforms. These attributes are key to the establishment of confidence in an out-of-data center implementation.

The backing of analytical applications Developer Support and End-User Support is also important. Because cloud-based implementations have constantly evolving feature/function sets, it is important to provide the developers who are creating the analytical applications and the business stakeholders who are using and often-times doing their own configuration with the information that they need to effectively utilize a cloud-based analytical platform.

2.3. Importance of Security
Security is the most important component of a cloud-based solution. When information and data processing leaves the confines of an on-premises data center, the importance of security becomes acute. Nearly 55% of EMA panelists indicated that Security was Extremely Critical to their cloud-based analytical implementations.
While there have been no significant breaches associated with analytical platforms based on cloud architectures, there are plenty of examples of how security breaches negatively impact the perception of overall corporate and platform confidence. Recent security breaches at major US-based retailers and a significant breach of security at an international movie studio and gaming provider highlight these issues. Because they take the issue of cloud-based analytical platform security seriously, many organizations have focused on mitigation steps to prevent breaches from happening. Encryption of Data at Rest in a Data Store (22.8%) and Audit Trails on Data Access and Manipulation (16.7%) are the top two techniques for organizations that have implemented cloud-based platforms to secure their information from these situations.

Also included in the top five techniques are Automation of Data Retention Policies (15.9%), Advanced Connection Authentication (15.3%), and Masking Data in Queries Based on Security Privileges (14.5%). Automated retention policies allow for both business and information technology (IT) stakeholders to set retention business rules and allow platforms to manage the removal/deletion of data that is no longer needed for active analytical processing. Advanced connection authentication ensures that appropriate communications over potentially non-secure networks prove their identity(s) to maintain secure connectivity.

Data masking offers a unique solution to avoid an “all-or-nothing” security strategy. By masking or partially encrypting information between the application and users based on their role and permissions, organizations can offer up varying access levels without having to manage different datasets or limiting internal resources and external partners’ access to the information that they require on an ongoing basis.

2.4. Capital Budgets and Operational Expense
Cloud-based implementations have always held the attraction of lowering costs for organizations. Initially, cloud-based implementations had the advantage in terms of duration of platform provisioning. Instead of measuring the implementation of a platform in months, or as a best-case scenario, weeks, cloud-based implementations could be implemented in days, if not hours. Reduced time-to-implement lowered the overall cost of implementation by allowing organizations to execute on initiatives in a relatively short amount of time.
Cloud-based platforms have continued to provide this level of implementation speed and reduction of cost for procurement, implementation, and execution. However, cloud-based platforms are starting to evolve past simply providing a faster time to implementation, maturing into solutions that provide a higher level of value in terms of the overall total cost of ownership (TCO).

When asked about **Financial Drivers** associated with cloud-based analytical and business intelligence platforms, the EMA survey panel indicated that minimizing their hardware and infrastructure costs was still their top financial consideration.

![Diagram 8]

However, the next three drivers are related to a wider TCO calculation that deals with the overhead associated with the implementation of an analytical or business intelligence platform. The **Reduced Implementation Costs** category shows that organizations are looking for ways to reduce the costs associated with their analytical and business intelligence platforms. The **Reduced Administration Costs** category shows how organizations are utilizing their cloud implementation to align their staff allocations along with their implementation costs. Finally, the **Reduced Training Costs** category shows the support of developers and end users (mentioned above) to optimize the costs associated with their education and skills acquisition.

Considering these **Financial Drivers**, EMA survey respondents were asked about how critical overall costs are for their cloud-based analytical and business intelligence solutions.

![Diagram 9]

Cloud Criteria: Costs
In this area, **Costs**, while important, were not at the same level as some of the other components for cloud-based platforms, but still important in the minds of the EMA survey panel.

Following the core model of the cloud-based subscription as opposed to a licensed agreement for the use of and implementation of an analytical and business intelligence solution, the EMA survey panel was asked about their preferences on payment for their cloud-based implementations. The graph below represents how organizations preferred to pay for their cloud-base subscriptions: **Utility-based pricing**, **Monthly** pricing, **Annual** subscriptions, or **Multi-year** subscriptions.

Organizations indicated that they are much more interested the financial stability and cost certainty associated with annual subscriptions or multi-year agreements than they are with the potential tactical savings associated with the monthly or utility-based pricing.

With this focus on yearly or multi-year agreements, the budgetary approval for these implementations stays at a relatively high level.
The **Vice President via Capital Expense** category dominates the approval for the overall budget. However, when the cloud budget is considered, the authority starts to move down to lower levels of responsibility. “Losses” from the **Vice President via Capital Expense** category are evenly distributed among the next three categories: **Business Unit Head via Capital Expense**, **Department Head via Capital Expense**, and **Department Head via Operational Expense**.

### 3. Sponsor Information

Founded in 1989, MicroStrategy (Nasdaq: MSTR) is a leading worldwide provider of enterprise software platforms. MicroStrategy's mission is to provide enterprise analytics, mobility, and security platforms that are flexible, powerful, scalable, and user-friendly.


#### 3.1. Product Description

MicroStrategy Secure Cloud offers an integrated and optimized cloud business analytics platform that combines infrastructure, technology, people, and processes to offer as an analytics as a service to customers. MicroStrategy Secure Cloud builds on MicroStrategy Analytics, and adds data integration (ETL) and database technology to provide an agile, high performance, and elastic analytics platform.

MicroStrategy Secure Cloud provides customers the MicroStrategy Analytics Platform and MicroStrategy Mobile offerings through a Platform-as-a-Service (PaaS) solution hosted in the cloud. In addition to the MicroStrategy Analytics Platform and MicroStrategy Mobile, MicroStrategy Secure Cloud also offers data integration ETL and data hosting services. The MicroStrategy Secure Cloud PaaS provides customers with infrastructure (data center space, rack space, power, cooling, and servers), technology platforms (analytics, mobile data integration, and data hosting), operations, support, and expert analytics practitioners for a subscription fee with no upfront capital investment. MicroStrategy Secure Cloud can offer improved time to market, higher performance, and lower overall total cost of ownership compared to traditional on-premises deployments.

MicroStrategy analytics are also offered on the Amazon AWS marketplace as a self-service customer managed solution where customers can launch their own MicroStrategy environments and start using full MicroStrategy Analytics Platform offering at a subscription or yearly fee.

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**PRODUCT HIGHLIGHTS**

**Vendor Name:** MicroStrategy  
**Product Names and Functions:** MicroStrategy Secure Cloud  
**Vendor contact:** info@microstrategy.com  
**Availability:** Generally Available
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Key features of MicroStrategy Secure Cloud include:

- **Agile Rapid Application Development And Secure Deployment** - MicroStrategy Secure Cloud provides the infrastructure, technology, processes, and professional services to empower customers to develop and securely deploy applications. The entire service has been pre-packaged and optimized, and is supported by MicroStrategy's analytics practitioners. This solution allows customers to get to market quickly and react to business changes as they happen.

- **High Performance Analytics Application** - MicroStrategy Secure Cloud combines the high performance characteristics of the MicroStrategy Analytics Platform and MicroStrategy Mobile with high performance servers and network infrastructure. This integration allows customers to deploy analytics and mobile applications on demand, allowing them to serve their customers quickly and efficiently.

- **Elastic Capacity With No Capital Investment** - MicroStrategy Secure Cloud allows customers to get started with no upfront capital investment in infrastructure. Customers can start small and increase their capacity on demand.

- **Low Overall Total Cost Of Ownership** - IT application costs are driven by capital investments and the personnel cost associated with hiring a staff of experts to build, maintain, and tune a large-scale environment. MicroStrategy Secure Cloud delivers this high performance, tuned, and monitored environment as a service, lowering overall total cost of ownership.

- **Global Availability** - Leveraging AWS, the MicroStrategy Analytics Platform is now available in all AWS data centers spanning 11 regions on 5 continents.
About Enterprise Management Associates, Inc.

Founded in 1996, Enterprise Management Associates (EMA) is a leading industry analyst firm that provides deep insight across the full spectrum of IT and data management technologies. EMA analysts leverage a unique combination of practical experience, insight into industry best practices, and in-depth knowledge of current and planned vendor solutions to help EMA’s clients achieve their goals. Learn more about EMA research, analysis, and consulting services for enterprise line of business users, IT professionals and IT vendors at www.enterprisemanagement.com or blogs.enterprisemanagement.com. You can also follow EMA on Twitter, Facebook or LinkedIn.

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