OVERVIEW OF BUSINESS INTELLIGENCE ON THE CLOUD PLATFORM

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Abstract

With the increase in productivity and marketing, enterprises are gradually turning more towards Cloud Computing (CC) based tools using file collaboration and storage (Dropbox, Box), Customer Relationship Management (CRM), online and help desk software (Zendesk) and applications (Salesforce). These applications are hosted on the virtual network (Internet). Business Intelligence (BI), a new technology-driven process circumscribes applications, tools, and frameworks for collecting the data from interior sources and exterior sources. Using BI, enterpriser prepares the database for the analytical study, development process and to run queries against the client requirement, generate reports and data visualizations to create methodical outcomes for taking corporate decisions as well as for the use of operational process. The merging of Cloud Computing (CC) and Business Intelligence (BI) are an idyllic match. Business Intelligence (BI) provides the precise information to the authentic client at the exact time, and Cloud Computing (CC) provides a lightweight, agile approach to access BI tools and applications. Accordingly, the use of Cloud Business Intelligence (CBI) is a complete game-changer over the traditional Business Intelligence (BI). Clients are slowly moving from in-house to Cloud Business Intelligence (CBI). In the future it is expected that Business will continue shifting towards Cloud for capturing the mid-size market. This paper focuses on a broad overview of Cloud Business Intelligence (CBI). The aim of this paper is also to render a more elaborate and complete understanding of the issues and challenges related Cloud Business Intelligence (CBI) which will be a source of information related to leading Cloud Business Intelligence (CBI) vendors.

Keywords: Cloud, Cloud Computing (CC), Business Intelligence (BI), Cloud Business Intelligence (CBI), Business.

Introduction to Cloud-Buisness Intelligence

Overview of Cloud Business Intelligence (CBI):

Cloud Computing is noticeably varying the approach of business vision with the use of information technology functions [13]. The new concept poses numerous interesting challenges and opportunities on product delivery and vendors come within reach of providing Business Intelligence clarification in the structure of Software-as-a-Service (SaaS) [13]. For Business Intelligence (BI) software providers, this new concept of product delivery poses numerous interesting challenges and opportunities, as vendors consider their approach to providing their BI solution in the form of Software-as-a-Service (SaaS)[13].

Cloud Business Intelligence (BI) applications are installed on internet (virtual network system). Cloud Business Intelligence (BI) applications are used by buisness organisations to provide access to Business Intelligence (BI) related data business analytics, dashboards and KPIs[1]. Enterprises are gradually turning to tools based on cloud example using file collaboration and storage (Dropbox, Box), Customer Relationship Management (CRM), online and help desk software (Zendesk) and applications (Salesforce)[1].

The new delivery models based on Business Intelligence are taking place on the cloud as an active approach to increase the profit [2][3]. Even though it is not likely, clients will swiftly substitute their on-premise Business Intelligence solutions in support of Cloud Business Intelligence alternatives, it is pragmatic that there are a small number of justifiable use cases in which the Cloud Business Intelligence model would be valuable and
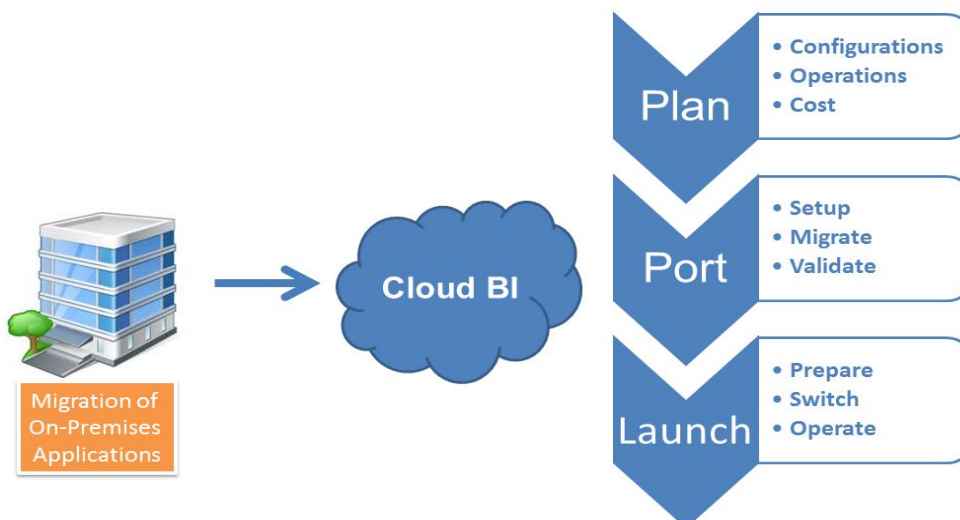
significant[2][3].

Cloud deployment models:

Infrastructure-as-a-Service (IaaS) handles virtualized platform, servers, networking, operating system environments and storage. *Platform as-a-Service (PaaS)* develops on Infrastructure-as-a-Service and additionally comprises managed middleware (BI development services, application servers, data integration services, database management systems). *Software-as-a-Service (SaaS)* extends prior stack to integrate the application layer [4] [5] [6].

Cloud Business Intelligence (CBI) adoption area:

Very small size and Medium size businesses had used the horizontal Business Intelligence tool for standalone delivery along the relational database as the primary source of data with audit reporting and scrutiny applications. **Large size businesses** had used the horizontal tool to having IT sandbox where project testing and evaluation can occur far from the production environment [14].

Businesses system and application integration had used a prototype or framework (application based) for analysing and reporting on client-detailed functional solutions and customer-specific domain result more rapidly [14].

Drivers of Cloud Business Intelligence

The drivers favouring Cloud Business Intelligence (CBI) in the operational and finance domain area are Implementation and Deployment speed, Availability On-demand, Flexibility; Core strength and Lower totality cost [7]. Cloud Business Intelligence (CBI) immediately provides availability of exclusive reliance over extended periods allied with application deployment and infrastructure acquisition which has significantly decreased the Business Intelligence implementation time slot.

Cloud Business Intelligence (CBI) immensely influences computing strength accessible on the WWW, up-scale and down-scale, based on varying requests. Cloud Business Intelligence (CBI) had outsourced running of business intelligence applications to experts and focused on their hub capabilities [7]. Cloud Business Intelligence (CBI) had transformed several parts of cost-effective pricing models, capital outflow to operational outflow and pay per-use model, etc.

Cloud Business Intelligence (CBI) had supported mobile phone and remote end users with browser-based right to use and manage the whole thing from their cloud platform to cloud database management, from the cloud data warehouse layer to the logical analytics platform[7][8].

Concerns on Cloud Business Intelligence (CBI)

Various issues and challenges have resulted in a slow adoption rate of Cloud Business Intelligence (CBI). A number of issues are specified in the section. The common concern is security of data which ensures confidentiality, integrity and availability while utilizing cloud [9]. Organizations feel that the security issue is a barrier which is without a solution. Though, as further business organizations shift towards Cloud business it is expected that the security concerns will get reduced with time and new countermeasures will be developed.

In several cases, the Cloud business personnel make a secure domain area available which is more than what client sites already have. Moreover, it is not rapid progress towards cloud is not feasible and a phased approach is generally suggested [10]. There is no co-existence model until the Cloud Business Intelligence (CBI) market is more established. Lack of control is another issue due to which data ownership, service reliability challenges and data control remain major reasons for customer concern.

Thus, it is tough to get Service Level Agreements (SLAs) from cloud providers. Due to the availability of many vendors it is hard to choose the correct vendor as per varying needs and capabilities. The standardization of pricing models is also an issue for the client in the selection of their desired choice. The performance depends upon the size of the cloud data warehouse and latency significance if a large amount of data is processed and resulted as output at client site. To over look these problems, companies need to apply IT governance and service delivery standards [12].

Cloud Business Intelligence (CBI) Models [7]

A. Business Intelligence (BI) for Public cloud based IaaS (Infrastructure as a service)	**IaaS vendor** • *Rackspace* • *Savvis* • *Amazon* • *GoGrid* • *Pay-as-you-use model* Organizations deploy their Extract, Transform and Load (ETL), Database management System (DBMS) and Business Intelligence (BI) software. Limitations of vendors: Maintenance of the BI/Data Warehouse (DW) infrastructure.	
B. Platform as a Service (PaaS) for (Business Intelligence and Data warehouse) BI/DW	Organizations deploy the Business Intelligence and Data warehouse (BI/DW) model on public cloud for building individual cloud-based BI model.	**Product Vendors** • *AsterData MPP on Amazon EC2,* • *Teradata Express on Amazon EC2* • *IBM Cognos Express on Amazon EC2,* • *Vertica/RightScale/ Talend/Jaspersoft on Amazon EC2.* **Use cases** • *Custom Analytic applications,* • *Enterprise BI systems,* • *Data Mining,* • *Prototyping,* • *short-lived BI projects*

Two options of vendors in PaaS

1.   **Multi-vendor DW/BI PaaS**
   - *RightScale/*
   - *Vertica/*
   - *Talend/*
   - *Jaspersoft*

(PaaS offering on Amazon EC2).

Multi-vendor DW/BI PaaS offers, file based data integration, uploading files of data and processing of the data for loading into the DW/BI database of Platform as a Service (PaaS).

A number of single vendor Platform as a Service (PaaS) offers only inconsequential data integration in which there is no full systematic ETL including data quality [7].

2.   **Single:**
Single vendor PaaS

   - *GoodData,*
   - *SAP Business Objects On-Demand,*
   - *Birst,*
   - *Indicee,*
   - *PivotLink*

The vendor provides pre-built integration with cloud-based data integration tools (SnapLogic, Informatica cloud and Boomi) to incorporate data ahead of passing the data batches to them.

Conclusion

Cloud Computing is emerging as a new technology in today's world having advantages like cost benefits, implementation flexibility, speed implementation and availability. Future Business Intelligence will increase its productivity by adopting Cloud. Increased infrastructure needs, random load volumes, increased investment, high development, longer duration provision and maintenance costs are the present demand which are being fulfilled with the use of Business Intelligence and Data warehouse (BI/DW) implementations on Cloud.

Even though primarily cloud-based solutions were developed for Small and medium business (SMB's) companies which lack in IT resource availability or assets to use on creating and maintaining software and hardware infrastructure, now huge organization are also accessing cloud for innovative business solutions and enhancement of existing data centre competence.

With regard to Cloud Business Intelligence some risk improvement strategies are recommended like data security, various pricing models offered by vendors, acceptance of Service-Level Agreements (SLAs), actual application usage, Double-check additional source data licenses and detailed cloud to on-premise migration strategy.

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