Using Cloud Transforming for Big Network Management Procedure

Nikolay N. Hranov

Abstract: *This research is addressed on an overview of a specialized system for the migration/assimilation of a hybrid enterprise network system with the possibility of embedded identification, through a remote encrypted connection to a new cyber ecosystem, without the active process ceasing to function until the first system is finally assimilated into the new one, without being disturbed the balance of its cyber security.*

Keywords: Cloud, Big Network, Management, Network System Cyber Security

I. INTRODUCTION

The choice of methods for carrying out the research is based on the nature of the set goal, respecting the principles of precision, objectivity, unity of analysis and synthesis, and discretion. Given the specificity of the problem under consideration and the field of research, a qualitative research approach was applied, which focuses on completeness, objectivity and accuracy of information. Scientific and research methods of conceptual and functional modeling, as well as theoretical and comparative analysis with a critical aspect, cause-and-effect analysis, systematization, documentation and synthesis were selected.

II. MAIN IDEA

The public cloud is implemented,

built and managed by Oracle. Customers have limited visibility into the service architecture and cannot perform certain specific security or service settings. These settings are selected by Oracle for all customers.

A. Private cloud

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i. Advantages of Private Cloud are

Data and information control. The IT department of the respective company controls the data security itself and optimizes the network to be more efficient.

Nikolay Hranov*, Ph.D. Scholer, New Bulgarian University, Bulgaria. Email: niki.nnh@gmail.com, nikienbu@gmail.com, ORCID ID: 0009-0006-9248-6918

Reducing long-term costs. In the long run, private clouds come out cheaper than public clouds because the company owns them rather than renting them. Easy integration. The applications and software used can easily be moved to the private cloud and provide the user with access to their applications and services with improved reliability [1].

ii. Disadvantages of Private Cloud are

Private clouds are only available in the designated environment and are very difficult to make public.

B. Hybrid Cloud

- It consists of two or more deployment models. For example, a hybrid cloud can contain both public and private cloud and can easily segment data and transfer it between clouds when needed.
- The advantages of Hybrid cloud systems are:
- Oracle has 24x7 employees monitoring specific customer KPIs. The centers are managed 100% by employees with no criminal record.

C. Community Cloud

A community cloud is a model that provides access to multiple organizations that have similar interests in collaboration. This may look like a private cloud for one government organization and a public cloud for other government organizations that share community cloud services.

III. REVIEW CRITERIA

From the generally considered options, the "HYBRID CLOUD" model was used:

Software as a Service or sometimes the term 'Software on Demand' ie. on-demand is a software delivery model in which the software and associated data are hosted centrally and accessible to users through a client program using a web browser over the Internet [2]. Software as a Service is a cloud-based delivery model for most business applications including accounting, collaboration software, customer relationship management (CRM), enterprise resource planning (ERP), invoicing, human resources management resources (HRM) and others. Oracle provides hosting of applications to the customer, and the customer can access those applications over the Internet. In turn, the customer saves on the maintenance of its own infrastructure, and Oracle has different types of subscriptions for this. Many businesses find this solution ideal as it enables them to work with the most innovative technology available.

Also, the automatic updates offered reduce the burden on internal resources. Customers can also manage fluctuating loads by adding more services. ERP – this service enables the company to track basic work processes such as production, deliveries and inventory management in real time. ERP systems monitor the resources with which it is operated (available cash, raw materials and production capacity) and the fulfillment of the company's obligations (customer orders, delivery requests, salary payments), regardless of which department entered the information into the system. ERP facilitates information flow between different functions inside the enterprise and manages relationships with stakeholders outside the company. Companies that use the Oracle ERP system are: ING, KPMG, Orange, MEK Enterprises, etc. HCM - Human Capital Management Service. This service is a set of practices related to human resource management. These practices are focused on the organizational need to provide specific competencies and are applied in three categories: workforce acquisition, workforce management, and workforce optimization. Companies that use Oracle's HCM system are: T-Mobile, American Airlines, deutsche Post, Dell, HP, Siemens, Toyota, etc. CX - a service for analyzing how the customer feels as a customer of a given company (Customer Experience). Customer experience, also known as CX, is a customer's overall perception of their experience with a particular business. CX is the result of every interaction a customer has with a particular business, from navigating the website to speaking with customer service and receiving the product/service they purchased. Everything you do affects the perception of customers and their decision to return. That's why this Oracle service is key to the success of a business. Companies that use the CX system provided by Oracle are: Hitachi Consulting, Panasonic, Yahoo, Hertz, Vodafone, Canon, British Airlines, Airfrance, ING, PayPal, etc. SRM – is a service that includes: monitoring social media conversations about your brand, analyzing interactions and sentiments, interacting with customers and developing deeper market insights. One can imagine who the customers of these services might be and why Oracle has not disclosed them.

PaaS – Platform as a Service

This type of Oracle service enables the customer to have access to development tools and complete build of a mobile or web application without any other investment or support of the underlying infrastructure. Oracle has all these applications installed, and the customer can access them freely and from anywhere via the Internet. Even Oracle offers innovative technologies such as artificial intelligence, chatbots, blockchains, Internet of Things (IoT). It also includes solutions such as:

Application Development - Oracle enables different teams to easily organize their work, access data and computing resources, and build, train, deploy and manage different models in the Oracle cloud service. The platform makes diverse teams more productive and allows them to deploy a larger volume of work, even using machine learning. Oracle offers the following solutions in this direction:

Container Engine for Kubernetes - cluster management service

Container Pipelines - CI/CD automation system

Events Service - a service allowing users to easily track changes in their resources

Java - easy and fast deployment of Java applications

Developer - A development platform that includes tracking issues in the code and keeping it in one place for easy tracking of changes.

API Platform - managing the lifecycle of an application

Data Science – enables teams to more easily organize and plan their work during application development

Administration of a large volume of data (Database Management) - here Oracle provides the following solutions:

Autonomous Data Werehouse - is a fully automated and independent high-performance service equipped with the best Oracle database.

Autonomous Transaction Processing – a fully automated database service tuned and optimized for transaction processing or mixed workloads. The service provides a self-managing, self-anchoring, self-healing database that can instantly scale to meet customer needs.

Database Cloud Service (Virtual Machine) - consists of a single 11g, 12c or 18c database instance on 2 OCPUs with the ability to dynamically scale up to 52 OCPUs. Available storage configurations range from 5.4 to 51.2 TB of local storage.

Exadata Cloud Service - Enables you to run Oracle Databases in the cloud with the same extreme performance and availability experienced by thousands of organizations that have deployed Oracle Exadata before.

NoSQL Database - NoSQL database service that supports JSON, Table and Data Types data types.

Integration of different systems and their management - here Oracle provides the following solutions:

API Platform - A comprehensive API lifecycle management solution that supports agile API development and enables easy tracking of KPIs.

Application Integration – Accelerate project modernization by removing barriers between business applications through a combination of machine learning best practice guidance, a library of pre-built adapters, and process automation examples.

SOA Cloud Service - Is an integration platform that quickly provides a completely new platform on which to launch the development and deployment of new applications. It also provides various types of real-time analytics.

Companies that have trusted Oracle and use the PaaS cloud services are: Fetch Ratings, Emerson, Temenos, Accenture, Siemens.

IaaS - Infrastructure as a Service

In this service, Oracle is solely committed to providing the computing power, data storage and network capacity so that the customer's workloads run smoothly. Customers in this case are responsible for installing, configuring, securing and maintaining any software in the cloud-based infrastructure such as database and software. The following divisions are included in this type of service:

Compute – providing the computing power, which is divided into several types:

Vertual Machine - an ideal place to run applications that do not require special hardware.

Container Registry - a place where all teams can manage Docker images, perform vulnerability analysis. Vulnerabilities or security issues can also be discovered even before images are deployed to containers.

Container Engine for Kubernetes - is a fully managed, scalable and fail-safe service used to deploy containerized applications in the cloud using a certified version of Kubernetes.

Bare Metal Compute – supports applications requiring a large number of cores, large amounts of memory and high memory bandwidth. Customers can build cloud environments with significant performance improvements over other public clouds and on-premises data centers. Storage

Local NVMe SSD - a data storage device that is designed with a high-performance inelastic controller that provides industry-leading performance, low latency and high quality of service.

Block Volumes – enables companies to dynamically provision and manage block storage volumes.

File Storage - file storage service.

Object Storage - accelerates reliable, durable and secure object storage.

Archive Storage – used to store data that is accessed infrequently. All stored data is encrypted.

Storage Gateway - provides access to Oracle services so that a company's data can be protected from the global network [3].

Networking

Virtual Cloud Network - A customized private network that only the customer can access. This includes assigning IP space, creating subnets, routing tables, and configuring firewalls. A customer can have many VCNs, thus providing pooling of related resources.

Service Gateway - provides access to Oracle services so that customer data can be protected from the global network through private connections between the customer and the Oracle service provided.

Load Balancing – offers an option to distribute processes and application resource load to ensure availability.

FastConnect – enables companies to extend their IT infrastructure with dedicated connectivity to Oracle resources.

DNS – allows organizations to create and manage their own DNS zones [4].

Health Checks – enables companies to configure and deploy monitoring and single infrastructure checks using easy-to-manage applications.

Email Delivery – sending automatically generated emails upon fraud detection alerts, multi-factor identity verification, etc.

Security

Identity and Access Management - a service that allows controlling access to cloud resources. Complex logical groups of users can be managed.

Key Management - a service for managing private keys as they are stored in isolated partitions in FIPS 140-2, certified hardware modules or directly in the Oracle infrastructure.

Web Application Firewall – additional protection of web applications from cyber-attacks, which includes protection against bots, DDoS and other types of malicious inbound traffic [5].

Identity Cloud Service - represents a new generation security and identity platform and is designed to be an integral part of the enterprise platform.

Cloud Access Security Broker - is a separate security module that provides advanced threat analysis using user behavioral analysis, additional configurations, system monitoring, detection of shadow IT technologies and alerts when needed.

Database Security – provides data protection such as monitoring for threats from risky users and incorrect configurations, and additionally encrypts information.

Companies that have trusted Oracle and use IaaS cloud services are: Marriot, Dell, Intel, Linkedin, Calvin Klein, Facebook, Symantec.

Analysis of Oracle Cloud Development

Oracle has decided to refresh its SaaS applications twice a year, bringing them up to par with its on-premise software and adding new e-commerce features. It has also decided to increase its data centers – fig.1:

Figure 1. World Oracle Cloud Development - New Oracle data centers planned by 2020

IV. RESULT

By following the data from this research, we have the following results: Much of the data migrated from the business ends up in Web Services - the first choice for 21% of companies surveyed - or Microsoft Azure (25%). SAP's cloud is preferred by 12%, IBM's by 9%, and 6% of companies choose Oracle. When it comes to ERP solutions preferred by businesses in my survey, 54% choose SAP, 29% choose Oracle. Companies have good reason to worry about data migration delays - 94% of CIOs have already had data migration projects that were not planned well enough due to the complexity of the process of moving from on-premise servers to cloud infrastructure. Only ¼ of organizations manage to meet the deadlines for such migrations, with the average duration of one such migration taking 9-12 months.

V. CONCLUSION

Many companies rely on the cloud products provided by Oracle to be able to run their business competitively enough in the conditions in which they find themselves.

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The automation provided by Oracle greatly facilitates these companies, it can even be said that it gives them an edge over others due to the innovations that are provided by Oracle and its cloud services. Oracle is a fast-growing company that keeps a close eye on what businesses need and strives to deliver its new services in the best and most customer-friendly way possible. With the need for modern migration solutions thus created, the Schema Integration Program Method (SCT) is increasingly required: This service is used in heterogeneous migration, the subject of this study. This method serves to convert the existing database schema from one machine to another. It will not be included as a practical example, but it is important to know its meaning. In this type of migration, the program module is installed on a local computer that also uses an SQL tool to initiate a secure pipe connection to the two instances (source and target \target\).

DECLARATION

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REFERENCES

1. G. O. Young, "Synthetic structure of industrial networks (Book style with paper title and editor)," in *Plastics*, 2nd ed. vol. 3, J. Peters, Ed. New York: McGraw-Hill, 2014, pp. 15–64.
2. W.-K. Chen, *Linear Networks and Systems* (Book style). Belmont, CA: Wadsworth, 2003, pp. 123–135.
3. H. Poor, *An Introduction to Signal Detection and Estimation*. New York: Springer-Verlag, 2015, ch. 4.
4. B. Smith, "An approach to graphs of linear forms (Unpublished work style)," unpublished.
5. E. H. Miller, "A note on reflector arrays (Periodical style—Accepted for publication)," *IEEE Trans. Antennas Propagat.*, to be published.

APPENDIX

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AUTHORS PROFILE

Nikolay N. Hranov magister degree of Cybersecurity, candidate for a PHD scientific degree at NBU Bulgaria. He has specialized fully in the field of computer science and cyber security for 20 years. He has earned numerous certifications such as Cisco, MS, S4E14, VPAL, CISM, IT/IS, CISSP, Security+, CEH, CISM, GSEC, SSCP, GCIH, OSCP, CASP. His field of work borders closely with all spheres of business, including state structures of security and development. It specializes closely in the protection of critical information at all levels and spheres of business and life.