



A Literature Review on the Readiness for Providing Cloud Services Locally in Yemen

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Abstract— *Over time, the importance of information and the need to use it are increased. Cloud computing provides data and computing resources to clients as a service. However, cloud computing provides to the end user computing recourses such as software, hardware, and information as a service through the available interface over the Internet to be with more advantages to make the information available and accessible whenever is needed, by using the cloud computing services offers these services. The main purpose of this literature review paper is to develop an understanding of cloud computing adoption. Moreover, this paper forms the basis of our theoretical study. In particular, we review the state of the art of cloud computing and discuss about it aspects and features. In addition, we provide a set of cloud readiness criteria and review cloud migration in some countries that have already shifted to cloud. In this paper, we investigate the readiness to provide cloud services locally, as well as the chances and challenges of combining cloud services with existing infrastructure. Furthermore, the telecom sector infrastructure is suitable to provide cloud services, as the first step to provide the cloud into the network infrastructure of such providers, enabling and enhancing the telecom sector services and infrastructure.*

Keywords— *Cloud Computing services, Cloud Readiness, Cloud Computing Adoption, Yamani Telecom Sectors.*

I. INTRODUCTION

The demand for technology grows so quickly these days. New technologies emerge in most of the areas and they change how organizations and even governments operate. One of the technologies that had a great impact on business models is cloud-computing technology. In fact, cloud computing has become an important platform for organizations seeking to offer computing services over the Internet at less cost.

Since it is important for telecom sectors including internet service provider (ISP) and telecom companies to follow the new trends of technologies, cloud computing has become one of the hottest trends recently. The telecom sector understructure enable the opportunity to provide cloud services. In addition, an important feature

of cloud computing services is to reduce the cost used these data over the firm datacenter. Consequently, this is the reason why many companies use cloud computing over the internet subscribed to cloud computing services from companies outside Yemen.

Furthermore, there are many benefits to use cloud computing for small, medium, and large enterprise businesses migrating to this technology for many reasons such as computing resources, reduced total cost of ownership, on demand services, increased revenue, cost savings, scalability, security, ease of deployment. Admittedly, Cloud computing plays an important role in the early established a new business model. From a computing and business perspectives, cloud computing enables organizations with flexible IT environments as well as a set of technologies such as server virtualization that reduce the resources cost, capacity (ex elasticity), and maintainability (ex: maintenance and management). Above all, cloud computing includes 'pay as you go' for this reason, billing only for services consumed and not fixed costs, and many more features that are needed to use information technology (IT) [4] [9] [13].

Actually, cloud computing appears in many forms in recent years. One of the methodologies to define cloud-computing examples is fog computing, where first suggested by Cisco's network system manufacturer. The fog computing deploys and manages computing tools and resources to facilitate a wide range of geographical areas [11].

On the other hand, the most important challenge is the security and privacy of the information. There are different solutions or suggestions that a company should follow to overcome various challenges and issues [4].

Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of computing resources (eg, networks, machines, systems, operating systems, hardware, software, and services) [2].

That service can be available with minimum management effort and interaction, as well as on demand and available anywhere and wherever it needs [2] [8].

Although there are many definitions for cloud computing, NIST (National Institute of Standards and Technology) defined the cloud as follows:

"Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (for example, networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" [2].

However, cloud computing has the same concept of storing data and sharing computing resources over networks. Thus, studying the implementation of cloud computing in developing countries can be of great help to the many sectors in developing countries. In addition, cloud enhances the availability of new trends services such as Internet, sharing of resources, and hosting services with lower costs [2]. Thus, this explains that the cloud could be helpful in the telecommunication sectors. Furthermore, the new technologies are paradigms of the future cloud computing indicated in recent years [11].

Obviously, several steps are taken by international companies before providing the cloud service to the organization to measure the readiness of an organization. This process is known in some cloud companies providers as modernization evaluation, which is the process of putting together an assessment that helps determine the modernization readiness of organization applications [5].

Therefore, a similar previous study was conducted in Africa, which developed a framework to assist IT managers and decision makers to use evidence-based management principles to determine their maturity of cloud adoption [7].

CLOUD COMPUTING SERVICES ADOPTION

There are many motives explaining the reason that leads organizations to use cloud services. Regardless of what type of cloud services they provide, the type of cloud services can be classified into three different deployment models based on the needs of the organization. Moreover, each brings its own set of advantages and disadvantages.

Before moving to cloud computing services, there are some issues that should be in mind. First, understand the importance of what services should be provided using the cloud, what are the potential risks and are the provided services acceptable for users, as well as the capabilities of the networking infrastructure. Moreover, sensitive information and operations should be classified and considered carefully [31].

Similarly, decision makers are an important factor in adopting cloud computing, along with the general management of construction projects through cloud computing implementation [15]. In addition, there are some research related to governments in some countries that are looking to adopt cloud computing locally. One of these methods is to provide a framework for the adoption of cloud computing with its various adoption and service models [16].

To meet the cloud customer's requirements, cloud computing has developed into several deployment models:

1. The public cloud is available to the public through a service provider. So, any one uses this type of cloud service. Examples Amazon, Dell, Google, etc.
2. Private cloud dedicated to a particular organization where its services cannot be public.
3. The hybrid cloud is a combination between the private and public cloud. Where the resources provided from both the public service provider and the service that dedicated to the organization.
4. Community cloud where the cloud infrastructure is shared by many organizations based on similar needs and wants [2].

The Storage Cloud and Other Cloud Services provide a service delivery model that offers Storage-as-a-Service (SaaS), Platform-as-a-Service (PaaS), and Infrastructure-as-a-Service (IaaS) for all implementation models.

Cloud computing has three main service models:

1. Infrastructure as a Service (IAAS): delivers computing resources on demand. For example, enable operating systems based on the organization needs. Such as Amazon, VMware, IBM cloudburst, Juniper, 3 tera, and Rackspace.
2. Platform as a service (PAAS): allows users to create applications on the Internet without licensing any software, by using the web interface browser with features as an integrated database and collaborated team. Examples of PAAS: Oracle, IBM provides blue cloud computing platform, Google enables to develop application, AT&T, Microsoft provides windows azure, and three tera is for offering applications, and NetSuite for demand services.
3. Software as a Service (SAAS): is software to be delivered and deployed over the Internet. Examples of SAAS: SAP, Oracle, salesforce.com provides CRM solutions in the cloud and applications such as Google calendar and Google Docs provided by Google [2].

Meanwhile, cloud computing arises due to resource outsourcing, virtualized, shared, private and public services, emerging challenges from security breaches, and the increasing need to provide the proper cloud computing infrastructure and services.

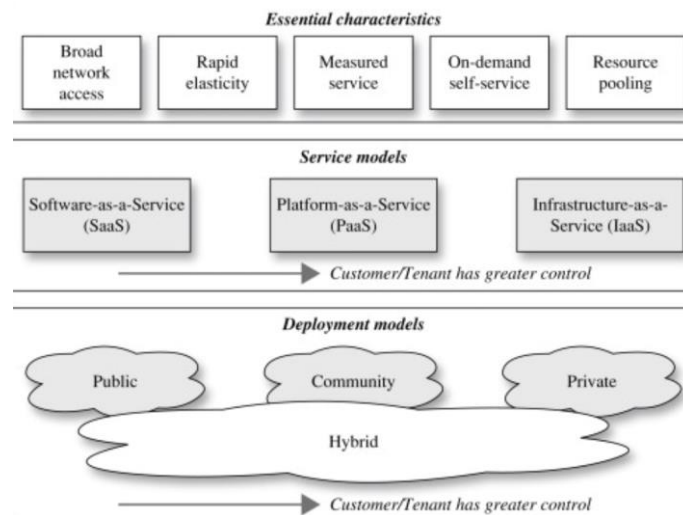


Figure 1: The Cloud Computing deployment model and model services.

Meanwhile, the variety of available services brings applications to the cloud user in many domains, such as HPC, analysis, finance, media and entertainment, content delivery, the Web, and others [9].

In general, many services could be provided to the client based on demand. In addition to the above services, the cloud could provide network or storage as a service [9][10].

The Ready Cloud Computing Services Adoption and the Model Used (STATE OF THE ART)

The demand for technology demands grows up so quickly these days. Without a doubt, cloud technology provides a potential for Yemeni network services to develop a competitive advantage over international telecom companies.

The Countries Adopted Cloud Computing

In this section, we discuss cloud migration in some of the developed and developing countries. This information helps us to have a better perspective of cloud adoption in national level, therefore, gain the ability to analyze the various aspects of this process.

Moreover, cloud computing and its promotion were considered as government guides to strategic planning in many countries, such as United States, United Kingdom, South Korea, Japan, The Nordics, Benelux, Germany, Bahrain and Saudi Arabia [13].

Furthermore, in addition to the countries above there are many countries adopt cloud-computing services and they have the reason of adoption, the following will show an information about those countries that adopt cloud computing locally in their countries.

Cloud Computing in China

The government of China is extremely supportive of cloud computing. The government has proposed a cloud development plan to initiate a national cloud called the China Cloud. In 2012, China built around 100 national data centres to provide locally in China [13] [52].

Cloud Computing in North Korea

The cloud adoption introduces new technologies innovations and development as strategic plan [13].

Cloud Computing in Iran

Cloud adoption in developing countries could be helpful to strengthen their economy and government decisions. This is due to the fact that the results of this can be generalized to other developing countries to some point. Moreover, advantages and disadvantages [52].

Cloud Computing in United Arab Emirates (UAE)

The goal of UAE cloud is to introduce new technology adopted in the Middle East. While the security issues are of the main concerns in migrating to cloud, incentives such as accessibility, scalability, and improved performance have made the government to make use of this new technology [52].

Cloud Computing in Australia

The Australian government's vision is to use cloud computing to meet a wide variety of government demands in a cost-effective, flexible, secure, and reliable manner. Much research has been done to clearly highlight the benefits and potential risks of cloud adoption across the country [52].

Cloud Computing in Japan

The Digital Japan Creation Project was initiated to produce new ICT markets in 2009 to strengthen the economy. The main purpose of this cloud is to collaborate and integrate hardware by using virtualization technology and infrastructure among different ministries in order to create unit platforms for shared data resources [52] [13][44].

State-of-the-Art

Hence, this paper aims to add to the literature a comprehensive CC survey from the local adoption perspective. Various and extensive work on CC can be found in the literature, as shown in Table I.

Title	Summary	Year	Reference
A Theoretical Framework for Implementing Cloud Computing in Malaysian Hospitality Industry.	Cloud technology provides a potential for developing a competitive advantage over the multinational firms that return objectives of the government goals. Thus, this study was representative of the problems and perceptions reported as an experiment on 10 hospital firms.	2020	[1]
How North Korea Revolutionized the Internet as a Tool for Rogue Regimes.	Using the Internet as a mechanism for revenue generation and acquiring prohibited knowledge and skills. By the use of an isolated network such as the internet, will gain access to prohibit technologies such as cloud. In North Korea.	2020	[17]
Capacity Expansion and modernization of core network elements running on ATCA platform.	The cloud has well-known benefits: resource pooling, cost savings, flexible capacity, and improved availability. Providing the need to figure the capacity planning on the telecom operation. Most research talked about cloud-based virtual network functions (VNFs). On the other hand, virtualizing in everything is not always the most economical solution, in addition migrating the core network to the cloud is not just a technical, but also a business decision. Furthermore, this paper reviewed modernization and expansion possibilities for existing ATCA (Advanced Telecom Computing Architecture) deployments that increase capacity and support easier migration to cloud later.	2020	[32]
Detection of time series patterns and periodicity of cloud computing workloads	Experiments conducted on cloud server nodes and aggregated CPU and throughput workload datasets collected from Information Technology (IT) and Telecom domains reveal that our solution improves the accuracy of the detections, especially in harsh environments, where the lengths and shapes are compared to the autocorrelation technique. The proposed approach is also highly efficient in detecting multiple short-term and long-term periodic patterns on any type of time series-based cloud computing workloads of different time granularity	2020	[38]
Design of MEC 5G Cellular Networks: Viewpoints from Telecom Operators and Backhaul Owners	In this paper, we propose a social maximization revenue model with the investment strategy for the telecom operators who decide the number of MEC and the backhaul that maximize the profit by using both cloud and edge resource in parallel rather than processing all traffic on the MEC (Multi-Access Edge Computing) side.	2020	[36]
A monitoring framework for 5G service deployments	The cloud computing further supports the idea of 5G technology. For this reason, the paper discussed the main features of monitoring 5G deployments and services. Moreover, the 2020 architecture for both physical and virtual resources of 5G technology is presented. One of the most widely used open source cloud platforms is OpenStack technology.		[45]
A Network Paradigm for The telecom operator will improve the quality needed in cloud 2020 Very High Capacity Mobile and Fixed Telecommunications Ecosystem Sustainable Evolution	Technology as well as the telecom quality services. Applications will enable new business models and revenue streams. Similarly, it will provide a sustainable cost for the Telco operators. The objective was proved by a framework that is beneficial for both performance and cost issues.		[48]

Energy Efficient Virtual Machine Services Placement of energy efficient virtual machine services in Cloud-Fog Architecture	Presented a framework for energy efficient virtual machines in a cloud fog architecture. The results showed that optimal placement of virtual machines on a cloud fog architecture can save up to 75% of the total power consumption.	2019	[40]
Dependability integration in cloud-hosted telecommunication services	Telecom clouds can handle the growing cloud services. Also, proposed DBA-Telco. There is an emergency need to adapt cloud environments in order to guarantee services in cloud and guarantee dependability in the telecommunication services hosted in cloud environments. Network virtualization technology is the future communication ecosystem. So that technologies to be used in cloud.	2018	[49]
A Vision for the Next Generation Platform-as-a-Service	The applications of the cloud lead to increase the new operations for telecom-based services such as Platform as a service.	2018	[28]
Designing a spatial cloud computing system for disaster (earthquake) management, a case study for Tehran	The fifth vital human needs preceded by water, electricity, gas, and telecommunications. Resource pooling in the cloud means to use the discrete and strayed resources inside the network. In Tehran's telecom cloud. The future development path: 2018 infrastructure installation, enough bandwidth, application serving many areas, and enabling system to joint to other spatial applications like ESRI software and be in sync to them.	2018	[37]
Applications and Challenges of cloud computing and check its status in Iran	Describe general concept of cloud computing and explore the advantages and disadvantages and challenges, considering the assessment of the state of cloud computing in Iran. In Iran.	2017	[18]
Software as a Service based CRM Providers in cloud computing: Challenges and Technical Issues	Software-as-a-service (SaaS) features according to important factors of the CRM providers. In Iran.	2017	[19]
Application of Cloud Computing in Telecom Operators	Discuss the insights and proposals to changes, countermeasures, and strategies toward cloud computing development by telecom operators. Analyzes the advantages and disadvantages of cloud computing by studying the development of telecom operators and the development of cloud computing. In China. The provision of cloud computing by telecom sectors will face risks for telecom operators in the size of its use, which consumes its infrastructure. Expand the right needed infrastructure. Absorb application developers to 2017 provide the services. Make the network accessible to devices easily.	2017	[20]
Experimental Assessment The telecom infrastructure is deploying their own cloud 2017 of Big Data-Backed Video Distribution in the Telecom Cloud	infrastructure to provide cloud services and enable virtualization of network functions (NFV). This virtual is proposed for big data that is deployed in the telecom cloud.		[27]
Provision of CDN as a Telecom Operator's Cloud	The Content-Delivery-Network-as-a-Service (CDNaaS) architecture allows a telecom operator to open a virtual CDN of a cloud content provider (Content Delivery Network). Presented the architecture design and implementation of a telecom operator to offer a service of vCDN on demand.	2017	[33]

Design and Implementation of the cloud platform for intelligent logistics in the Trend of Intellectualization	Proposed mechanism of data access on the cloud platform. In addition, the mechanism for data encryption to be more secure in the cloud might be in many levels, such as encrypted SSL tunnel, private files in TrueCrypt (encrypted virtual disk), and virtual disk in encrypted Dropbox. In China.	2017	[35]
Enhancing Contact Center Performance Using Cloud Computing: A Case Study on Telecom Contact Centers	This paper described the success factors of emerging cloud computing in telecom sectors. Moreover, the high growth potential of the cloud computing services market attracts telecom service providers. Business operations are more effectively and efficiently. The contact center can improve performance and deliver better business value. Cloud adoption can improve operational operators and its performance. Exploratory factor analysis can reduce data redundancy and derive summery variables without losing any meaningful information. Can influence the business model by providing value chain management system.	2017	[46]
Open Innovation in ICT Services for Quadruple Helix Model: The Cloud Proposition	Described how to implement cloud adoption by the telecom companies investing in the right area. Proposed model and framework for cloud computing.	2016	[21]
Critical Success Factors Affecting the Adoption of Cloud Computing in the Oil and Gas Industry in Oman	Provide cloud computing for oil companies by telecom companies. In Oman.	2016	[22]
ADOPTING CLOUD COMPUTING IN THE YEMENI PUBLIC SECTOR, OPPORTUNITIES AND CHALLENGES	Provided framework of adopting cloud computing in the Yemeni public sector. Since the Yemen public sector needs to know the objectives and benefits of cloud computing adoption, and identify the possibility of adopting cloud computing in its operations. Identified on models of adoption technologies and determined the relationship between public sector and cloud computing, in general. Thesis Study in Yemen.	2016	[23]
Advances in Mobile Cloud Computing Systems	Services such as storage and application used in mobile devices. Mobile Cloud Computing with Telecom Operator Discussed the most used devices on cloud and its services. Mobiles are the most used devices, and they should provide cloud computing by the telecom sectors offered with its cloud 2016 Cloud	2016	[24]
Anti-fragile ICT Systems - Chapter 7 Anti-fragile Cloud-Based Telecom Systems	Described the cloud computing in a telecommunication company including the security and its infrastructure.	2016	[29]
Lean Computing for the Explained the Fundamentals of cloud computing that clarify the 2016 Cloud -	services that needed to be provided by the cloud provider. Such as Resource pooling are the physical or virtual resources leading to the cloud benefits.		[39]
Open Innovation in ICT Services for Quadruple Underscores the importance of adopting Cloud Computing in the 2016 Helix Model The Cloud Proposition.	Mainstream ICT industry Helix model. Created hypothesized based on theory that there is high value in implementing Helix framework, by using Cloud Computing. Proposed model for relationships between Open Innovation Parameters and the Telco firm's performance.	2016	[41]

Planning and Implementing a Smart City in Taiwan	Described the cloud virtualization resource management system called CHT Virtuoso that will support smart cities in Taiwan. Likewise a scenario of cloud computing development that can form smart cities by using the available network, data, backup protection as disaster, and other information source in real time feedback. The cloud provides information between business and customers such as customer and taxi.	2016	[42]
SaaS Virtualization Method and Its Application	Discussed about “SaaS virtualization method”. Thus, an advantage of cloud computing service provided by telecom operators and SaaS vendors. Multiple cloud service companies as one way of combining technology and business. In Tokyo.	2016	[44]
Telecom Grade Cloud Computing : Challenges and Opportunities	The growth services used to provide the cloud computing service could affect the infrastructure of the telecom sector.	2015	[47]
A Feasible Solution to Provide Cloud Computing over Optical Networks	Suggested to implementing cloud computing in passive optical networks (PONs). The telecom companies have the ability to provide cloud computing services for industries and enterprises because the vast development network in telecommunication companies such as using fiber optic network.	2013	[26]
Assessment and optimization of business opportunities for telecom operators in the cloud value network	Telecommunication companies (telecoms) in the cloud to present a model for assessing business opportunities. This implies an efficient use of the telco assets in the business market.	2013	[31]
Legacy Application Migration to the cloud: Practicability and Methodology	Discussed features chances of cloud immigration, such as database immigration.	2012	[25]
Regulating the Cloud	The end user controls the various models over Application, Hosting environment, Storage, Operating systems, Servers, Network, and Cloud infrastructure. In addition, the telecom sectors make the best compatible environment for the cloud despite Communications as a Service (CaaS).	2011	[43]
Assessing NoSQL Databases for Telecom Applications	Take an advantage of cloud computing in telecom companies using NoSQL technology. Assess how NoSQL data stores could be adapted to the business model of a telecommunications enterprise.	2011	[30]
Cloud Computing: An Overview	The cloud computing developed fast but the appearance of cloud 2009 Computing started since 1961 and 2006 and then developed very quickly by companies such as Google and Amazon. Furthermore, there are five major technical characteristics of cloud computing: 2009 (1) large computing resources (2) high scalability and elastic (3)shared resource pool (virtualized and physical resource), (4) dynamic resource scheduling, and (5) general purpose.		[34]

TABLE 1: Previous studies on adopting cloud computing services

The Results to Adopt Cloud Computing

This paper presents five factors on the adoption of cloud computing in Yemen. Moreover, cloud adoption in developing countries. This is because the results of this research can be generalised to other developing countries to some certain point.

1. The Awareness and realization of adopting cloud computing (ACC) locally in Yemen by the telecom sectors.

This research proposes an adapted model to assist executive manager officers (CEOs), chief information officers (CIOs), and IT managers in the telecommunication sectors to assess and progress their readiness and maturity of cloud adoption. Additionally, managers of large enterprises can use evidence to close the 'research-practice gap' [7].

The cloud computing becomes an important factor in our daily life that we should be aware of. Most of the new technologies connect to the network using the cloud computing technique.

To illustrate, smart, intelligent, and modern systems provide substantially different capacities for processing, storage, network access, and energy use. Consequently, this brings the need of cloud computing features to these mobile devices and sensors because of its features to make process and computing sources in the cloud.

1.1. Service Enhancement

Obviously, using the cloud computing and looking at the actual network was possible to identify a range of network computing paradigms recently, including fog computing, mobile edge computing, and dew computing (dew computing is the core concept of cloud computing with the capabilities of end devices to solve cloud problem such as reliance on internet access). Indeed, new technologies are made using the same concept of network and cloud computing, the different future cloud computing involved in many new technologies such as 5G network, D2D networking (is as data communication without infrastructure), Virtualization, Internet of Things (IoT), Internet of Vehicles (IoV), Virtual Reality, Augmented Reality (AR), Self-driving/Unmanned Aerial Vehicles (UAVs), and smart devices [11].

1.2. Security, Safety and Privacy

In fact, securing cloud computing is considered a big challenge since user data is on the cloud network, in some cases it could be sensitive data [2].

Conversely, there are advices in Security Areas to be consider for protecting the customer information, such as

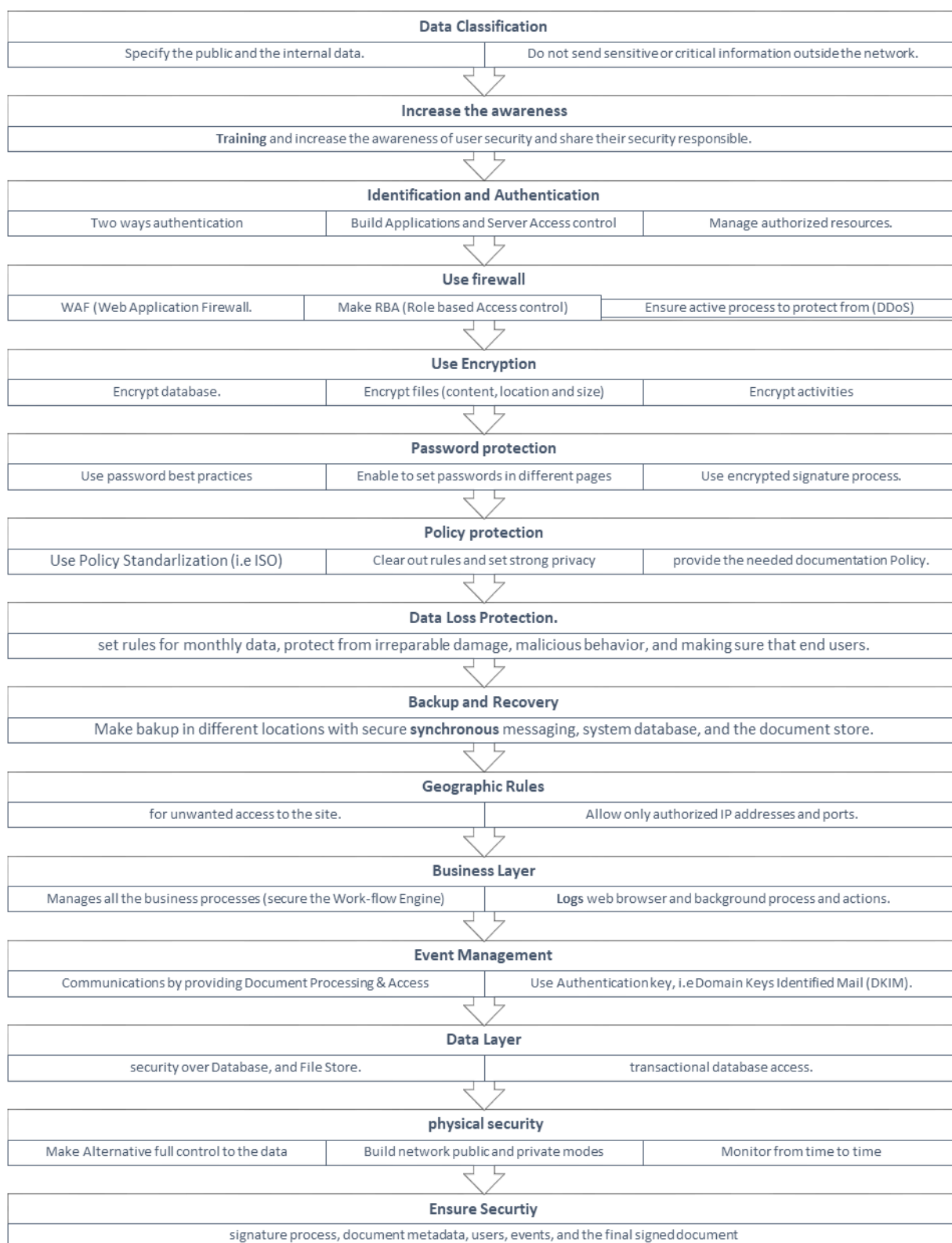


FIGURE 1: Security and Protection Areas and Tips [6] [8] [12].

Certainly, security should be provided based on its needs; for example, there are some government sectors that have their own security agencies, such as Fed RAMP, which is a government-wide program that provides a standardized approach to security assessment, authorization, and continuous monitoring for cloud products and services [8].

Furthermore, there are cloud solutions provided by companies, create smart technique to protect from famous attacks such as distributed Denial of Service (DDoS), make RBA (Role based Access control) for Application, Sever, Network console. For instance, adobe sign solution architecture by including security in four layers. First, the Presentation Layer such as the web browser and REST API Service. Second, provide security in second layer could Services Layer such Capability-based Security by protecting web servers handle browser and API requests, load balance, incorporate security-filtering rules, as well as firewall protection in order to strengthen access control [6][12].

Above all, the employee actions should be schedule, along with stopping the authority of an employee on their last day of an employment. Therefore, he or she cannot perform and important CRUD process create, update, delete, and, in addition, restrict access to confidential files or offices, such as removing email access, removing remote VPN access, invalidating office and data center badges, and removing network access [12].

1.3. Hosting

Hosting is one of the most wanted services in Yemen, as most business organizations host their websites on servers of web services from foreign countries. Thus, the observed increase in cloud computing could be attributed to web services and its environment.

According to the 2021 statistical report, Internet use has increased recently. As a consequence, during the proceedings of COVID-19. Thus, the number of Internet users in January 2021 was 4,783,503,852,4.7. Because of this, the internet user consumes 6-7 hours daily as minimum rate of daily use. Meanwhile, the number of websites in January 2021 was more than 1.83 billion on the Internet.

Statistical Number	Description	Statistics Date	Reference
545	The number of Yemen Net web hosting services subscribers was in 2010.	2010	[50]
4,783,503,852,4.7	The number of internet users in the world in January 2021.	January 2021	[51]
6-7	The rate numbers of hours spent using the internet were 6-7 hours daily.	January 2021	[51]
1.83 billion	The number of websites in January 2021 was more than 1.83 billion on the internet.	January 2021	[51]

TABLE 2: Statistics related to Cloud Hosting Services.

The results, as shown in the above statistics, indicate that desire for hosting web services. In simpler words, one of the most noticeable services recently increased in the cloud was hosting website services due to the increasing number of websites and users [50] [51].

1.4. Culture

Moreover, there are important factors related to the Yamani culture, as well as the environment in Yemen related to cloud computing adoption, considering tribalism culture moderates the relationship between compatibility, reliability, security, relative advantage, regulatory policy and cloud computing adoption [14].

Finally, it is important to know the computation, IT, hardware devices, and networks related to cloud computing.

2. The readiness to provide cloud services and the technology capabilities

The readiness for providing local cloud computing service should cover many areas in the telecommunications sectors that provide cloud services with regard to the needs of the clients as well as the readiness to provide the wanted cloud services locally. The readiness of the organizations including the human and architecture.

Moreover, the readiness of providing cloud-computing services locally should be with the top management, financial, IT, and technical departments. Includes business unit, IT finance, security, networking, application development, infrastructure, operations, and cloud application of users [5].

Clearly, success and failure factors and perceived barriers need to be considered.

Users and the Local Cloud Services

Human readiness

During the past decade, technology-driven disruption has affected all industries. At this time, the human factor also becomes involved with the new technologies.

Consequently, there are some studies that suggest several important factors for adopting a cloud computing system in top management support. The readiness covers an assessment with the following in the telecommunications sectors: CEO, CTO / chief architect, CIO, Managing director, Business unit owners, IT finance, Security leader, Network leader, Application development leader, Infrastructure leader, Operations leader, and Application owners [3] [5].

A readiness assessment consists of these tasks, schedule the readiness assessment, interviews with key personas for each application suite. Gather information by using the application modernization questionnaire. Analyze the information gathered. Schedule and conduct a debrief meeting [5].

II. CONCLUSIONS

In conclusion, the purpose of the current paper was to investigate the readiness to adopt cloud computing services locally in Yemen. However, the adoption of local cloud computing services in Yemen is limited due to several factors and the reasons discussed in this paper above.

To summarize the contributions of this paper, the cloud services enabled on the ISP infrastructure. Also, how to better facilitate innovative convergent services such as cloud computing through ISP commitments, obligations, and opportunities from the existing infrastructure? In general, this paper has been divided into four parts. The first part deals with cloud introduction, background, and services. The second part of this paper begins by proposing factors to be considered in adopting cloud computing. It will then go on to describe the properties of each factor. For instance, it included useful tips as security guides for local cloud computing.

Furthermore, security is involved for all parties. This paper proposing adopting local cloud computing by telecom sectors, in addition to considering the security in the infrastructure of cloud computing is like securing any digital or computing structure, since the computing structure concept shared for both cloud technologies or other technologies deals with network.

Finally, the conclusion gives a brief summary and critique of the findings on the previous experience of adopting cloud computing services locally. Cloud introduction, background, and services, as well as presented contribution to survey local cloud computing properties by viewing and analyzing them.

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