CITRA

الهيئة العامة للاتصالات وتقنية المعلومات

COMMUNICATION & INFO. TECHNOLOGY REGULATORY AUTHORITY

Cloud First Policy

The State of Kuwait

V2.4

Contents

First Section: Introduction

Cloud computing has revolutionized the advancement and technical development of information and communication technology, as governments around the world shifted to cloud computing that provides many advantages in various fields, whether it was administrative or technical, it contributes in facilitating business procedures and making them easily available through a simple network connection from anywhere. For example, it became easier to conduct business meetings digitally via the network, and to do electronic transactions for individuals and institutions using smart devices (smart phones, smart TVs, computers, etc.).

Therefore, the implementation of cloud computing has become an urgent necessity to keep the public sector in the State of Kuwait in line with the global technology development, and to make the State of Kuwait a pioneer in this field regionally and globally, in addition to achieving many other benefits that are more detailed in this document.

Second Section: Definitions

The following terms and expressions, wherever mentioned in this document, shall have the meanings assigned to them below. The definitions mentioned in the Communication and Information Technology Regulatory Authority Law No. 37 of 2014 and as amended by Law No. 98 of 2015, its executive regulations, and in the ICT Terms and Definitions document issued by the authority are all adopted.

Cloud Computing: a model for enabling convenient and on-demand network access to a common set of configurable computing resources (for example: networks, servers, storage, applications, and services) that can be quickly provided and launched with minimal administrative effort or interaction from a cloud computing service provider.

Cloud Operating Environment: the environment that manages one or a group of virtual computers through a virtual environment, and the type of cloud computing operating environment depends on the cloud computing services and the virtual environment used.

Cloud Computing Services: information and communication technology products and solutions that use information systems resources and platform capabilities as needed at any time and through any network (fixed or mobile) and through any devices connected to the network using cloud computing technology. Below listed the cloud computing services:

- **Infrastructure as a Service (IaaS):** in this model, the service provider hosts the infrastructure components that of a data center such as servers, storage, network devices, and a subscriber's virtualization layer. The subscriber does not manage or control the underlying cloud infrastructure but does control the operating system, storage, applications and some protection systems, it includes mainframe computers, storage, load balancers and virtual machines.
- **Platform as a Service (PaaS):** in this model, the service provider provides the environment that includes the hardware and software tools required to develop applications for subscribers over the internet. The service provider hosts hardware and software on its own infrastructure and thus exempts subscribers from purchasing an infrastructure to install new information and communication technology solutions, this includes application development, databases, middleware, test and development tools.
- **Software as a Service (SaaS):** is a software distribution model in which the service provider hosts the applications and makes them available to the subscriber via the internet, for example: government applications, web services, virtual computers, customer relationship management (CRM) systems.

Cloud Computing Service Provider (service provider): is a legal person who provides one or more of the cloud computing services of all types detailed above to subscribers of cloud computing services, and may own a center or data centers that they manage partially or completely, which they use to provide cloud computing services, directly or indirectly through a cloud computing services broker or through a cloud computing services aggregator.

Cloud Computing Subscriber (subscriber): is any individual, government entity, or private company who uses cloud computing services by purchasing those services from a cloud computing service provider under the cloud computing contract.

Entity: includes ministries, departments, institutions, bodies, and independent subsidiaries and companies of the government of the State of Kuwait, except for entities of a security or military nature, where the security or military entities have the options as they see fit.

Information and Communication Technology (ICT): are technologies that enable government agencies to access information through electronic means of communication (including the Internet, wireless networks, phones, mobile devices, and other means of communication).

Service Level Agreement: is a commitment between the cloud computing service provider and the subscriber, as this commitment includes several aspects, including: the quality of the services provided, the availability of services, and the responsibilities of the cloud computing service provider. This agreement also states that the services provided by the cloud computing service provider to the subscriber are as agreed upon in the contract signed between the two parties, and it guarantees the confidentiality of information and data between the two parties.

Virtual Machines: a simulation system for a specific computer system, where it operates based on the available computer architecture and the operating method of this simulated computer system. Virtual computers create a virtual environment located between the user and the operating platform.

Load Balancers: are devices that divide and distribute the workloads of a network or applications through a group of servers. Load balancers are used to increase the capacity, efficiency and the continuity of applications.

Time Zone: is the time on which the server was installed.

Server Time: is used to determine the times of operations that take place on the server, such as storage and loading.

Virtualization Layer: it is a layer that exists between the network, storage and operating system, and the application that works on this layer and is used to distribute resources within systems.

Data center: is a department within an organization that hosts and maintains its back-end information technology systems, data stores, its large computers, its servers, and databases. This department and all its hardware systems and applications are in one place and called the data center.

The Migration to Cloud Computing: is the process of transferring data, workloads, databases, applications, and systems work procedures to cloud computing, or from one cloud to another.

Third Section: Cloud First Policy

1. Policy Items

1.1 Government entities should consider cloud computing options first when making new decisions in IT investments.

1.2 Government entities in the State of Kuwait must fully evaluate cloud services first, before considering other options when acquiring new information and communication technology means or upgrading the existing infrastructure and applications.

1.3 Government-affiliated entities have the option to choose an alternative to cloud services, but they need to prove that the alternative is more efficient and effective in terms of protection and privacy, reducing cost, and systems availability, and also need to prove that it provides better value for money over the investment period.

2. Parties of Concern

2.1 This policy and the policies associated with it (referred to in section seven of this document) apply to all government entities in the State of Kuwait, except for entities of a security or military nature. Entities of a security or military nature have the choice as they see fit.

3. What to Consider Before Migration to the Cloud

3.1 The technical aspect should be studied in terms of the technical applicability, for example, the extent of the viability of the current versions of the existing solutions and applications or the ones planned to be purchased in the future by the entity, to migrate and be installed on the cloud, and the possibility to make the necessary updates to those applications if necessary, especially when the available cloud computing technologies are not providing the same technical characteristics.

3.2 The current estate should be studied and compared in terms of economic benefits, cost efficiency, availability of services, security, and privacy of services for the government entity, to the situation when moving services to cloud computing.

3.3 The "current situation" in terms of economic benefits, cost reduction, availability of services, security, and privacy of services for the government entity should be studied and compared with the future status that results from migrating the services to the cloud.

4. Roles and Responsibilities

4.1 Government entities roles and responsibilities

Roles	Responsibilities
4.1.1 High Management	4.1.1.1 Communicate, implement, and execute all aspects of this policy and the associated guidelines (refer to section six of this policy) inside the entity. 4.1.1.2 Employees training and capabilities on cloud computing to obtain accreditation certificates from the service providers. 4.1.1.3 Establishing Cloud Computing Center of Excellence (refer to the Cloud Migration Guide mentioned in article 6.1 of this document) which will lead the digital transformation to cloud computing within the entity. 4.1.1.4 Monitoring the entity's compliance with what is stated in this policy. 4.1.1.5 Designating communication person to provide the Central Agency for Information Technology (CAIT) with periodic reports on the extent of the entity's use of cloud computing. Provided that CAIT submits periodic reports to CITRA, in accordance with its regulatory and oversight role. 4.1.1.6 Provides approval for the data classification after the executive departments classify the entity's data. 4.1.1.7 Approving the technical department's choices for the appropriate cloud computing models in coordination with the Government Center of Excellence for Cloud Computing of the Central Agency for Information Technology (CAIT).
4.1.2 Executive Management	4.1.2.1 Acquire means and tools of information and communication technology. 4.1.2.2 Data classification procedures and activities (refer to the Data Classification policy mentioned in article 7.1), security, access rights, access controls, and data editing. 4.1.2.3 Participate in the migration process to the cloud according to the business unit's role and functions (for example, the human resources department provides the necessary staff, the finance department handles the budgets related). 4.1.2.4 Conduct analysis improve usage and manage workloads to provide the required cloud computing services with the help of the entity's IT department.

4.1.3 The IT Department	4.1.3.1 Support the entity to achieve compliance with this policy and its implementation by providing technology resources that enable the entity to migrate to cloud computing. 4.1.3.2 Provide adequate infrastructure and security standards to ensure the security and protection of data required for the migration to cloud computing. 4.1.3.3 Operate, manage, and provide support to the entity's applications that run on the cloud. 4.1.3.4 Ensure the appropriate connection capacity with the Internet, as well as ensuring the continuity of the service, by contracting with more than one internet service provider. 4.1.3.5 Choose the appropriate cloud computing model (refer to article 3 "cloud computing deployment models" from section 4 of this document) depending on the nature of the department's nature, in coordination with CAIT.

4.2 CITRA's Roles and Responsibilities

4.2.1 Issuing policies and guidelines related to cloud computing and data, to be applied by the public sector on a national level.

4.2.2 Ensure that there are Service Level Agreements (SLA) between the service provider and the government entity.

4.2.3 Receive quarterly reports or on-demand from The Central Agency for Information Technology (CAIT), on the progress and the extent of cloud computing usage by government entities, and their compliance level with this policy.

4.2.4 Governing and monitoring the public sector on the degree and extent in implementing the policies issued by the Communication and Information Technology Regulatory Authority (CITRA).

4.3 Roles and Responsibilities of Cloud Service Providers

4.3.1 To comply with the requirements mentioned in the Cloud Computing Regulatory Framework and in the Cloud Service Providers Regulations and Commitments document (referred to in section seven of this document) issued by CITRA, in order for the service provider to be eligible to provide cloud computing services in the country.

4.3.2 To provide cloud computing services and other related services to government entities as per the Service Level Agreements (SLA).

Fourth Section: Cloud Computing Overview

The definitions and terms in this section, in addition to the definition of cloud computing in the second section, are as stated by the National Institute of Standards and Technology (NIST) in addition to the ICT Terms and Definitions document issued by the Communication and Information Technology Regulatory Authority (CITRA).

1. Goals and Benefits of Cloud Computing

The use of cloud computing services by the government entities included in the scope of this policy contributes to achieving many benefits, including:

1.1 Contributing to the New Kuwait Vision 2035, through empowering the public sector in the State of Kuwait to achieve digital transformation on a national level and to lead regionally in the field of information technology.

1.2 Empowering new investments in the field of information technology by directing the government entities to consider available cloud computing solutions instead of traditional technical solutions before acquiring hardware, software and applications.

1.3 Building a culture that is more accepting of cloud computing in the public sector and enabling it to move to digital transformation instead of traditional systems.

1.4 Enhancing cooperation between government entities by activating information and communication technology solutions through an integrated institutional framework for the public sector to exchange information, which contributes to reducing the documentary cycle of electronic services and transactions. In this context, cooperation and connectivity is enabled effectively so that government entities can share resources more easily (as cloud computing supports the exchange of information and resources between government entities even if the cloud computing service provider for each entity is different), improve efficiency, and achieve creativity in delivering public services.

1.5 Increase budget control and reduce costs across all sectors of the entity, and reduce the cost of purchasing and maintaining hardware, software, infrastructure, databases, stationery, archiving, printers, and the costs of: maintenance, customer service procedures, internal work procedures, and government infrastructure. Where government entities can purchase a lot, or a few, resources depending on actual need. In addition to the possibility of setting and implementing rules, alarms, and spending limits in order to help manage budget control.

1.6 Improving the management and productivity of information and communication technology solutions: improving the ability of government entities to provide information and communication technologies, maintain security, and make the solutions integrated with hardware and software updates that are managed by the service provider.

1.7 The continuity of operations and business recovery: with centralized and redundant data storage and secure backup of government information, business recovery and data retrieval in times of crisis and disaster becomes faster, more effective and less cost.

1.8 Rapid launching of electronic services of the government entities and raising the level of productivity, as it is possible to benefit from these services using any smart device. Where cloud computing simplifies the development, support and hosting of information and communication technology solutions, that leads to improved service deployment and performance. As it reduces the size of the information and communication technology infrastructure required to be built and owned by government entities, shifting the focus from managing the infrastructure to providing improved services.

1.9 Enhancing the level of cybersecurity: cloud computing helps supporting cybersecurity by following the best cybersecurity protocols in network communications. Cloud services can also provide a high level of cybersecurity.

1.10 Promoting innovation: cloud computing technology, is an engine for innovation for the entire system, with the basic scope of cloud services (infrastructure, platform, software), which enables government entities to develop their services.

1.11 Cloud computing provides a catalyst for all sectors in the entity to review their procedures and methods of work.

2. The Basic Features of Cloud Computing

2.1 **On-demand self-service feature:** the government entity, from its side, can provide computing capabilities, such as the time zone for server time and network storage, as needed without the need to request that from the service provider.

2.2 **Broad network access feature:** services and capabilities are available across the network and can be accessed through fixed and portable devices such as cell phones, desktop computers, tablets and laptops.

2.3 **Resource pooling feature:** collecting service provider's computing resources to serve several government entities/users at the same time. This process is accomplished by activating the multi-tenant model, which in turn allocates and reallocates these resources to each user or entity as needed. The model of multiple tenants of computing resources also ensures that the operations and data of each entity are isolated from the rest of the entities, and it also guarantees the inaccessibility of unauthorized access to the data of each government entity. Examples of resource pooling includes storage space, processing, memory, network bandwidth, and virtual computers.

2.4 **Flexibility and speed:** this feature enables the government entity to provide resources according to its needs quickly, seamlessly and automatically (in some cases) in order to rapidly expand or shrink the size and area of resources in proportion to its need. Resources appear to the government entity as unlimited and can be allocated in any quantity and at any time.

2.5 **Service measurement feature:** cloud systems automatically control and optimize resource use by activating the role of the measurement feature in cloud systems in proportion to the type of service, for example: storage, processing, bandwidth, and active user accounts. It is also possible to monitor, control and report the use of resources, which provides transparency regarding the service provided to both the service provider and the government entity that uses those services.

3. Cloud Computing Deployment Models

3.1 The government entity can choose any of the following cloud computing deployment models that suit the sensitivity, confidentiality and security requirements of its data, which are protected and classified according to the Data Classification policy and the Cloud Computing Regulatory Framework issued by the Communication and Information Technology Regulatory Authority (CITRA), referred to in section seven of this document.

3.2 **Public Cloud:** providing cloud infrastructure for public use by subscribers. This model may be owned, managed, and operated by a commercial, academic, or governmental entity, or a combination of them, and it is available on the site/center of the service provider.

3.3 **Private Cloud:** providing cloud infrastructure for the exclusive use of one party that includes many users (for example: the various departments in one entity (and is operated by the same entity, or by a third party) such as: cloud computing services provider), or both, and its physical location may be inside or outside the entity's headquarters. The entity itself manages the data copying process, and in this case, developing solutions consumes longer time, given that all deployment and testing operations need to be implemented within the entity.

3.4 **Community Cloud:** providing cloud infrastructure for the exclusive use of a specific group of subscribers belonging to entities that have common/similar interests (for example: the entity's activities, cybersecurity requirements, and compliance considerations). The infrastructure is managed and operated by one or more entities included in that group, or a third party (service provider), or both, and its physical location may be inside or outside the entity's headquarters. The service provider manages the data copying process (in fulfillment of the service level agreement (SLA) between the service provider and the entity) as this model supports the acceleration of the mechanism of installation and immediate operation, which leads to speeding up the process of deploying new solutions.

3.5 **Hybrid Cloud:** The infrastructure of this type of cloud is a combination of two or more infrastructures of the types of cloud computing mentioned (private, public, or community) where each model has its own properties but linked to other models with a standardized technology that enables the connection between each cloud model, in addition to enabling data and application transfer, for example: a private cloud platform may be transformed into a public platform for load balancing between the linked cloud computing platforms.

4. Cloud Computing Service Models

4.1 Cloud computing offers three basic service models that provide software, platforms, and infrastructure as a service. The service models provide some or all necessary technical support characteristics that were mentioned above in the second section "definitions":

- Software as a Service (SaaS).
- Platform as a Service (PaaS).
- Infrastructure as a Service (IaaS).

Fifth Section: Policy Definition and Reference

5.1 This policy has been prepared and published by the Communication and Information Technology Regulatory Authority (CITRA) with the aim of accelerating the public sector's migration and shifting from the traditional IT solutions to cloud computing solutions, and it is one of the main pillars to support the digital transformation in the country.

5.2 When planning for new investments in information technology, government entities must first consider cloud computing options and adopt what is stated in this policy.

Sixth Section: Appendix

The documents listed below are related to this policy and can be reviewed through the Communication and Information Technology Regulatory Authority's (CITRA's) official website (www.citra.gov.kw):

6.1 Cloud Migration Guide

6.2 Subscribers Guide to Cloud Services

Seventh Section: Related Documents

The documents listed below (with their appendices) are related to this policy and can be reviewed through the Communication and Information Technology Regulatory Authority's (CITRA's) official website (www.citra.gov.kw):

7.1 Data Classification Policy

7.2 Cloud Computing Regulatory Framework

7.3 ICT Terms and Definitions of Information and Communication Technology