
PUBLIC CONSULTATION

“Cloud First Policy Strategy and Guidelines – to establish the United Arab Emirates as Regional Data Hub”

Version. 1.0

Issue Date: 7 October 2018

Response Date: 6 December 2018

Preface and Notes to Potential Respondents

In line with its values of transparency and sector engagement, the TRA wishes to engage all potential stakeholders to study the consultation document on the white paper of establishing UAE's position as a regional data hub with cloud-first strategy. The TRA strives to meet the needs of the sector and seeks the views and feedback from the sector to understand the risks and challenges when implementing this approach. Stakeholders who wish to respond to this consultation should do so through participating in the survey below, on or before the response date stated on the front cover of this document.

Survey link:

<https://msurvey.government.ae/survey/Telecommunications%2520Regulatory%2520Authority/T6/>

Respondents are advised that it will be the general intention of the TRA to publish in full the responses received to this consultation. Additionally, the TRA may, at its discretion generate and publish a "Summary of Responses" document at the conclusion of this consultation. Accordingly, the Summary of Responses may include references to and citations (in whole or in part) of comments which have been received. The TRA recognises that certain responses may include commercially sensitive and confidential information which the respondent may not wish to be published. In the event that a response contains confidential information, it shall be the responsibility of the respondent to clearly mark any information which is considered to be of a confidential nature.

It should be noted that none of the ideas expressed or comments made in this consultation document will necessarily result in formal decisions by the TRA and nothing contained herein shall limit or otherwise restrict the TRA's powers to regulate the telecommunications sector at any time.

Consultation Schedule

Milestone	Due Date	Notes
Closing Date for Initial Responses	6 December 2018	All responses to this consultation should be properly received by no later than <u>15.00 noon</u> on the closing date. Responses are to be submitted in electronic format as set out in this consultation document.
Latest date for requests for extension to the due date for Initial Responses.	26 November 2018	Stakeholders wishing to secure an extension to the Closing Date for Initial Responses may apply in writing to the TRA for such an extension. The request should set out the rationale for the request. Requests for extension should be submitted by e-mail to the e-mail address shown above. The TRA will not consider any requests for extension which the TRA receives after <u>15.00 noon</u> on the date stated here. The TRA will consider requests to extend the Closing Date for Initial Responses and will take into account such factors as: the number of such requests received; the rationale for such requests; and the effect on the overall time-scale of the particular project in question. In the event that the TRA extends the Closing Date for Initial Responses, the TRA will publish the revised closing date on its website.
Publication of Initial Responses	20 December 2018	The TRA will publish non-confidential responses on its website on this date and will invite comments on those responses.
Closing Date for Comments on Responses	10 January 2019	The TRA will not consider Comments on Responses which the TRA receives after <u>15:00 noon</u> on the date stated here

The TRA will endeavour to keep all stakeholders informed of any material change to the above schedule.

1.0 Introduction: Establishing UAE as a Regional data hub with cloud-first strategy

In December 2015, the TRA launched the ICT Development Forum, with the goal of driving innovation in the ICT domain in the UAE, by fostering dialogue and collaboration with the marketplace, to create a supportive environment to ensure that regulation works to unlock the benefits of ICT. It is recognized that Cloud Computing is key in enabling digital transformation agenda of the UAE, effectively improving the global ICT ranking from X to the top performing countries¹.

Under the guidance of HH Sheikh Mohammed Bin Rashid Al Maktoum, the UAE has united as a nation to accelerate the development of a new regional hub for cloud computing, and additionally it can also make a strategic play to capture and ‘mine real economic value from data’, to become the ‘data gravity’ force in the Middle East region

The vision for the future is based on a commitment to develop a ‘digital economy and society’, core of which is based on sustainable economic growth with environmental benefits of energy and resource efficiency.

In the UAE, the vision to move to a Cloud First economy is inspired by:

- **UAE Vision 2021** - Sustainable Environment and Infrastructure, under the 4th Pillar of the National Agenda which is united in Prosperity: The National Agenda highlights the importance of infrastructure and aims for the UAE to be among the best in the world in the quality of airports, ports, road infrastructure, and electricity. And leading telecommunications infrastructure will allow the UAE to become a forerunner in the provision of Smart services.
- **National Innovation Strategy** and its Vision 2021 to be among the best in the world, the adoption of Cloud computing will accelerate positive change and ensure this vision is reached by 2021. This will continue the UAE's development into a fully digitally enabled, with best in class Data Privacy /security laws, customer/resident centric country that can meet the needs of its citizens and residents alike.

• ¹ Source : <http://www.itu.int/net4/ITU-D/idi/2017/> UAE 2017 Rank is 40

- **TRA Vision:** To establish and maintain the UAE as globally leading country in the ICT domain.

The goal is to achieve a more cost-effective ICT; increased recognition for core enterprises; increased flexibility; better security through more professional and standardized ICT; lower threshold for innovation and entrepreneurship and reduced climate impact from ICT operations.

The focus of this whitepaper has been to document key challenges that need to be addressed, related to cloud computing working with industry contributors, including global ICT vendors and incumbent Telcos, to offer a world-wide view, to position the UAE as the '**Regional Data and Cloud Hub**', and a leading digital economy that is competitive on a global scale.

2.0 Current Cloud Computing Landscape in the UAE

2.1 Definition of Cloud

The widely accepted definition of Cloud computing is an *ICT sourcing and delivery* model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. It is key to note that Cloud is not a new technology, but a service delivery model.

- **Software as a Service (SaaS).** The capability provided to the consumer is to use the provider's applications running on a Cloud infrastructure. The applications are accessible from various client devices through either a thin client interface, such as a web browser (e.g., web-based email), or a program interface (e.g. an API). The consumer does not own, manage or control the underlying Cloud infrastructure including network, servers, operating systems, storage, or even individual application capabilities, with the possible exception of, limited user-specific application configuration settings.
- **Platform as a Service (PaaS).** The capability provided to the consumer is to deploy onto the Cloud infrastructure consumer-created or acquired applications created

using programming languages, libraries, services, and tools supported by the provider. The consumer does not own, manage or control the underlying Cloud infrastructure including network, servers, operating systems, or storage, but has control over the deployed applications and possibly configuration settings for the application-hosting environment.

- **Infrastructure as a Service (IaaS).** The capability provided to the consumer is to provision processing, storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems and applications. The consumer does not own, manage or control the underlying Cloud infrastructure but has control over operating systems, storage, and deployed applications; and possibly limited control of select networking components

2.2 Adoption of Cloud in the UAE Public and Private Sector Today – The Buy Side

Cloud adoption both in the Public and Private sector has been positive with both sectors moving workloads to the cloud. *The UAE's eGov strategy recognizes the importance of the development of a cloud computing strategy to facilitate the Government operations.* Evidence suggests that a transition towards Cloud computing offers a range of potential benefits to the public sector; including, a reduction in capital and operational expenditure; flexibility with matching business needs to suit demands; and, a greater focus on delivering core services

Gartner highlights that by “By 2020, a corporate “no-cloud” policy will be as rare as a “no-internet policy”². Whilst the UAE private sector is consuming cloud in some form, there needs to be greater adoption on a bigger scale, to fully benefit from the economics of cloud, enabling all types and sizes of enterprises to access scalable, shareable, elastic pool of computing resources, instead of investing capital in their own IT infrastructure.

Overall there is an opportunity to conduct a gap analysis exercise on cloud consumption taking place today both at the federal level and in the private sector, to fully understand the openness to a Cloud-First policy and how its addressing the organizations’ digital agenda, and assess against risk and best practice, based on global and industry standards.

² <https://www.gartner.com/smarterwithgartner/cloud-computing-predicts/>

2.3 Cloud Service Providers in the UAE – The Sell Side

Today in the UAE and the MENA region there are number of grown cloud solutions, ranging from locally home-grown private managed IT service providers, to overseas located/based hyperscalers, offering public cloud services. Until recently, no hyperscalers have had physical presence in the region, with the exception of AWS (Bahrain) and Alicloud (UAE).

The GCC nation's race to become a regional hub, has not yet been won and remains open. With the national ICT agenda covering Big Data, Robotics, Internet of Things, Artificial Intelligence, Mobility, Virtual Reality, all platforms enabled by cloud computing, there is an opportunity to aggregate the pulling force of cloud, create data gravity, and build out a cloud ecosystem for the Middle East region, with the UAE as the Hub.

2.4 Role of Telecommunications Sector in Cloud Services

Telecommunication companies play a key role into the Cloud industry. Global Cloud players such Microsoft, Google or Amazon require communication services to let end user access their Clouds worldwide on a secure, low latency and reliable way. Otherwise Cloud might never be able to host mission critical system or applications that are core for companies' business.

At the same time, it is strategic for Telecom companies to offer Cloud Services since it makes their network services more attractive for end users. Therefore, it is strategic for Telecom companies to find synergies and alliances with Global Cloud players that incentivize the utilization of their networks and become a one stop shop for end users where they can consume any required ICT service.

2.5 Key Observations

- Locally, the UAE is also ready to grow, with a ***world leading reputation within key areas of the Networked Readiness Index***, existing ICT Future Plans and Artificial Intelligence strategy that can combine to empower cloud growth
- However, **the scaling of the industry rests on a foundation that is currently missing – being a top brand in data protection, privacy and security.**

- Multinational cloud partners will make investments conditional on a **best practice data privacy and security framework**, Data Governance and Classification Practices need to be clearer
- **Data today lives in isolated pockets** -Given the relatively small market size of the UAE and ME region, it is crucial that all data loads are taken into consideration, when architecting the UAE's position as a cloud hub.
- **Infrastructure Challenges** -Performance issues when using cloud platforms outside of the region (latency delay) -value of 'Cloud' cannot be unlocked in the UAE and the ME region until the challenge of network access and connectivity is resolved, both inside the country, and outside, be it regional or international
- **Skills and Practices** – whilst ICT skills scarcity is recognized to be global challenge, the skill shortage can impact digital transformation growth, key skills in the area of cloud solution architects and contract managers who are apt in understanding and formulating contracts are key.

3.0 Key Barriers and Challenges to Cloud Adoption in the UAE

Despite the trend towards adopting Cloud computing there remain both risks and challenges when implementing this approach. While the most cited challenge has been the cultural resistance to change within organizations, other perceived risks and challenges include security of data, delayed cost-savings and workforce transition.

3.1 The Cloud Opportunity in the ME region

Digital Transformation Report, Frost & Sullivan “the UAE cloud services market is forecasted to be \$290 million (Dh1.06 billion) in 2020 - driven by several initiatives ranging from the shift from capital expenditure to operational expenditure, the need to scale for small and medium businesses (SMBs) and most importantly the digital transformation agenda.”

Given the global cloud market opportunity, the UAE market is relatively small. In order to attract the hyperscalers and architect the UAE as a cloud hub of the ME, *it is crucial that all*

data loads across the region are taken into consideration, with the aim to capture and ‘mine real economic value from data’, with the UAE becoming a ‘data gravity’ force.³

3.2 Data Privacy & Sovereignty

Nearest example of UAE situation with data privacy issue in concern of the cloud services would be projected in the European Parliament report on cloud service policy “Closely related to the question of data protection is the question of jurisdiction in cloud computing, users may be located in one country, suppliers may have their headquarters in another one and have sites in various others. Applications and data are stored in any one of those various sites or even move between them. Cloud suppliers and customers alike may suffer from uncertainty about the applicable regulations concerning intellectual property, data retention and deletion, court orders for disclosure, contract and consumer protection as well as data protection.” The above statement is also applicable in the UAE in both cases of local CSPs and cross-border CSPs.

Security of data, including accessibility and protection, is a common concern when considering Cloud computing where there is limited, if any, control over the location of the data storage. This risk may be mitigated by specifying in the contract with the CSP the exact location where the data will be processed, stored and backed up. And by performing data classification to ensure that data location could be determined based on varying levels of sensitivity.

3.3 Infrastructure

Gartner notes “regardless of the multi-provider design approach customers choose to pursue, one constant infrastructure component needs to be efficiently architected to enable one or all of these approaches. That component is networking — more specifically, connectivity”.⁴ Enterprise customers are demanding more flexible, open, and cloud-based WAN technologies, rather than installing proprietary or specialized WAN technology that often involves expensive, fixed circuits or proprietary hardware. Cloud Service Providers (CSPs) demand good network

³ <https://www.khaleejtimes.com/uae-cloud-service-market-set-to-cross-dh1b>

⁴ <https://www.gartner.com/newsroom/id/3598817>

https://www.gartner.com/binaries/content/assets/events/keywords/catalyst/catus8/2017_planning_guide_for_cloud.pdf

latency, developed infrastructure and relatively lower connectivity costs between the UAE and other markets, when looking into setting up physical presence in country.

3.4 Human Talent

Workforce transition is a multifaceted challenge that accompanies any significant change to a large workplace, and technology has always had to address this so Cloud computing is no exception. Employees will need to be reskilled to operate in a Cloud computing environment and there will be a lesser reliance on internal ICT specialists to manage in-house systems, freeing them up for other work such as service delivery. A key game changing area in the Human development strategy to create a Cloud-First digital economy in the UAE, *is to address the cultural mindset to Cloud itself and drive cultural change for cloud adoption in the private and public sector*. There will also be an increased need for contract managers to liaise with and manage external providers and the Cloud computing contracts, in particular Service Level Agreements (SLA) monitoring.

4.0 Guiding Principles for establishing UAE as Cloud-First economy

4.1 Establishing UAE as a Hub for Cloud in the GCC

Gartner estimates Public Cloud Services in the MENA region to reach \$1.2 Billion in 2017, UAE must move fast to seize the opportunity ahead of its neighboring countries to claim the Middle East data and interconnection hub status, become a compelling gravitational force for DATA in and out of the region.⁵

4.2 Data Classification Guidelines.

Over many years various levels of data classification have been adopted, often up to six or even seven categories. These were based essentially on historical paper-based filing systems and in many cases, are no longer appropriate for a modern electronic records system. A recent Accenture report⁶ (2016) indicated that 90% of respondents agree that digital stewardship is the most important principle in terms of being responsible managers of personal data, to achieve

⁵ <https://www.equinox.ae/interconnection-enables-the-digital-economy/>

⁶ https://www.accenture.com/t20161013T233710_w_us-en_acnmedia/PDF-4/Accenture-Strategy-Corporate-Disruptors-Full-Report.pdf

this updated data classification policy may be implemented. Based on global best practice, following is proposed:

In general, data classification schemes are designed to be simple, indicating clearly, what type of data needs protection and what not.

- Three levels of data according to sensitivity, which are i) public, ii) sensitive and iii) secret/critical data.
- Most of the data by volume belong to the public/non-sensitive data category.

4.3 International harmonization of Cloud Standards to Global

The development and widespread adoption of appropriate national, regional and international technical and organizational standards are required to address a range of concerns among cloud providers and users, including the integration of legacy systems with cloud interfaces; data and application portability and security. Data portability and seamless use of interoperable applications are key considerations for cloud computing and digital economy applications. Consumers are demanding interoperability in the cloud computing space, and industry should work through standards development organizations and other international avenues to meet this demand. National Regulatory Authorities support of these efforts and the avoidance of technological mandates are important.

4.4 Promoting ICT agenda and GDP growth & international trade

Far beyond winning revenue for cloud operators and telecommunication companies, a world-class cloud ecosystem in the UAE will deliver a wide reaching socio-economic uplift across GDP, job creation, FDI and more for the UAE and the ME region. The physical location of a Cloud Hub in the UAE, with the right data governance will drive data exchange with other ICT ecosystems and other geographies.

A recent UAE study⁷, benchmarking the socio-economic impact of similar programs in Europe, we estimate >3.4b USD of new GDP, >5,400 new supported jobs and >2.3b USD in new foreign direct investment over the first 6 years. Those contributions are new and due to the law proposed. Total cloud sector socio-economic impact estimates including the status quo and

⁷ 1. Methodology in appendix; estimates including servers, connectivity, storage, software and IT operations. Local Regulation increment estimated by Etisalat team [Source](#): Etisalat team analysis, Copenhagen Economics, IDC Black Book, SG Dept. of Statistics

growth driven by data security and privacy amount to 7.0b USD of GDP, 11,100 supported jobs and 4.1b USD in foreign direct investment.

4.5 Human Talent development

A key game changing area in the Human development strategy to create a Cloud-First digital economy in the UAE is to address the cultural mindset to Cloud itself and drive cultural change for cloud adoption in the private and public sector.

5.0 Summary

The opportunity is here and now for the UAE to become the Cloud and data hub of the MENA region. We need Cloud – First ICT framework in the UAE, which drives multi-cloud adoption, foster cross border cloud compute data into and out of the UAE, creating data gravity and market that opens opportunities for businesses and citizens, to make sure that the UAE is competitive with other major world economies. To ensure the benefits of Cloud are realized, implementation guidelines to cover the following should be communicated to stakeholders.

- Articulation of “Cloud First” vision and objectives for adoption of Cloud computing,
- Ensuring choice in Cloud architecture,
- Information System Security Requirements and Assurance,
- Data Privacy Requirements and Assurance,
- Data Governance and Classification Practices and
- Transitional issues caused by a “Cloud First” Strategy.

Success will be defined by partnership; with innovators, law makers, investors and operators coming together to ensure a clear path to ICT sector empowerment. Indeed, partnership extends beyond the nation – with global dialogue with leading innovators guiding the UAE’s path

6.0. Recommendations and Next Steps

Ongoing dialogue with all key stakeholders:

- TRA address on “Enabling UAE as a Cloud-First digital economy”, supported by an industry panel with participation from du, Etisalat, Equinix and Microsoft, *UAE ICT development Forum on 7th December, TRA Dubai, UAE.*
- TRA Consultation Session with Cloud Buy Side for Private Sector – tbc
- TRA Consultation Session with Cloud Buy Side for Public Sector -tbc
- TRA Consultation Session with Cloud Sell side – Hyperscalers -tbc
- TRA Consultation Session with Cloud Sell side – Private CSPs –tbc

7.0 Acknowledgements

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