



Telecom Regulatory Authority of India



**Consultation Paper**  
**on**  
**Cloud Services**

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# Contents

|          |   |           |
|----------|---|-----------|
| <b>1</b> | <b>Introduction</b>   | <b>1</b>  |
| 1.1      | Background . . . . .  | 1         |
| 1.1.1    | TRAI's earlier recommendations on Cloud Services . . . . .                      | 2         |
| 1.1.2    | Acceptance of recommendations by Government . . . . .                           | 3         |
| 1.2      | Types of Cloud Service Providers . . . . .                                      | 3         |
| 1.3      | Scope of Consultation . . . . .   | 6         |
| 1.4      | Structure of the consultation paper . . . . .                                   | 6         |
| <b>2</b> | <b>Framework for registration of industry body for cloud services providers</b> | <b>7</b>  |
| 2.1      | Terms and Conditions of registration . . . . .                                  | 9         |
| 2.1.1    | Eligibility Criteria for registration . . . . .                                 | 9         |
| 2.1.2    | Entry Fee and Recurring Fee . . . . .   | 10        |
| 2.1.3    | Period of registration . . . . .  | 10        |
| 2.1.4    | Transparency measures for consumers . . . . .                                   | 10        |
| 2.1.5    | Uniformity in rules and polices for industry bodies . . . . .                   | 11        |
| 2.1.6    | Obligations of Industry body(ies) . . . . .                                     | 13        |
| 2.2      | Governance Structure of industry body . . . . .                                 | 15        |
| 2.2.1    | Membership policy . . . . .   | 18        |
| 2.2.2    | Governing bodies and administration . . . . .                                   | 20        |
| 2.3      | Seeding of Industry body . . . . .  | 23        |
| <b>3</b> | <b>Issues for Consultation</b>  | <b>26</b> |
|          | <b>Annexure-I: Mandatory Provisions of Code of Conduct (CoC)</b>                | <b>28</b> |
|          | <b>List of Abbreviations</b>  | <b>32</b> |

# Chapter 1

## Introduction

### 1.1 Background

The growth of Cloud Computing (CC) Services have transformed the way governments, enterprises, consumers etc. store and process their data and manage their resources. Cloud computing has now become the favoured hosting model for big and small enterprises alike as it provides advantages over physical resources in terms of cost, flexibility, efficiency, security and scalability. National Digital Communications Policy-2018 envisages establishment of India as a global hub for cloud computing, content hosting and delivery, and data communication systems and services by evolving the enabling regulatory frameworks. However, customers would require a minimum level of quality, a level of confidence and transparency in billing, metering, data security, inter-operability and other policies from a Cloud Service Provider (CSP) before they entrust them with data and applications. By addressing the concerns of cloud users, cloud services may witness growth of cloud computing to a next level.

On 31<sup>st</sup> December, 2012, Department of Telecommunications (DoT) sought recommendations from TRAI (the Authority) on broad aspects of Cloud Computing (CC) based services, including Regulatory framework for CC, Security over the cloud, Cost benefit Analysis, Quality of Service of the Cloud Services, Interoperability amongst the cloud players, Incentivisation for conceptualization and implementation of India based Cloud Services, Legal framework for multiple Jurisdictions/Areas of operation, Implementation Strategies of Cloud Services in Government (Central, State and UTs), Organizations and other strategic networks. DoT subsequently clarified on 22<sup>nd</sup> June, 2015 that recommendations on Cloud Services need not be too specific on implementation Strategies for Cloud Services in India. TRAI issued a consultation paper discussing emerging issues of Cloud Computing on 10<sup>th</sup> June, 2016 and, subsequently, sent recommendation to DoT on 16<sup>th</sup> August, 2017 after completing the con-

sultation process.

**1.1.1 TRAI's earlier recommendations on Cloud Services** : The Recommendations on "Cloud Services" dated 16<sup>th</sup> August, 2017 includes recommendation on legal and regulatory framework for Cloud Services, overarching and comprehensive legal framework for data protection, interoperability and portability, legal framework for Cloud Service Providers (CSPs) operating in multiple jurisdictions, cost-benefits analysis, incentives for conceptualisation and implementation of cloud based services in India, especially in government networks<sup>1</sup>. Under legal and regulatory framework for Cloud Services, Authority recommended to regulate CSPs through not for profit industry body. Authority further recommended that:

- (i) All CSPs, above a threshold value, to become member of one of the registered Industry body for cloud services and accept the code of conduct (CoC) prescribed by such body. Such threshold may be based on either volume of business, revenue, number of customers, etc. or combination of all these. Registered Industry body, not for profit, may charge fee from its members, which is fair, reasonable and non-discriminatory. Threshold value, based on previous financial year, may be notified by the Government from time to time.
- (ii) Industry body for Cloud Services to prescribe the Code of Conduct of their functioning. Code of Conduct shall include provisions for adoption of a constitution towards its members, Membership, Creation of working groups, and Mandatory codes of conduct, standards or guidelines that specifically include, Definitions, QoS parameters, Billing models, Data security, Dispute resolution framework, Model SLA, Disclosure framework, Compliance to its codes and standards, Compliance to guidelines, directions or orders issued by DoT, and providing requisite information in stipulated time lines when sought by DoT/TRAI. Details regarding above provisions are annexed with this consultation paper as per Annexure- I.
- (iii) No restrictions on number of such industry bodies may be imposed to ensure that there is freedom in functioning of such industry body and such body should not become monopoly of few big entities.
- (iv) DoT may issue directions, from time to time, to such registered industry body as and when needed to perform certain function and procedures to be followed.
- (v) DoT may also withdraw or cancel registration of industry body, in case it finds the instances of breach or non-compliance of the directions/ orders issued by it, from time

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<sup>1</sup>[https://main.trai.gov.in/sites/default/files/Recommendations\\_cloud\\_computing\\_16082017.](https://main.trai.gov.in/sites/default/files/Recommendations_cloud_computing_16082017.pdf)

to time or non-adherence to code of practices notified by it.

- (vi) DoT may keep close watch on the functioning of industry body and investigate functioning of the body to ensure transparency and fair treatment to all its members.
- (vii) A Cloud Service Advisory Group (CSAG) to be created to function as oversight body to periodically review the progress of Cloud Services and suggest the Government actions required to be taken. This Advisory Group may consist of representatives of state IT departments, MSME associations, Consumer advocacy groups, Industry experts and representatives of Law Enforcement agencies.

**1.1.2 Acceptance of recommendations by Government** : Government has considered TRAI recommendations on the ‘cloud services’ and has accepted all the recommendations. In line with the TRAI’s recommendations in Para 4.1 (ii), reproduced below for ready reference, *“Recommendation no. 4.1 (ii): Authority recommends DoT may prescribe a framework for registration of CSPs’ industry bod(y)(ies), which are not for profit. The terms and condition of registration of Industry body, Eligibility, entry fee, period of registration, and governance structure etc. would be recommended by TRAI once the recommendations are accepted by the Government in principle”* DoT has sought additional recommendations vide letter dated 27<sup>th</sup> September, 2018 from the Authority on terms and condition of registration of industry body w.r.t. recommendation no. 4.1 (ii).

## 1.2 Types of Cloud Service Providers

India’s cloud computing market is poised for growth and the technology is increasingly being embraced across businesses as well as retail consumers. Complementing the ecosystem with the futuristic technologies such as AI(Artificial Intelligence), ML(Machine Learning), advanced analytics and immersive media are aiding in the seamless adoption of Software as a Service (SaaS), Infrastructure as a Service (IaaS) and Platform as a Service (PaaS) offerings. But, cloud computing is not limited to servers, storage or such broad level services. Emerging trends are making cloud as one of the integral part of new and existing technologies and new business models may help in adoption of cloud in future, like consumption based model, everything as a service (XaaS) model etc. End users, both enterprises and individuals, may find different cloud products in market based on service model or deployment model. These products may be sector specific and may reach to end users through different marketing models. Understanding the cloud service space and entities involved in providing services to cloud consumers may help in knowing the requirements of registration of industry bodies for cloud service providers. Overall, cloud computing market and its providers may be classified

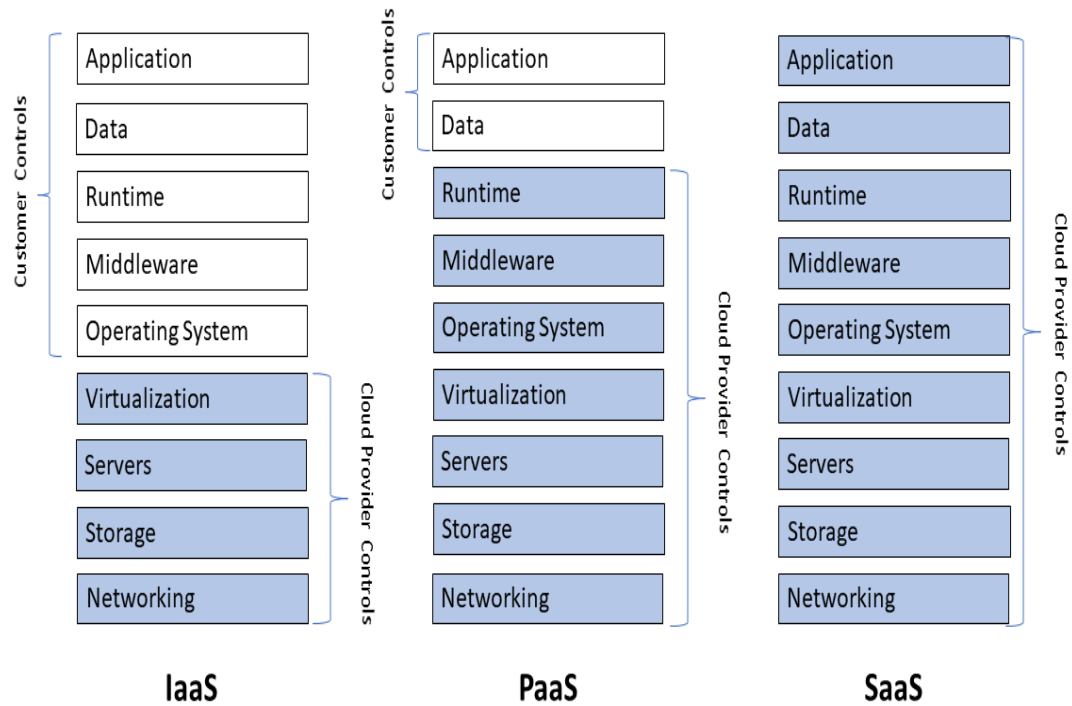


Figure 1.1: Standard Service Models

in following themes from end user prospective:

- (i) **Based on service model:** Standard service models, SaaS, PaaS, and IaaS are the three of the most commonly used terms in the cloud sector. In case of on premise infrastructure setup, enterprises are required to maintain all the hardware, networking, storage, etc by itself. Cloud providers may help enterprises to offload its infrastructure maintenance requirement as per their demand. Figure 1.1 shows<sup>2</sup> the difference in these standard models based on layers controlled by cloud service providers instead of customers.
  - (a) Infrastructure as a Service (IaaS): Under this service model, CSPs provide the infrastructure like Servers, Operating Systems, Virtual Machines, Networks, and Storage on rent basis. Few examples of IaaS providers are - Amazon Web Service, Microsoft Azure, Google Compute Engine, VMware, CtrlS, netmagic. Factors that can drive the IaaS uptake in India are improved infrastructure, economic benefits, increased innovation, vibrant startup and connected ecosystem.
  - (b) Platform as a Service (PaaS): This kind service is used in development, testing and maintenance of software. PaaS is same as IaaS but also provides additional tools like DataBase Management Systems (DBMS) and Business Intelligence (BI)

<sup>2</sup><https://networklessons.com/cisco/evolving-technologies/cloud-service-models>

service. Few examples of PaaS providers are - Apprenda, Red Hat, Google App engine, Microsoft Azure, AWS (Amazon BeanStalk), Zoho.

- (c) **Software as a Service (SaaS):** This service makes the users connect to the applications through the Internet on a subscription basis. Few examples of SaaS providers are - Google Applications, Salesforce, Zoho. It is expected that Software as a Service (SaaS) market will grow at 36 percent per annum and touch 3.3-3.4 billion dollar by 2022<sup>3</sup>. This boost is expected on the back of lower cost of workforce, abundant talent availability, mature sales ecosystem, adoption of newer technologies like AI and machine learning to build products.

Similarly, there are various other services and products provided by CSPs to consumers as per their demands and business requirements. Some notable services are API as a service (AaaS), Data as a service (DaaS), Database as a service (DBaaS), Identity as a service (IDaaS), Logging as a service (LaaS), Runtime as a Service (RaaS), Analytics as a Cloud, Backup as a Service and Disaster Recovery etc. RaaS allows cloud users to avoid paying for idle compute, instead payments are made for cloud resources for actual usage, when their functions, or runtime, are invoked.

- (ii) **Based on deployment model:** Second theme for cloud services is, access by end users which may be based on deployment model, such as private cloud, public cloud, community cloud and Hybrid cloud. In Public Cloud infrastructure model, service providers setup the infrastructure and run applications over this, however, user only lease it. This solution is suitable especially for retail or individual users or clients who are less likely to need the high level for infrastructure and security, for example ESDE eNlight Cloud, Amazon Elastic Compute Cloud (EC2) etc. Private Cloud infrastructures are set up and operated solely for an institution or organization and public or third party access are generally not allowed. Community Cloud deployment model are based on sharing the cloud infrastructure between several organizations from a specific community with a common purpose and common security and compliance requirements. Community Cloud can be designed as a public or private cloud. Last, Hybrid Cloud model is a cloud infrastructure which is a combination of two or more cloud environments (private, community or public) that remain unique entities but are bound together by standardized or proprietary technology enabling data and application portability.
- (iii) **Based on reselling and marketing model:** End users can subscribe cloud from various sources, like directly from CSPs or through channel partners of CSPs. In cloud ecosystem, various entities are involved in providing customized cloud services

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<sup>3</sup>NASSCOMCloud:NextWaveofGrowthinIndia2019



to end users as per their requirements. It may include, Cloud service partners (Infrastructure/hardware/software /equipment/ content providers), Cloud service providers, Distributors, Reseller, Value added Reseller, System Integrator, Cloud hosting service providers, Referral partner, Consultant, Solution Providers, Cloud Service Users (Consumers/Enterprise/Govt institutions) etc.

- (iv) **Based on sectors where cloud is being utilised:** With digitization, utilization of cloud services is increasing rapidly in every sector of society. Banking, Health, Telecommunication, commerce are of few sectors where it is being used widely. However, requirements and challenges of sectors may be diverse. Each sector may have different Quality of Service (QoS), interoperability, security or any other requirements.
- (v) **Based on volume of business or strength of CSPs:** Business model for big cloud service providers, in terms of volume of business, subscriber base, annual revenue, may be different from the small players like SMEs or startups. Therefore, approach of reaching consumers, type of customer base, transparency and SLA requirements may be different for them.

### 1.3 Scope of Consultation

This consultation is focused and limited to the subject matters on which DoT has sought additional recommendation vide above mentioned reference letter dated 27<sup>th</sup> September, 2018, i.e. terms and condition of registration of Industry body, eligibility, entry fee, period of registration, and governance structure and other matters relevant for prescribing a framework for registration of CSP's industry bod(y)(ies).

### 1.4 Structure of the consultation paper

Chapter 2 deliberates on possible frameworks for registration of industry body for cloud services providers. It covers the issues of registration of industry body(ies), terms and conditions of registration and Governance Structure requirements of industry bodies. Chapter 3 summarizes the issues of consultation.

## Chapter 2

# Framework for registration of industry body for cloud services providers

In earlier recommendations of TRAI on 'Cloud Service' <sup>1</sup>, various potential concerns of cloud user were raised such as information asymmetry, data protection, Quality of Service and Billing. Market might need to function appropriately to address the concerns. But, it is a fact that market has tendency of being dominated by a few large players and cloud users, especially, MSME and small users may not have the capability or capacity to raise and resolve these issues with CSP. This required a regulation of cloud services, however over-regulation may hamper the growth of cloud Services which we have witnessed in last few years. In view of above, light touched regulation was envisaged and prepared to be implemented via setting up industry body(ies). DoT has sought additional recommendations on terms and condition of registration of Industry body, eligibility, entry fee, period of registration, and governance structure etc, for setting up framework for registration of CSPs' industry bod(y)(ies).

In fact, TRAI earlier recommended no capping on such industry body(ies). However, subsequently Authority decided to examine the concerns if many such bodies independently function in overlapping area. Possible models for number of industry body(ies), are discussed below:

- (i) **Single industry body or Multiple industry bodies:** Establishment of single industry body may be a simpler task in comparison to multiple bodies. Single body to perform self-regulatory functions may avoid inconsistencies which may occur in case of multiple bodies performing similar functions. However, multiple industry bodies may give more freedom to the industry as individual entity may have more choices to exercise before becoming member. Even the interest areas of group of companies may be different than other depending upon the deployment model, service model, end use

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<sup>1</sup>full text available at <https://main.trai.gov.in/>

scenarios etc. Multiple bodies may be helpful to avoid capturing of the single industry body by few big entities. CSPs may also feel free in contributing in any industry body as other option(s) would be available for compliance of the prescribed or adopted norms. But presence of multiple industry bodies may result into overlapping of same work and adoption of different or conflicting codes of conduct.

- (ii) **Multiple industry body(ies) with capping or no capping:** Multiple industry bodies may be having relatively more advantages than single body. But there might be a possibility of numerous bodies getting registered for this purpose. Too many bodies might create confusion in consumers' mind and may also cause problems in terms of conflicting positions taken by different bodies and due to multiple communication channels between DoT and different industry bodies. This may also fragment whole cloud market in very small groups and defeat the very purpose of establishing such bodies. To maintain the balance, there might be requirement to put some capping on number of such bodies or defining minimum criteria to establish such body. Minimum criteria may also include conditions of minimum number of members or total volume of business, user base etc. for all of the members.
- (iii) **Category-wise industry body(ies):** There may be a requirement to have industry bodies for a particular CSP-category such as service models, deployment models, end users etc., as such CSPs working for a particular sector, service model may have similar requirements. interest area's However, there may be Cloud Service Providers who may be working in multiple categories and they may be required to become member of all such relevant industry bodies.

From the above, it is important to deliberate on appropriate number of industry bodies which may be required for the purpose and whether there should be overall capping or capping may be on the basis of categories such as Service Models, Deployment Models, end Use Scenarios etc. There may be a need to put some limits or define minimum criteria for establishing industry bodies.

**Q. 1. Whether there should be single industry body or multiple industry bodies of cloud service providers which may be registered with DoT? If multiple industry bodies, whether there should be any cap on their number? Should the industry bodies be registered based on the category or type of CSPs? Can a CSP be a member of multiple industry bodies? Please suggest with justification.**

## 2.1 Terms and Conditions of registration

This section deals with the Basic requirements of registration of industry body which may include the terms and conditions of registration, eligibility criteria for industry body to get registered with DoT and other registration requirements like documents required for registration, submission of Code of Conduct (CoC) etc.

**2.1.1 Eligibility Criteria for registration** : One of the functions of the industry body is to formulate Code of Conduct (CoC) and members may have to comply with it. Various aspects which may be required to be covered in the CoC are already mentioned in TRAI's earlier recommendations.

- (i) **Not-for-Profit:** TRAI recommended earlier that Industry Body should be a not-for-profit body. Therefore, one condition for eligibility may be kept that industry body(ies) need to register itself under section 8 of Companies Act, 2013 or Societies Registration Act, 1860, before applying for registration with DoT.
- (ii) **Objectives and vision:** Second requirement for an Industry Body to get registered with the DoT might be to present the facts that objectives and vision of the Industry Body are matching with the purpose for which it is getting registered i.e. dealing with Cloud Services in India and would be having fair, reasonable and non-discriminatory policies for the memberships.
- (iii) **Members of Industry body:** The purpose of establishing Industry body(ies) is to ensure that self-regulatory mechanism is developed by the Industry and members of the Industry Body to comply with the prescribed or adopted Code of Conduct. It would be required that all significant players becomes part of the one or other Industry Body otherwise Cloud Users would not be getting benefits of the framework. However, it may not be a practical approach to include each and every CSP irrespective of size of the individual company. There may be many companies who have recently launched their services in the country or have very small user base. From day one, it would not be useful to impose obligations to comply with the CoC. Therefore, some criteria may be defined to identify Cloud Service Providers who should be necessarily become part of the Industry Body. The criteria may be based upon the annual volume of business, revenue, number of customers, etc. or combination of all these parameters, over a defined period. Such criteria may be notified by the Government from time to time. There may be situations where parameter values of franchisee or service partners of the main company might be required to be included in the parameter value of the main company.

- (iv) Industry body requesting to get registered with the DoT might be required to submit set of documents in support of its claims of fulfilling the eligibility requirements. Further documents may also include various other information such as list of all present members of Governing body of the registered industry body with name and address; Resolution of the Board of Directors; Address details of Industry Body office, where all the communications and notices to the body may be delivered.

**2.1.2 Entry Fee and Recurring Fee** : Industry Body has to be Not-for-Profit but to meet its expenses whether it is capital expenditure or operational expenditure, it may be required to charge its members in terms of Entry Fee and Recurring Fee. One option may be that such fees may be prescribed by the DoT. Other option may be to prepare and publish its accounts and determine Fees to be charged from members on fair and reasonable basis. Industry Body may also create slabs on the basis of financial turnover or any other parameters to differentiate for entry and recurring fees. However, such fees should not be abnormally high and discourage the new members to join the Industry Body.

**2.1.3 Period of registration** : The validity period of registration may be such that Industry body gets sufficient time for adherence of provisions of code of conduct by its members. One option may be to have the registration of Industry Body which may be valid for a limited period, for example, period of 10 years. Provisions for extension of registration may also be included. Accordingly, after expiry of registration period, validity of the registration may be extended for more time, such as 5 years , upon request of the industry body. Keeping limited registration validity period and procedures for extension of registration period may give opportunity to DoT/TRAI to review functioning of industry bodies and extend registration accordingly and put a burden on industry body to work efficiently. Other option may be that one-time registration is performed by DoT for lifetime, however, such arrangement may be required to have the provision of a stringent monitoring system to check the compliance of industry body, from time to time.

**2.1.4 Transparency measures for consumers** : Cloud services are not limited to few standard service instead it can be customized based on actual requirements and demand of users. Here, end users are those who are actual consumer of services. They can be individual or any enterprise, who use cloud services for their business. To promote the adoption of cloud services, in few countries, industry bodies have developed code of practice for cloud provider for maintaining transparency towards users. In case of compliance, they issue special certificate or mark to such cloud service provider. Examples are listed below:

- (i) **Cloud Industry Forum (CIF)**<sup>2</sup>: CIF certificate benefits cloud service provider, as it certifies the CSP for operational best practice; helps to promote services via COP awareness and highlights service quality in the market. Cloud service providers (CSPs) may also use the CoP as a blue print for service development. Cloud Service Providers can begin their journey to Certification by becoming a Registered Supplier, but such providers can not describe themselves as Certified or use the CIF Certified logo. Once registered, providers would have 12 months to complete their Certification. Two types of Certification are available for CSPs. First, the CIF certified Mark, which identifies an organisation that has Self Certified to the Cloud Service Provider Code of Practice. Second, the CIF Certified+ Mark (a higher-level mark) which identifies an organisation that has been independently assessed by an Accredited Assessor as being compliant with the Code of Practice. Certified CSPs are required to provide good quality services according to the guidelines and best practices set out in the COP. CIF maintains details of registered and certified suppliers, their scope of services and provides an opportunity to consumers of CSPs to find the trustworthiness of supplier organisation.
  
- (ii) **Cloudcode - New Zealand Cloud Computing Code of Practice**: The CloudCode is a voluntary code of practice. Signatories to the CloudCode comply by requirement of code. CloudCode Signatories will appear on the public Register of CloudCode Signatories once their Disclosure Documents have been reviewed and found to meet the disclosure requirements of the CloudCode. Signatories are authorised to use the CloudCode Signatory or Provisional Signatory logos after listing on the Register. CSPs may be removed from the Register of CloudCode Signatories in case of non-compliance, complaint or dispute.

**2.1.5 Uniformity in rules and polices for industry bodies** : If more than one industry body is registered by DoT and they have their own governance structure, Code of Conduct, membership rules, complaint handling mechanisms etc. then, a situation may arise where cloud service providers and consumers both get confused during interactions with industry bodies. Therefore, to establish proper understanding among government, industry bodies, consumers and cloud service providers, transparency and uniformity in rules and polices may be required. One requirement of uniformity among the industries bodies may be to have standardize governance structure of Industry bodies. It may help cloud service providers while taking membership. Governance structure of few industry bodies are discussed in heading 2.2 of this document. During registration with DoT, industry body(ies) may require to declare about its governance structure, composition of governing bodies, their powers and deliverables etc and subsequently, if industry body change it from time to time. Governing bodies and

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<sup>2</sup><https://www.cloudindustryforum.org/>

members generally adopt a constitution to perform its deliverable. To maintain uniformity and transparency towards its members and consumers of cloud services, one option may be that DoT may issue broad guidelines regarding Governance structure and Code of Conduct of industry body. DoT may provide minimum requirement for governance structure and code of conduct with the registration forms explicitly. This approach may establish uniformity in rules and policies and that will eventually help building a trust among consumers and cloud service provider. Some minimum requirements for Governance Structure and Code of Conduct is may be as below:

- (i) Scope of Code of Conduct
- (ii) Internal Governance of members or governance structure
  - (a) General Assembly - Composition, Powers and policy for meetings
  - (b) Steering Board - Composition, Powers and policy for meetings
  - (c) Secretariat - Functions and responsibilities
  - (d) Policy for handling disputes amongst Members and establishing concurrence
- (iii) Mandatory provisions of CoC as recommended by Authority are annexed with this document at Annexure-I. Code of conduct will include provisions for adoption of a constitution towards its members, Membership, Creation of working groups, and Mandatory codes of conduct, standards or guidelines that specifically include, Definitions, QoS parameters, Billing models, Data security, Dispute resolution framework, Model SLA, Disclosure framework, Compliance to its codes and standards, Compliance to guidelines, directions or orders issued by DoT, requisite information in stipulated time lines as and when sought by DoT/TRAI.
- (iv) Type of Membership and Membership fee
- (v) Process for creation of working groups and take decision on new request of membership etc,
- (vi) Prescribe guidelines to set task and action plans for set of deliverables, which ensure effective and efficient ways to achieve the objective of industry body.
- (vii) Working methods or procedures to conduct meetings, to prepare and finalise documents, to coordinate working groups, to propose/examine actions/proposals etc,
- (viii) Procedures and mechanisms to maintain transparency by industry body in its own working.

- (ix) Different Levels of Compliance and Compliance Marks
- (x) Procedure for Monitoring and compliance by members: It may include procedures and mechanisms to check the compliance of CoC by registered members.
- (xi) Transparency and Documentation obligations of the cloud service providers:- framework for disclosure to DoT/TRAI and Multi-stakeholder Advisory body or Monitoring body nominated or established by DoT.
- (xii) Financial details: How industry body not-for-profit would meet its capital and operational expenditures.
- (xiii) Complaints Handling and Procedures

**2.1.6 Obligations of Industry body(ies)** : After registering industry body, DoT/TRAI would expect them to perform their functions transparently. Terms and Conditions of registration provide information regarding the obligations that industry body has to follow after registration. Few obligations are listed below which may be included in Terms and conditions of registration:

- (i) **Compliance with policies or DoT rules** : Industry bodies after registration may be required to abide by the policies of registration and rules of DoT as amended from time to time.
- (ii) **Code of Conduct** : A CSPs industry body may be required to submit CoC at the time of registration and CoC submitted must include the minimum requirements defined by TRAI/DoT. Any change in CoC, after submitting to DoT, may need to be intimated to DoT before making such changes.
- (iii) **Transparency requirements:**
  - (a) Industry body may be required to maintain details of registered and certified supplier CSPs. Also, scope of their services and publish them in public domain. Industry body may provide opportunity to consumers of CSPs to find the trustworthiness of supplier organisations.
  - (b) Disclosure to DoT and TRAI : Industry body may require to submit reports periodically to DoT/TRAI. It may include the disclosures regarding location, migration and outsourcing of cloud data to third parties along with disclosures on security and interoperability. The report may include QoS metrics achieved at network level and in different customer segments, or deployment models.



- (c) Industry body may require to establish procedures and mechanisms to maintain transparency in its working. Such procedures and mechanism should be a part of CoC submitted by Industry bodies during registration with DoT.
- (iv) **Compliance to its codes and standards:** Industry body may monitor adherence to prescribed standards/codes by its members, for which adequate audit mechanisms may be instituted. The results of the audits may be displayed on the website of the CSP.
- (v) **Compliance to guidelines, directions or orders issued by DoT:** Industry body may be required to ensure compliance by its members to the guidelines, directions or orders issued, from time to time, by DoT/TRAI.
- (vi) **Information by DoT :** Industry body may be required to ensure compliance by its members to provide requisite information in stipulated timelines as and when sought by DoT/TRAI.
- (vii) **Assessment report on the performance of industry body and its members :** It may require to establish a system for monitoring of members compliance with Code of Conduct and DoT/TRAI rules/regulations/directions. Industry body may submit an assessment report to DoT based on the outcome of monitoring of performance of members and action taken by industry body to resolve the issues and notice of violation forwarded by DoT. Industry body may also required to submit reports to CSAG from time to time.
- (viii) **Audit of registered industry body:** Cloud Service Advisory Group (CSAG) may play a vital role in monitoring of non-compliance of CoC of industry body by its member cloud service providers. Advisory Group may further advice DoT to take relevant enforcement against such non-compliance. Other option could be to appoint a third party for auditing the compliance of industry body registered with DoT.
- (ix) **Provision for discouragement of violation of terms and conditions of CoC -** Fair, transparent, reasonable and non-discriminatory behaviour are some preliminary requirements that industry body should follow, while performing its functions. Any violation of terms and conditions may give undue advantage to few player in cloud service ecosystem. To discourage such situation and repetition of violation by industry body, it may be required to put some penalty provisions in terms and conditions of registration. For penalty, one option may be impose financial disincentives as per the extent of violation. Other options may be that DoT may suspend or terminate the registration and debar such industry body from taking registration for a time period

which also may be as per the extent of violation. Such penalty may be imposed based on the complaint received from stakeholders of ecosystem. To avoid victimization, mechanism of warning or notice may be placed. However, in case of repetitive violation intensity of punishment may be increased.

**Q. 2. What should be the eligibility criteria for an Industry body of CSPs to register with DoT? What is the list of documents that should be required to be submitted as proof of eligibility? What obligations should be cast upon the Industry Bod(y)(ies) after registration with DoT? Please suggest with justification.**

**Q. 3. What may be the threshold value of parameters such as the volume of business, revenue, number of customers etc. or combination of these for a CSP to mandatorily become member of a registered Industry body? Please suggest with justification.**

**Q. 4. Whether entry fee, recurring fee etc, need to be uniform for all members or these may be on the basis of type or category of members? How such type or category can be defined? Should such fee be prescribed by DoT or be left to be decided by the Industry body ? Please suggest with justification.**

## **2.2 Governance Structure of industry body**

Industry Body is an organization that is founded and funded by businesses and operates in a specific industry. As several global industry consortia are actively involved in addressing the needs and issues of cloud computing, discussion of their governance structures may be helpful to explore possibilities of frameworks for registration of industry body(ies). Few examples of industry bodies working in the field of cloud computing in other jurisdictions and in India are listed below along with their own description of activities performed by them, as published on their websites:

- (i) **Asia Cloud Computing Association (ACCA)**<sup>3</sup>: is involved addressing the issues of adoption of cloud computing with a focus on the opportunities and issues in Asia Pacific (APAC). It is working to establish collaboration among cloud stakeholders in Asia to accelerate the growth of the cloud market. Members are benefited by opportunities like

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<sup>3</sup><http://www.asiacloudcomputing.org/>

collaborating with reputed companies on Asias cloud challenges and, positioning and promoting organizations brand.

- (ii) **EU Cloud CoC:** European Commission (EC) is working on the strategy for cloud computing since 2012, to unleash the cloud computing in Europe. A Code of Conduct was prepared by the Cloud Select Industry Group (C-SIG)<sup>4</sup> - Data Protection Code of Conduct Subgroup and was recently revised in November, 2018 as per the requirements of General Data Protection Regulation (GDPR) by European Union (EU)<sup>5</sup>. The activity related to code of conduct is managed through EU Cloud CoC<sup>6</sup>. It is supported by Alibaba Cloud, Arcules, CIF, Cisco, Epigonisis, Fabasoft, Google Cloud, IBM, Oracle, Salesforce, TrustArc, SAP and Workday. The code is a voluntary instrument which includes a set of requirements that enable CSPs to demonstrate their capability to comply with GDPR, cloud specific approaches and recommendations, including a road map, which tracks Code requirements to GDPR and to international standards such as ISO 27001 and 27018<sup>7</sup>.
- (iii) **Cloud Industry Forum (CIF)**<sup>8</sup> was established in 2009 to provide transparency through certification to Cloud service providers and to assist end users in determining core information necessary to enable them to adopt these services. It is a not for profit company limited by guarantee, and is an industry body that champions and advocates the adoption and use of Cloud-based services by businesses and individuals. It is a member of the Cloud Select Industry Group (C-SIG)<sup>9</sup> organized by European Commission (Directorate-General Connect), and is participating in its working groups on cloud certifications, cloud codes of conduct, and cloud service level agreements. CIF has adopted Code of Practice (COP)<sup>10</sup> for Cloud Service Providers ("Code") to bring greater transparency and trust in doing business in the cloud. The CoP covers a broad range of areas and disciplines but focuses on TRANSPARENCY, CAPABILITY ACCOUNTABILITY. It provides certification to cloud service provider after compliance with COP.
- (iv) **Cloudcode - New Zealand Cloud Computing Code of Practice**<sup>11</sup> helps users to

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<sup>4</sup>EC established Cloud Select Industry Group (C-SIG)<https://ec.europa.eu/digital-single-market/en/cloud-computing-strategy-working-groups> and is open to all organisations, groups and individuals having a professional interest in cloud computing matters and are active in the European cloud market.

<sup>5</sup><https://eucoc.cloud/en/contact/request-the-eu-cloud-code-of-conduct.html>

<sup>6</sup><https://eucoc.cloud>

<sup>7</sup><https://eucoc.cloud/en/about/about-eu-cloud-coc.html>

<sup>8</sup><https://www.cloudindustryforum.org/>

<sup>9</sup><https://ec.europa.eu/digital-single-market/en/cloud-computing-strategy-working-groups>

<sup>10</sup><https://www.cloudindustryforum.org/content/code-practice-cloud-service-providers>

<sup>11</sup>[cloudcode.nz](http://cloudcode.nz)

make informed decisions. It gives professional and responsible cloud service providers the opportunity to benchmark and demonstrate their practices, processes and ethics via a recognised third party to build trust with prospective customers. The CloudCode is developed and operated by the Institute of IT Professionals NZ, the independent professional body of the IT industry. The CloudCode was developed with the input of over 250 cloud providers, users, individuals and other stakeholders and was funded by a group of Cloud providers keen to protect the integrity of this important future-focused sector.

- (v) **Cloud Computing Innovation Council of India (CCICI)** is an independent, not-for profit, vendor-neutral body of Professionals from Industry, Academia and Government<sup>12</sup>. The body take multiple initiatives to promote cloud computing adoption. These initiatives can broadly be categorized into Task Forces, Working Groups and Outreach Program. The body seeks to be a trusted neutral advisor and partner to governments and industry by catalyzing innovation in cloud, promoting cloud startups and evangelizing innovative cloud services, by developing an India perspective on cloud requirements, including interoperability as a focus area, by giving inputs to standards bodies and by spreading the India perspective and representing Indian interests in international cloud forums. Vision of CCICI is to accelerate Indias transformation into a digital society through Cloud Computing.
- (vi) **National Association of Software and Services Companies (NASSCOM)**<sup>13</sup> is a not-for-profit industry association committed towards supporting the IT BPM industry. It was set up in 1988 and registered under the Indian Societies Act,1860 and funded by the industry. Its objective is to build a growth-led, sustainable, technology and business services segment in the country. Many enterprises contributing in cloud ecosystem are members of this association. Vision of NASSCOM is to help the IT and IT enabled products and services industry in India to be a trustworthy, respected, innovative and society friendly industry in the world.

As may be seen from the above discussions, an industry body working as an enabler for cloud ecosystem may have different objectives and visions from other bodies. Objectives and vision of any industry body helps it to shape the strategy to achieve the desired goal. Therefore, an industry body may efficiently implement the requirements of regulatory framework, if their objectives are aligned with the objective of enactment of this light touched regulatory framework and its principles.

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<sup>12</sup><https://ccici.in/>

<sup>13</sup><https://www.nasscom.in/>

**2.2.1 Membership policy** : As discussed earlier, ecosystem of cloud services consists of various types of entities including, Cloud service partners (Infrastructure/hardware/software/equipment/ content providers), Cloud service providers, Distributors, Reseller, Value added Reseller, System Integrator, Cloud hosting service providers, Referral partner, Consultant, Solution Providers, Cloud Service Users (Consumers/Enterprise/Govt institutions) etc. Every entity plays its role in providing services to end users. In such situation, limiting membership only to the few entities may leave some problem areas/issues unresolved. On the other hand, involvement of entities, who contributes in providing services to end user directly or indirectly and affects end user's overall experience about cloud service, as members may help industry body and members to have conclusive and solution-oriented discussions. Criteria for membership may include minimum requirements to become a member, types of membership and rights of members. Membership criteria and fee structure for membership adopted by some industry bodies as per the information published on their websites are:

- (i) **Asia Cloud Computing Association (ACCA)**<sup>14</sup>: The ACCAs memberships are corporate in nature (i.e. not tied to a single individual). Interested companies may apply for membership at any time. Presently, it has members such as Amazon, Google, Cisco, Ericsson, Microsoft etc. There are four membership categories: ENTERPRISE membership, ASSOCIATE membership, SME and CHAPTER membership. ENTERPRISE category is for companies deemed market leaders in terms of revenue, size and reach, and who may wish to develop deeper reach into existing markets, and/or explore emerging economies. ASSOCIATE category is for companies deemed market leaders within their own domestic economy, but who may wish to expand beyond their current markets. SME category is for entrepreneurs who want visibility over regional developments and opportunities. CHAPTER membership category is for corporate cloud consumers (e.g. banks, insurance companies, analytics firms) that are interested in participating in discussions related to cloud, and to be connected to other leading cloud service providers and consumers. ENTERPRISE and ASSOCIATE members are eligible for board, but SME and CHAPTER members are not. Membership fee for different categories are different, highest for ENTERPRISE members and lowest for SME members.
- (ii) **EU Cloud CoC**<sup>15</sup>: Membership fee and their rights are also depending on organisations' size. Full Membership is open to any Cloud Service Provider no matter of size. SME may voluntarily opt-in for this option, in case they want to participate in the further development of the EU Cloud CoC. Non-Voting Membership is open to either

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<sup>14</sup><http://www.asiacloudcomputing.org/membership>

<sup>15</sup><https://eucoc.cloud/en/participate/membership-options.html>

Medium or Small Sized Enterprises. Members with full membership become members of general assembly with voting rights. Non-voting membership fee are different for mid-sized and small sized enterprises.

- (iii) **Cloud Industry Forum (CIF)**<sup>16</sup>: It has two categories for membership, industry members and professional members. Industry membership is for cloud vendors, cloud distributors, cloud service providers and organizations that provides consultancy services and cloud integration services. On other hand, professional membership is for individuals that consume cloud services, use cloud technologies or are involved in assessment, design, procurement, adoption and management of cloud environments. Alternatively, anyone can Subscribe to get the latest industry news as well as accessing some of the premium content from their knowledge hub.
- (iv) **Cloudcode - New Zealand Cloud Computing Code of Practice**<sup>17</sup>: The CloudCode is a voluntary code of practice. Signatories to the CloudCode comply with the requirements of code. CSPs, who are wishing to become Signatories, but who have not yet produced Disclosure Documents for all of their Cloud related Products or Services, may become Provisional Signatories. CloudCode Signatories will appear on the public Register of CloudCode Signatories once their Disclosure Documents have been reviewed and found to meet the disclosure requirements of the CloudCode. Once listed on the Register, Signatories are authorised to use the CloudCode Signatory or Provisional Signatory logos on their websites, marketing materials, tender and quote documents and elsewhere. CSPs may be removed from the Register of CloudCode Signatories, due to (1) voluntary withdrawal; (2) withdrawal due to non-payment of CloudCode fees; or (3) withdrawal as a result of a complaint or dispute.
- (v) **Cloud Computing Innovation Council of India (CCICI)**<sup>18</sup>: They invited institutions and individuals to become founding members of CCICI. Presently, various large enterprises such as Microsoft, Oracle, TCS; educational institutions such as IIM Bangalore, IIIT Bangalore; Government bodies such as Andhra Pradesh State skill development cooperation; and Startups and SMEs are institutional founding members. Members are registered under two type of Membership i.e. individual membership and institutional membership. Institutions membership fee are different for different categories, like Startup (<5 crore Annual Revenue), Mid-size enterprise (5 to 50 crore Annual Revenue), Large enterprise (>50 crore Annual Revenue), educational institution (established<10 years ago or >= 10 years ago) etc. Options of Life-time and

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<sup>16</sup><https://www.cloudindustryforum.org/content/cif-membership-0>

<sup>17</sup><https://cloudcode.nz/BecomeaSignatory>

<sup>18</sup><https://ccici.in/types-of-membership/>

annual membership are also available.

- (vi) **National Association of Software and Services Companies (NASSCOM)**<sup>19</sup>: NASSCOM Membership is only for organizations and not for individuals. It offers three types of memberships, regular, associate and institutional. Regular members are the IT-BPM (Information Technology-Business process management) organisations registered in India with annual revenues from IT-BPM operations exceeding Rs 2 Crores. IT-BPM organisations earning annual revenue not exceeding Rs 2 Crores like startups may become member as associate members. Companies which are not directly in the business of technology products and services but provide support solutions / services to the sector, eg: HR Firms, Venture Capital Firms, Academic Institutes, background check companies, Real estate providers, management Consultants, may also get membership in NASSCOM, as an institutional member. Association take different membership fee from different category of members based on their annual revenue.

Above examples shows that *the category of membership* and *the membership fee* are generally based on scale of enterprises or annual revenue earned by them. Industry body may adopt multi-tier membership fee to bring every one on board. This approach may help SMEs and small startups to get membership and fulfill regulatory requirements. Further, it may help industry bodies to understand the problem areas associated with small players. As taking membership in any industry body and to comply with its CoC would be the regulatory requirement, there may arise a situation where industry bodies start charging very high membership fees from their members. To avoid such situation, a cap on membership fee may be necessary. Structure of Membership fee may be part of CoC which is required to be submitted by industry body to DoT while registration, so for any change in membership fee structure, industry body may required to inform the same to DoT.

**2.2.2 Governing bodies and administration** : An organisation sets its policies, procedures, values and long-term plans to meet the mission of the organization. The organisation does this through a governance structure or model. Under proposed framework, industry body must ensure transparency and fair treatment towards all its members, including non-discriminatory behaviour during selection of members, framing membership criteria and performing their functions such as formation of working bodies, policy decisions, formation of guiding rules for members, building consensus among members etc. Few examples of governance structures adopted by industry bodies working in cloud computing field and other fields, reference to the information published in their websites and information available in public domain, are highlighted as follows:

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<sup>19</sup><https://www.nasscom.in/membership-landing>

- (i) **Asia Cloud Computing Association (ACCA):** Governance includes, board members, executive committee and secretariat. Chairperson, Vice-chairperson and treasurer are the part of board members.
- (ii) **EU Cloud CoC:**The Code Governance Bodies<sup>20</sup>, under EU Cloud CoC, are tasked with the implementation and administration of the Code.The Code General Assembly is composed of the founding members and all other members, whose applications to join have been approved by the General Assembly. The General Assembly have the powers:
  - (a) to designate the Chairman of the General Assembly and the members of the Steering Board;
  - (b) to approve the Monitoring Body’s accounts;
  - (c) to approve annual membership fees, Supporter fees and any other fees as proposed by the Steering Board;
  - (d) to approve new Members;
  - (e) to decide on the suspension or exclusion of any member;
  - (f) to approve changes to the Code, and
  - (g) to decide on any other matters as requested by the Steering Board.

The Code Steering Board shall be comprised of a maximum of 13 (thirteen) Members, unless a bigger number of Members is decided by the General Assembly. The Steering Board, directly or through any sub-committees it chooses to create, monitor changes in European Union data protection laws and propose changes to the Code for approval by the General Assembly. The Steering Board develops appropriate policies to assure that interests are disclosed, and conflicts are avoided between Members. As Supporter, separately and without obtaining voting rights in the General Assembly, any interested individuals or organisations (including user organisations, consumer protection bodies, civil rights groups, industry associations, government bodies or agencies, supervisory authorities, academia, or consultancy organisations) may apply for a membership in the General Assembly. CSPs may not apply for Supporter Status. The Secretariat maintain a public register of Cloud Services that are verified adherent and perform other administrative functions.

- (iii) **Cloud Computing Innovation Council of India (CCICI)** is a registered not-for-profit society comprising of volunteers. It works as an open community where every member has equal rights. However, to comply to the statutory regulation of registered

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<sup>20</sup>EUDataProtectionCodeofConductforCloudServiceProvidersversion2.1,November2018



society, they have a Governing Board and office bearers like, President, Vice President, Secretary, Treasurer. Governance structure of CCICI includes, Governing Board and Executing Committee. The Governing Board is the apex committee of body. It is elected by the general body and is responsible for the administration and management of the association. It consisting of 12-18 members including President, Vice President, Secretary and Treasurer. The Executive Committee is the team responsible for day-to-day execution of CCICI strategy formulated by the Governing Board. It meets regularly to review and direct the work of each of the working groups and ensures that all activities are focused towards the overall CCICI mission. The current structure of the Executive Committee is Chairperson; Convener; Mentor; Chair and Co-Chairs of all Working Groups; Vice President, Secretary and Treasurer of the Governing Board.

(iv) **National Association of Software and Services Companies (NASSCOM):** Governance Structure of NASSCOM comprises Chairman, President and Multi-fold Councils. Such Multi-fold Council structure, including Executive Council, Past chairman Council, Industry Council and Regional Council, enables NASSCOM to serve the interest of diverse members across sectors/regions and also provide the requisite governance.

(v) Industry bodies working in other fields may also be seen to understand the appropriate models for governing bodies and administration. Few examples are mentioned below:

- **Association of Mutual Funds in India (AMFI)**<sup>21</sup>: The body is dedicated to developing the Indian Mutual Fund Industry on professional, healthy and ethical lines and to enhance and maintain standards in all areas with a view to protecting and promoting the interests of mutual funds and their unit holders. AMFI was established on August 22, 1995 as a non-profit organisation formed under sec. 25 of the Companies Act, 1956 AMFI performs its functions under the supervision and guidance of a Board of Directors. Every committee has one chairman and 10 members. One role of AMFI is to interact with the Govt. Ministry of Finance (MoF), Securities and Exchange Board of India (SEBI), Reserve Bank of India (RBI), National Payments Corporation of India (NPCI), KYC Registration Agency (KRAs), Registrar and Transfer Agent (RTAs), Central Registry of Securitisation Asset Reconstruction and Security Interest of India (CERSAI), etc. in respect of various common issues relating to the Mutual Fund industry to resolve the issues and difficulties faced by the MF Industry and also to ensure level playing field with other financial services players. AMFI also Interact other trade bodies

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<sup>21</sup><https://www.amfiindia.com/>

like Indian Banks Association etc. to resolve common challenges faced by Banking, financial services and insurance (BFSI) sector. SEBI has made it mandatory for MF Distributors (and their employees) to adhere to the Code of Conduct for Mutual Fund Intermediaries prescribed by AMFI. All MFDs need to adhere to the AMFI Code of Conduct .

- **Telecommunications Standards Development Society, India (TSDSI)<sup>22</sup>:** TSDSI is also a multi-stakeholder body with members from corporate, academia, Research organisations, Indian and foreign associations. TSDSI is registered as a not for profit Society, under the Indian Societies Registration Act XXI of 1860. Although focus of work of this body totally different, it is India's telecom standard making body. General Body is the apex decision making body. Governing Council steers and governs TSDSI in intervals between General Body meetings. Members of TSDSI form separate Standing Committees for performing its functions. A list of Standing Committees for different purposes are headed by members of Governing Council. Standing Committees perform its functions through study groups and working groups with members of body. Proposal are prepared by standing committees and decisions are taken by higher hierarchy levels.

**Q. 5. What should be the guiding principles for governance by an industry body? How would these principles/ organisation structure ensure fair, reasonable and non-discriminatory functioning of body? Should structure of Governance be prescribed by DoT or should it left for the industry body to decide? How can the industry body achieve the desired deliverables efficiently and effectively? Please suggest with justification.**

## **2.3 Seeding of Industry body**

To comply with regulatory requirements, CSPs would required to get membership with an industry body which is working in the field of cloud computing and registered with DoT. So, presence of such industry bodies would be the first stepping stone for implementation this regulatory framework. Various ways may be possible for ensuring their existence in market, few are listed below:

- (i) Government may nominate existing industry body, with members from cloud ecosystem. After registration with DoT, they need to comply with regulatory requirements

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<sup>22</sup><https://tsdsi.in/>

and the terms & conditions of registration. They may require to constitute new CoC or modify existing CoC for members, according to requirements of registration with DoT and require to ensure transparency and fair treatment towards all its members.

- (ii) CSPs form an industry body and develop a broad level of CoC for members. However, formation of industry body may face various challenges like Adoption of a Constitution, formation of CoC and funding for expenditures etc. Initially, it would not have any sponsor member and the framework of collecting funds from members as membership fee, may not work. Therefore, for formation of new industry body, one option may be that some founding members collaborate and develop a broad level of code of conduct. With time, founding members involve other members through selection process like through elections. For example, in New Zealand, The CloudCode is developed and operated by an independent professional body of the IT industry. The CloudCode was developed with the input of over 250 cloud providers, users, individuals and other stakeholders and was funded by a group of Cloud providers keen to protect the integrity of this important future-focused sector. In such initial setup by founding members, they may initially need to bear the cost of initial set up and functioning of industry body. But such arrangement may face dominance of few stakeholders like founding members take undue advantage, therefore, special measures may required to be taken while adoption of a constitution and formation of CoC and governance structure, so that industry body may avoid monopolies and all members may collaborate under a fair, transparent and non-discriminatory framework.
- (iii) Government (DoT) may recognize a not-for-profit industry body and approve its memorandums and by-laws. Then, Such recognised industry body may invite major cloud service providers, enterprises working in the field of cloud computing, institutions and Academia to become founding members of an industry body, at initial stage. Adoption of a Constitution, formation of CoC and funding for administrative and monitoring expenditures may be managed by founding members. Government including DoT and TRAI, may become members of governing bodies of this recognised industry body. For example, Telecom Industry, comprising operators and manufacturers, Academia and RD organizations came together to form Telecommunications Standards Development Society, India (TSDSI)<sup>23</sup> for contributing to next generation telecom standards and drive the eco-system of IP creation in India. TSDSI has been formally recognised by the Government.
- (iv) To avoid initial hassle, Government (DoT) may establish an adhoc industry body with representatives from major service providers of cloud services, communication networks

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<sup>23</sup><https://tsdsi.in/>

and other relevant players. With the help of industry, DoT may set up Constitution of body, Governance Structure, set deliverables of body, broad level Code of Conduct (CoC) and prepare guidelines or procedures to conduct meetings, to prepare and finalise documents, to coordinate working groups, to process/examine actions/proposals, to process new requests of membership, complaint handling and conflict resolution mechanism etc. Further, DoT may invite or nominate enterprises, institutions and individuals to become founding members of the industry body, at initial stage. Governance of body would be managed by DoT and initial funds or grant may be granted by government to such adhoc body till elected office bearers takes over. Such body, may have representatives from Government to understand the requirements of industry bodies and its members. Further, they may also help industry body in interacting with Government. For example, Directorate-General of the European Commission established the Cloud Select Industry Group (C-SIG)<sup>24</sup> with representatives from major European and multinational companies and organisations with significant involvement in cloud computing, for the purpose of providing independent validations and advise on proposals relate to cloud computing being considered by the European Commission.

**Q. 6. What policy may be adopted for initial formation of industry body for cloud services? Please suggest with justification.**

**Q. 7. Any other issue which is relevant to this subject? Please suggest with justification.**

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<sup>24</sup>Director-General for Communications Networks, Content and Technology, Software and Services, Cloud Unit <https://ec.europa.eu/digital-single-market/en/cloud-computing-strategy-working-groups>

# Chapter 3

## Issues for Consultation

- Q.1 Whether there should be single industry body or multiple industry bodies of cloud service providers which may be registered with DoT? If multiple industry bodies, whether there should be any cap on their number? Should the industry bodies be registered based on the category or type of CSPs? Can a CSP be a member of multiple industry bodies? Please suggest with justification.
- Q.2 What should be the eligibility criteria for an Industry body of CSPs to register with DoT? What is the list of documents that should be required to be submitted as proof of eligibility? What obligations should be cast upon the Industry Bod(y)(ies) after registration with DoT? Please suggest with justification.
- Q.3 What may be the threshold value of parameters such as the volume of business, revenue, number of customers etc. or combination of these for a CSP to mandatorily become member of a registered Industry body? Please suggest with justification.
- Q.4 Whether entry fee, recurring fee etc, need to be uniform for all members or these may be on the basis of type or category of members? How such type or category can be defined? Should such fee be prescribed by DoT or be left to be decided by the Industry body ? Please suggest with justification.

Q.5 What should be the guiding principles for governance by an industry body? How would these principles/ organisation structure ensure fair, reasonable and non-discriminatory functioning of body? Should structure of Governance be prescribed by DoT or should it left for the industry body to decide? How can the industry body achieve the desired deliverables efficiently and effectively? Please suggest with justification.

Q.6 What policy may be adopted for initial formation of industry body for cloud services? Please suggest with justification.

Q.7 Any other issue which is relevant to this subject? Please suggest with justification.

### Mandatory Provisions of Code of Conduct (CoC)

DoT has accepted Authority's recommendation which state that industry-led body for Cloud Services would prescribe the code of conduct of their functioning which would include the following:

- (i) **Adopt a constitution** that is fair and non-discriminatory towards its members. The constitution should have provision to adopt the directions, orders or guidelines issued by the Government from time to time. Constitution should also facilitate provision of sharing information with the Government or TRAI when asked by them from time to time. It should also facilitate investigation of the conduct of such industry body by the Government or TRAI to ensure transparency and fair treatment to all its members.
- (ii) **Membership:** Membership shall be open to any CSPs operating in India, with an equal opportunity without any discrimination. Each member shall be bound to follow the code of conduct prescribed by the Industry body. The procedure followed by the industry body and its various sub-groups while formulating codes of conduct and other guidelines shall be fair, transparent and non-discriminatory.
- (iii) **Creation of working groups:** Industry body shall be free to create various working groups to conduct the business including but not limited to for prescribing codes of conduct, to deal with standardisation and technical issues, to deal with consumer grievance redressal etc..
- (iv) **Mandatory codes of conduct, standards or guidelines:** setting out the The codes of conduct, current best practices<sup>1</sup>, standards or guidelines formulated by the industry regulatory body for cloud computing may specifically include the following:
  - (a) **Definitions:** The code should set out definitions of entities and activities that are sought to be regulated. While the Authority endorses the following widely-

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<sup>1</sup>The Office of Privacy Commissioner in Hong Kong has defined CC as a pool of on-demand, shared and configurable computing resources that can be rapidly provided to customers with minimal management efforts or service provider interaction. The cost model is usually based on usage and rental, without any capital investment

accepted definition of CC from ISO/IEC 17788:2014<sup>3</sup>, it would be advisable for the industry body to further deliberate upon this issue and develop definitions that are most suitable for the Indian cloud context: Cloud computing: Paradigm for enabling network access to a scalable and elastic pool of shareable physical or virtual resources with self-service provisioning and administration on-demand. NOTE Examples of resources include servers, operating systems, networks, software, applications, and storage equipment.<sup>2</sup>

The Authority also endorses the following definition of a CSP laid down by the International Telecommunications Union (ITU) wherein a CSP is defined as a party which makes cloud services available and cloud service has been defined as One or more capabilities offered via cloud computing invoked using a defined Interface. ITU also separately defines other CSP related terms like cloud service broker, cloud service partner etc. The industry body should consider and adopt relevant definitions for this sector in Indian scenario.

- (b) **QoS parameters:** The code should delineate QoS parameters to be complied with by CSPs for different segments of customers and publish them on their website. The code should also set out a requirement to publish, on a regular basis, the QoS metrics achieved by CSPs in order to promote transparency in the sector. This should include QoS metrics achieved at network level and in different customer segments, or deployment models.
- (c) **Billing models:** The code should lay down various credible billing models that can be followed by member CSPs and publish them on its website.
- (d) **Data security:** The code should set out the recommended reasonable cloud security standard(s) to be followed by its members, pertaining to issues such as encryption of sensitive data, backup options, and disaster management strategy to protect information held by CSPs from misuse, interference, unauthorised access, and loss. All such standard information should be published on their website for the purpose of transparency. For instance, in Australia the Office of the Information Commissioner has issued a detailed guidance as to what would constitute reasonable steps” pertaining to data security<sup>3</sup>
- (e) **Dispute resolution framework:** The code should set out a model framework

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<sup>2</sup>ISO/IEC 17788, Information technology Cloud computing Overview and vocabulary, available at [http://standards.iso.org/ittf/PubliclyAvailableStandards/c060544\\_ISO\\_IEC\\_17788\\_2014.zip](http://standards.iso.org/ittf/PubliclyAvailableStandards/c060544_ISO_IEC_17788_2014.zip).

<sup>3</sup>Office of the Australian Information Commissioner ,Guide to information security (2013) , available at <https://www.oaic.gov.au/images/documents/privacy/privacy-guides/information-security-guide2013WEB.pdf>.



for handling of complaints, including complaints pertaining to billing, metering and QoS, that should be resolved by CSPs independently. The code may also require CSPs to publish periodic reports on their website of the complaints handled and resolved by them. Procedures may also be prescribed for handling of those grievances which have not been resolved at CSPs level.

- (f) **Model SLA:** The code should also formulate a model template of SLAs which sets out model clauses pertaining to technical and legal aspects of CC - such as QoS, customer satisfaction, security, data protection, pricing and action in case of SLA violation - for the protection of the customers. This will ensure that safe and fair terms conditions of contract are drawn up by big and small market players alike. For instance, the EC also facilitated an industry group, called C-SIG SLA subgroup, which prepared a set of SLA standardisation guidelines for CSPs and professional CC services customers. These guidelines lay down the principles for developing SLA standards for CC services along with objectives to be achieved through these SLAs in terms of performance, security and data protection etc.<sup>4</sup>
- (g) **Disclosure framework:** The code should set out a disclosure mechanism to promote transparency in Cloud Services. This may include requirements to make disclosures regarding location, migration and outsourcing of cloud data to third parties along with disclosures on security and interoperability. For example, under the New Zealand CloudCode, a signatory CSP is required to disclose critical details regarding their cloud products and services such as-
  - i. who has ownership of data
  - ii. how data security is ensured
  - iii. where data is located
  - iv. how data can be accessed and used by customers etc.

The CloudCode does not impose any legal obligations on the signatories, however non compliance with the code can attract liability under general law.

- (h) **Compliance to its codes and standards:** Industry body shall monitor adherence to prescribed standards/codes by its members, for which adequate audit mechanisms shall be instituted. The results of the audits shall be displayed on the website of the CSP.
- (i) **Compliance to guidelines, directions or orders issued by DoT:** Industry body shall ensure compliance by its members to the guidelines, directions or orders

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<sup>4</sup>C-SIG SLA subgroup, Cloud Service Level Agreement Standardisation Guidelines, 2014.ISO has also developed a SLA framework which establishes a set of common building blocks - concepts, terms, definitions, contexts - that can be used to create cloud SLAs, available at <https://www.iso.org/standard/67545.html>.

issued, from time to time, by DoT/TRAI.

- (j) **Information by DoT:** Industry body shall ensure compliance by its members to provide requisite information in stipulated time lines as and when sought by DoT/TRAI.

# List of Abbreviations

**ACCA** Asia Cloud Computing Association.

**C-SIG** Cloud Select Industry Group.

**CC** Cloud Computing.

**CCICI** Cloud Computing Innovation Council of India.

**CIF** Cloud Industry Forum.

**CoC** Code of conduct.

**CSAG** Cloud Service Advisory Group.

**CSCC** Cloud Standards Customer Council.

**CSP** Cloud Service Provider.

**CWG** Cloud Working Group.

**DBCDE** Department of Broadband, Communications and the Digital Economy.

**EC** European Commission.

**GDPR** General Data Protection Regulation.

**NDCP** National Digital Communications Policy.

**OMG** Object Management Group.

**QoS** Quality of Service.

**TRAI** Telecom Regulatory Authority of India.

**TSP** Telecom Service Provider.