

Report

Advisory Council (AC) Consultation on Cloud Computing

OECD Foresight Forum – October 2009

Cloud computing promises a powerful new platform for innovation. It allows entrepreneurs to develop, deploy, market, and sell cloud applications worldwide without having to invest in expensive IT computing infrastructure. It also gives smaller businesses access to the same industrial-strength computing systems as large multinational corporations, boosting the competitiveness of small and medium-sized business. By allowing government and business in developing countries to access sophisticated computing platforms without having to make large hardware and software investments or manage complex IT deployments, cloud computing can help jump-start economic development. All that is required to access cloud computing solutions is a browser with broad-band access.

The OECD Secretariat invited the Internet Society (ISOC) – coordinator of the Internet Technical Advisory Committee (www.internetac.org) – to participate in the organization of the Foresight Forum in Paris (14 October 2009), which focused on "Cloud Computing: the next Computing Paradigm?". An important part of ISOC's preparation was input from its Organizational Members. To this end, ISOC staff (Constance Bommelaer) conducted a consultation on "Portability, Competition and Innovation" (<http://www.isoc.org/tools/surveys/index.php?sid=9>).

The Technology Foresight Forum is an annual event organized by the OECD Committee for Information, Computer, and Communications Policy (ICCP) to help identify opportunities and challenges for the Internet Economy posed by technical developments. Foresight Forums represent a collaborative effort of policymakers from member and non-member governments, business, civil society, and the Internet technical community. They are a good opportunity to give voice to stakeholders' concerns and create a constructive dialogue between all relevant actors.

Three Organizational members participated in this consultation. The report below summarizes the responses received. Also, one of the respondents, Benoit Verbaere (Innovation Programme, SITA, specialists in air transport communications and IT solutions), who is currently working on building a cloud computing facility for SITA, agreed to participate by way of an oral presentation (<http://www.internetac.org/wp-content/uploads/2009/10/sita5.ppt>) at the OECD Foresight Forum to share his experience and contribute to the discussion.

Note on Methodology

The survey of ISOC Organization members was conducted using a web-based instrument over a period of four weeks from 20 August 2009 to 12 September 2009. The following results are indicative and may not represent the entire ISOC Organizational membership's views.

I. Open data and Industry standards and their role in mitigating the risk of lock-in

As organizations and consumers move increasing amounts of data into cloud services, a crucial question arises as to whether or not it is possible to avoid lock-in? This leads to an assessment of whether the open-data movement can help address the problems of lock-in and what will be the likely impact of open-source software. Is there a role for industry standards? Also, given that cloud computing is still emerging, will standards hamper innovation?

The respondents agreed that the situation has rapidly evolved. It is estimated that previously, lock-in was a homogeneous environment from hardware through software. Today, on the contrary, in cloud computing the lock-in relates to bundling of services. There is a growing risk of vendor lock-in both from the end client point of view (those tied to a cloud provider) and from the cloud service provider point of view (those tied to cloud technology providers).

The respondents have different views on whether or not open data can help address the problems of lock-in. Some consider that its impact is nonexistent, while others consider that open-data can play an important role to help standards emerge or by providing alternatives to proprietary cloud products.

Additionally, it is believed that in the long run, open source would compete at the same level as proprietary products and take significant market share (for instance, in operating systems, application servers, etc.).

II. Several possible roles for policymakers

By giving entrepreneurs a powerful development and distribution tool, cloud computing promises to accelerate innovation and entrepreneurship. This raises the question of the possible roles of policymakers in ensuring that entrepreneurs are able to take advantage of the innovation that cloud computing allows.

It is considered that policymakers can have different roles making sure entrepreneurs take advantage of cloud computing and the powerful new platform for innovation it promises to offer. One mission could be to ensure that geographic boundaries are not imposed on the Internet as this would have

various negative effects, such as diminishing the potential developments and uses of cloud computing.

Respondents also mentioned that policymakers can evangelize on the potential and the benefits of cloud computing. Governments can also be exemplary by providing incentives for the development of regional, publicly operated clouds and by promoting open clouds (those based on standardization and open source).

Respondents also felt that governments have a role in developing awareness and adequate policy frameworks to address emerging policy issues, such as “cloud security”, “cloud privacy”, or “cloud confidence”.

III. Policies to help companies take advantage of cloud computing platforms

As mentioned in the previous section, policymakers should pursue different missions to ensure that the opportunities offered by cloud computing spur economic development. In addition to the possible roles listed above, policymakers could encourage the development of best practices to address the way cloud computing providers ensure robust and fault-tolerant services, or at least how they document what is done.

The consultation shows, however, that respondents have different views on the types of companies policymakers should focus on. Some feel that since small companies are likely to adopt cloud computing quicker than large multinational corporations (MNCs), it is governmental services and MNCs that need to be encouraged to turn to the cloud.

Others believe that is the category of smaller enterprises that will need greater support. While large companies are likely to use the cloud for only some of their IT needs (hence keeping IT infrastructure and skills at home), smaller companies may try to do “everything in the cloud”. This would imply having zero IT infrastructures on their premises and no longer dealing directly with software providers (no more software annual fees). Hence, they would need large application stores to choose from and advanced tooling, so as to compose, deploy, and manage their own applications.

It is also noted that as the technology is not mature yet, an in-depth understanding of the risks and the benefits of cloud computing could be premature at this stage.

IV. Cloud computing in relation to global policy issues

As cloud computing develops and shows its utility in different fields, it can be put in perspective with global issues and policy agendas. This raises two questions: Are there particular policy approaches to be considered by developing countries and international organizations to harness cloud computing for global economic development? What are the environmental implications of cloud computing? These questions generate a lively debate among the world’s experts. In a similar way, the respondents of this consultation hold differing views on the latter.

Some believe that because the technology is not yet mature, the environmental implications of cloud computing are still very hard to assess. Virtualization, as a core technology, could allow for energy consumption to be optimized (with consolidation of virtual machines on physical servers and the switching off of unused physical servers). They also note that proponents of mega data-centre-based cloud computing (such as Google) argue they achieve major reductions of energy consumption by locating data-centres in cold areas (such as Alaska) or near low cost energy sources (such as hydroelectric plants). They also note that other observers claim that we are very far from knowing if it is preferable, from an environmental point of view, to use resources in data-centres or resources at the edge of the network (for example, PCs, netbooks, mobile phones, PDAs, etc.).

One respondent firmly believes that the “cloud helps you turn green” and proposes that the development of cloud computing should be subsidized with carbon taxes. He raises an interesting question: as demand grows, could it be possible to enforce a policy that power and cooling is consumed only by countries that can control the environmental impacts of their IT use?

Finally, the development of cloud computing can be put into perspective with the global question of access and connectivity. Respondents underline the importance of anticipating and synchronizing the needs of connectivity. They also wonder if connectivity problems might prevent providers from extending their cloud services to developing countries.

About the Internet Society

The Internet Society is a non-profit organization founded in 1992 to provide leadership in Internet related standards, education, and policy. With offices in Washington, D.C., and Geneva, Switzerland, it is dedicated to ensuring the open development, evolution, and use of the Internet for the benefit of people throughout the world. More information is available at: <http://InternetSociety.org>