

For discussion on

14 May 2012

**Legislative Council Panel
on Information Technology and Broadcasting**

Implementation of a Government Cloud Platform

Purpose

This paper seeks Members' support for the implementation of a Government Cloud Platform.

Background

2. In order to meet the rising public expectations and citizens' demand for quality government services, the Government needs to continuously enhance the cost-effectiveness and responsiveness in e-government service delivery. This can be effectively achieved through cloud computing¹.

¹ Cloud Computing is a 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.

3. Under a cloud computing environment, computing resources such as computer servers and data storage can be pooled together for shared use by users. Users can flexibly utilise the computing resources as a service on demand basis. Through a “metering” function, service providers can measure the resource usage and charge the users for it.

4. With the above features, the implementation of a cloud computing environment can bring the following benefits:

- (a) cost saving through economy of scale and resource sharing;
- (b) time saving through streamlined procurement and system implementation, and on-demand service provision; and
- (c) enhanced agility in meeting dynamic demand of information technology (IT) services.

Proposal

5. To reap the potential benefits of cloud computing, we will develop a Government Cloud Platform (GovCloud) for hosting some common e-government services for shared use by bureaux and departments (B/Ds). These services will initially include electronic information management² and electronic procurement.

² Electronic information management covers content management, records management and knowledge management.

6. The proposed GovCloud will comprise a core infrastructure and a shared pool of computing resources. The core infrastructure will cover services of data centre, network, security, resilience, backup and load balancing, as well as components of resource virtualisation, provision and metering. The shared pool will consist of server, storage and network resources which will be dynamically provided to e-government services based on individual workload demand. The core infrastructure will facilitate secure, robust and effective hosting and access of the shared pool of computing resources, and will provide metering capability to manage its utilisation.

7. We estimate that a total of \$242 million will be required for implementing GovCloud. The estimated one-off funding would support about 30 B/Ds in rolling out their electronic information management and electronic procurement services for five years from 2013-14 to 2017-18. With a critical mass of B/Ds using the above cloud computing services, we expect that B/Ds will be able to sustain the ongoing operation of GovCloud within their existing resources.

8. To leverage on the flexibility of cloud service provision in the market, we will adopt an outsourcing approach for implementing and operating GovCloud. To ensure information security, the selected contractor will be required to provide the cloud services under an environment dedicated to the use by Government. The contractor has to comply with prevailing government policies, guidelines and requirements on information security. Thorough assessments and audits on security and privacy will be conducted both before and after launching the cloud services.

Potential Benefits

Cost saving

9. As a shared hosting platform, GovCloud will bring about economy of scale. It will help avoid the need of building duplicated infrastructures for implementing electronic information management and electronic procurement separately. We can save an additional investment of about \$67 million over a five-year period if we adopt a centralised approach of building GovCloud.

Time saving

10. Through adoption of cloud computing technology, GovCloud will enable rapid provision of computing resources, with lead time of procurement and installation substantially reduced from a few months to a few days. This can help expedite delivery of e-government services and enable earlier delivery of the associated benefits to Government and citizens. For example, a B/D would only require two to three months to roll out a typical electronic information management service under a cloud scenario in contrast to at least nine to 12 months under a traditional approach to procure and install the service.

Agility in meeting dynamic demand

11. GovCloud will facilitate on-demand and flexible provisioning of computing resources. This would greatly enhance agility and responsiveness of B/Ds in meeting dynamic public demands on e-government services.

Fostering development of IT industry

12. The implementation of GovCloud will generate demands for various types of IT professional positions and services in data centre hosting, operations management, project management, as well as IT system integration. It will foster the development of the local IT industry in strengthening the related professional skills and business models in cloud computing.

13. We will outsource the implementation and operation of GovCloud as a total solution. This will help create synergy and partnership across different levels and among different sectors in the local IT industry. GovCloud will be a hosting platform to facilitate the development of more e-government services. It will help generate demands on e-government application development, and related maintenance and support services, which will bring about more business opportunities to local IT industry.

Funding Proposal

14. The estimated non-recurrent expenditure for the implementation of GovCloud is \$242 million. The breakdown is as follows:

| | | \$ million | \$ million |
|-----|--|-------------------|-------------------|
| (a) | Provision of the core infrastructure | | |
| | - Data centre hosting services | 25.8 | |
| | - Hardware and software | 89.7 | |
| | - Contingency (10%) | 11.5 | |
| | Sub-total | | 127 |
| (b) | Provision of the shared pool of computing resources to meet dynamic demand | | |
| | - Data centre hosting services | 20.6 | |
| | - Hardware and software | 74.9 | |
| | - Contingency (10%) | 9.5 | |
| | Sub-total | | 105 |
| (c) | Programme coordination, management and support | | 10 |
| | Total | | 242 |

15. On paragraph 14(a), the estimate of \$127 million is for the provision of the core infrastructure and related services for GovCloud, including hardware (such as core network equipment, remote data backup solution, system resilience and disaster recovery facilities), software (such as resource provisioning tools, metering tools, central management and monitoring tools),

operation support, management and helpdesk services, data centre facilities for hosting the core infrastructure, and a 10% contingency.

16. On paragraphs 14(b), the estimate of \$105 million is for the provision of computing resources, including hardware (such as servers, disk storage and tape storage), software (such as server, disk and backup software) and network bandwidth, for the common electronic information management and electronic procurement services, data centre facilities for hosting the shared pool of computing resources, and a 10% contingency.

17. On paragraph 14(c), the estimate of \$10 million is for the acquisition of contract IT professional staff for programme coordination, management and support in managing the contractor's work for the implementation and operation of GovCloud.

18. The manpower requirement for planning and managing the implementation of GovCloud, conducting procurement exercise, performing the subsequent contract management and overseeing the service operation will be absorbed by the Office of the Government Chief Information Officer within existing resources.

Recurrent expenditure

19. Under a cloud computing model, services are bundled in a way that computing resources will increase gradually and technology will enhance progressively in light of demand. Such bundled services normally require payment by instalments without a breakdown of charging components. All expenditures are covered by the estimates stated in paragraphs 14 – 18, and no additional recurrent maintenance cost of GovCloud will be required in the five-year period from 2013-14 to 2017-18. Participating B/Ds will be able to sustain the operation of GovCloud using their own resources beyond 2017-18.

Expenditure for e-government services development

20. GovCloud will provide computing resources for hosting the common e-government services. The development and maintenance support of individual e-government services will be separately funded under the Capital Works Reserve Fund Head 710 Computerisation and absorbed by B/Ds concerned respectively.

Implementation Plan

21. Subject to funding approval of the Legislative Council Finance Committee, we plan to launch the proposed GovCloud by the end of 2013. The capacity will gradually increase in the course of uptake of common e-government services by B/Ds.

22. The proposed implementation plan is as follows –

| Activity | Timing |
|--|----------------------------------|
| (a) Seek funding approval from the Finance Committee | June 2012 |
| (b) Tendering for services to construct and operate GovCloud | July 2012 to December 2012 |
| (c) Construction of GovCloud | January 2013 to November 2013 |
| (d) Rollout of GovCloud services | December 2013 |

Advice Sought

23. Members are invited to support the proposed implementation of GovCloud as set out in paragraphs 5-8 above. Subject to Members' views, we will seek funding approval from the Finance Committee in June 2012 for implementing GovCloud.

Office of the Government Chief Information Officer

Commerce and Economic Development Bureau

May 2012