

Cloud Services Bouquet

Version 1.0

***Ministry of Electronics
& Information Tech.,
Government of India***

**Helping Government Organizations
Select Appropriate Cloud Services**

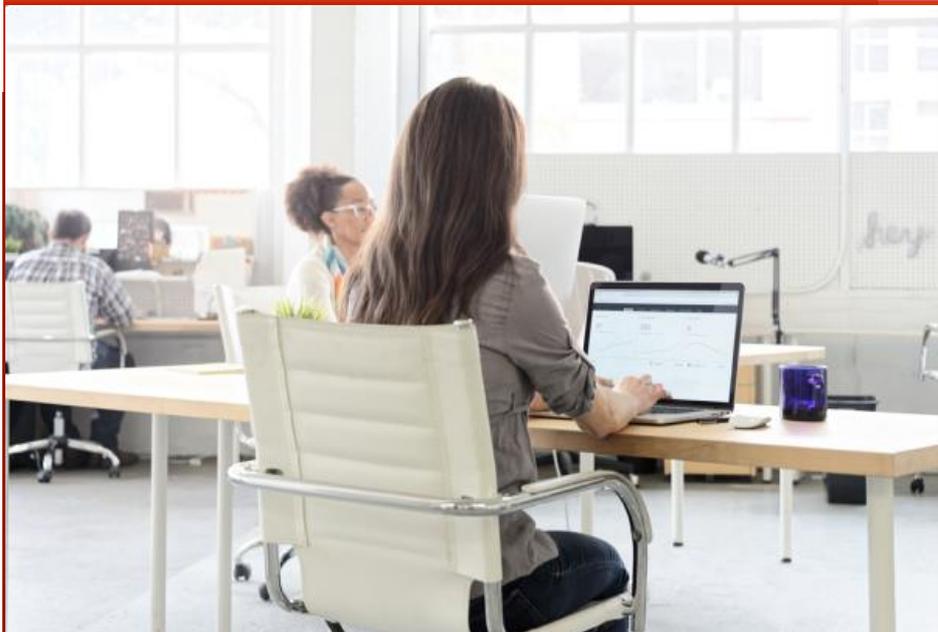


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1. Purpose

The purpose of this document is to provide a bouquet of Cloud services, empanelled by the Ministry of Electronics & Information Technology (MeitY), which Government Organizations in India can refer to while planning to move their legacy applications to the cloud environment or building their own Cloud native applications. The list of Cloud services provided in this document caters to the normal IT requirements of the Government Organizations. For each of the listed Cloud services, a description of the Cloud service along with the parameters that Government Organizations need to specify for procuring that service, is also provided in this document.

2. Background

Cloud has established its monetary & non-monetary benefits. Government Organizations cannot afford to miss on-boarding the Cloud bandwagon if they want to deliver their services to businesses and consumers resourcefully. However, Cloud Service Providers (CSPs), operating in India, have been offering differing and proprietary Cloud services, and it is very difficult for Government Organizations to compare and select Cloud services that can meet their business and IT requirements.

The Cloud services offered by the global and domestic CSPs vary significantly even if the services are intended to cater to the same requirements of the Government Organizations. The input parameters required to procure the Cloud services and the measurement / monitoring criteria used to bill the service consumers also vary greatly.

In order to assist the Government Organizations in selecting appropriate Cloud services from the plethora of offerings of CSPs, the common IT requirements of Government Organizations were identified and an attempt has been made to prepare a list of Cloud services, which are, to a reasonable extent, standardized across all CSPs. Though it is not possible to make an apple to apple comparison between Cloud services offered by various CSPs, the intent of providing this bouquet of Cloud services is to make Government Organizations aware of the common Cloud services which are being offered by the empanelled CSPs and which can be compared, to a reasonable extent, across all CSPs, before taking the decision to procure a Cloud service from a particular CSP.

3. Cloud Services

The Cloud services, listed under this section, have been categorized into “Basic Cloud Services” and “Advanced Cloud Services”. The Cloud services listed under the “Basic Cloud Services” are mandatory for all CSPs to offer to the Government Organizations under at least one of the empaneled Cloud Deployment Models. However, the Cloud services listed under the “Advanced Cloud Services” category are optional for the CSPs to offer.

Cloud services, under both the categories, are to be listed on the Government eMarketplace (GeM) platform once they have been successfully empanelled by the MeitY. If a CSP wants to list Cloud services, which are not covered under this document, it needs to follow the due process specified by MeitY to get its services first empanelled with MeitY under the “Advanced Cloud Services”.

While listing their Cloud services on the GeM platform, CSPs will be required to classify their Cloud services into one of the three service models – Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS) – based on the controls identified and defined by MeitY in its Cloud Services Empanelment RFP. CSPs shall also be provided with the option of specifying their Cloud service capabilities on the GeM platform while showing the service definition and service procurement parameters as identified and defined for those services in this document.

For majority of the Cloud services listed in this document, per unit price for various ranges of quantities will be discovered to ensure that Government Organizations get better prices as the quantity increases, e.g., for “Active Directory Services”, monthly and yearly price per user will be discovered for the users up to 100, between 101 and 200, between 201 and 300, between 301 and 400, between 401 and 500, and more than 500.

All the Cloud services mentioned in this bouquet are mandatorily required to meet all the controls, including technical, security and legal, specified in the Cloud Services Empanelment RFP issued by MeitY.

To keep this document clutter free, the Service Procurement Parameters for Cloud services have been provided in the drop down boxes. To see the actual values of the Service Procurement Parameters, please click on the text named “Choose an item.”

3.1. Basic Cloud Services

These services, as mentioned earlier, are mandatory for CSPs to offer. However, CSPs are not required to offer all the SKUs (combinations) of the Cloud services listed under “Basic Cloud Services” category. CSPs will be required to display prices of these basic Cloud services on the Government eMarketplace (GeM).

3.1.1 Compute Services

This service can be used by the Government Organizations to access the virtualized servers offered by the Cloud Service Providers. This bouquet currently includes only two types of compute services – Virtual Machines and Containers. Virtual Machines have been kept under the “Basic Cloud Services” while containers have been categorized under the “Advanced Cloud Services”.

3.1.1.1 Virtual Machine

Virtual Machines (VM) provide the basic IT Infrastructure that can be used by the Government Organizations to run their variety of workloads such as compute-intensive workload, memory-intensive workload, general-purpose workload, etc. All Virtual Machine packages, listed below, are Managed Virtual Machines. CSPs are required to list their prices on GeM platform keeping this in mind. These VMs will be provided with following mandatory inclusions without any extra cost.

Sr. No.	Category	Inclusion ^{1, 2}
1.	Processor	<ul style="list-style-type: none"> Minimum frequency of 2.0 GHz
2.	Storage type	<ul style="list-style-type: none"> 50 GB of Hard Disk Drive (HDD) storage, OR 50 GB of Solid State Drive (SSD) storage as required by the Government Organization (additional storage, if required, may be procured separately)
3.	Operating System	<ul style="list-style-type: none"> Any supported version of the following operating systems as per the requirement specified by the Government Department³ <ul style="list-style-type: none"> Microsoft Windows Server Red Hat Enterprise Linux Oracle Linux

		<ul style="list-style-type: none"> • SUSE Linux Enterprise Server • CentOS Operating System • Ubuntu Operating System
4.	Network	<ul style="list-style-type: none"> • Subnet / network segment capability should be available • VM should be firewall protected • Mapping of Private IPs to Public IPs for inbound / outbound traffic
5.	Security	<ul style="list-style-type: none"> • Antivirus • Identity and Access Management including Single-Sign On for managing access to Cloud services of the CSP • Encryption of data associated with VM • System log should be available • Multi-factor authentication • Hardening & patch management of underlying infrastructure by CSP
6.	Backup	<ul style="list-style-type: none"> • Entire VM data backup must be available • Backup must be taken at least every week • Backup of VM must be retained for at least 30 days.
7.	Auto scaling	<ul style="list-style-type: none"> • Ability to auto scale at least horizontally without bringing the virtual machine down
8.	Service Level Agreement	<ul style="list-style-type: none"> • Virtual Machine Uptime SLA of at least 99.5%
9.	Scheduling	<ul style="list-style-type: none"> • Scheduling features such as auto start, auto shut-down, etc., without requiring manual intervention
10.	Turnaround Time	<ul style="list-style-type: none"> • Resource (vCPU, storage, etc.) scaling up and down should be completed within 30 minutes. Alert may be provided.
11.	Virtual Machine Administration	<ul style="list-style-type: none"> • Basic monitoring tool and dashboard including admin access

¹ CSPs shall not charge any extra amount from the Government Departments other than the prices discovered for the VMs consumed by the Government Departments.

² Discovered prices shall include all prices associated with consuming a service fully.

³ Price of VM will vary based on the operating system selected by the Government Organization.

Sr. No.	Service Name ^{4,5}	Service Procurement Parameter					
		Operating System	vCPU	RAM (GB)	Storage (GB)	CPU Launch Year	Physical Core to vCPU Ratio ⁶
1	Virtual Machine Package ⁴	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

⁴ For the above configuration of Virtual Machines, hourly, monthly and yearly prices will be discovered.

⁵ In addition to the already specified SKUs, CSPs are allowed to list their own SKUs of the virtual machines on the GeM platform, provided that these SKUs meet all the specified criteria including minimum inclusions.

⁶ Physical Core to vCPU ratio

Keeping all other parameters same, it is recommended to consider following guidelines while selecting a Virtual Machine for a running a workload.

Physical Core to vCPU ratio	Recommendation
1:1	No performance issues. Recommended for business critical workloads.
1:2	Optimum performance. Recommended for compute intensive workloads.
1:3	Little performance degradation may be experienced depending on the workload. Recommended for regular and low-priority production workloads.
1:4	May cause performance scarcity. Recommended for non-production and test/development environment.

3.1.2 Storage Services

3.1.2.1 Block Storage

Used to store data in volumes as blocks. Because the volumes are treated as individual hard disks, block storage works well for storing a variety of applications.

Sr. No.	Service Name ¹	Service Procurement Parameter		
		Storage Type	Storage Amount (GB)	IOPS
1	Block Storage as a Service	Choose an item.	Choose an item.	Choose an item.

¹ Hourly, monthly and yearly price of the above configuration of storage will be discovered.

3.1.2.2 Object Storage

Used to store unstructured data such as photos, audio, videos, etc., as objects.

Sr. No.	Service Name ¹	Service Procurement Parameter
		Storage Amount (GB)
1	Object Storage as a Service	Choose an item.

¹ Hourly, monthly and yearly price of the above configuration of storage will be discovered.

3.1.2.3 File Storage

Provides a centralized, hierarchical, and highly accessible location for files, and generally comes at a lower cost than block storage.

Sr. No.	Service Name ¹	Service Procurement Parameter
		Storage Amount (GB)
1	File Storage as a Service	Choose an item.

¹ Hourly, monthly and yearly price of the above configuration of storage will be discovered.

3.1.2.4 Archival Storage

Used to store information which is accessed infrequently.

Sr. No.	Service Name ¹	Service Procurement Parameter
		Storage Amount (GB)
1	Archival Storage as a Service	Choose an item.

¹ Hourly, monthly and yearly price of the above configuration of storage will be discovered.

3.1.3 Database Services

3.1.3.1 Managed Database as a Service

Database as a Service is a managed service offering by the Cloud Service Providers wherein in operating system and all low level components such as drivers, I/O, network, etc. are managed and optimized by the Cloud Service Providers. All objects created using "Database as a Service" are transparent to the underlying operating system. Activities such as OS management, antivirus, encryption, hardening, etc. are included under this service. Automated failover, backup & recovery, isolation & security, scaling, automated patching, advanced monitoring, and routine maintenance are responsibilities of the CSP. Each database as a service will be offered by the Cloud Service Providers with a minimum storage inclusion of 50 GB HDD or 50 GB SSD. CSPs shall be required to provide a transparent view of the database activities managed by them.

Sr. No.	Database Service Name ¹	Service Procurement Parameter				
		vCPU	RAM (GB)	Storage (GB)	CPU Launch Year	Physical Core to vCPU Ratio ⁷
1	Microsoft SQL as a Service – Standard Edition	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
2	Microsoft SQL as a Service – Enterprise Edition	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
3	Microsoft SQL as a Service – Web Edition	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

¹ For the above configuration of database as a service, hourly, monthly and yearly prices shall be discovered.

For additional managed databases services, please refer “Advanced Cloud Services” section of this document.

3.1.4 Network Services

3.1.4.1 Virtual Network

Sr. No.	Service Name	Service Definition	Service Procurement Parameter
1	Virtual Network	This service may be used to logically segregate the computing resources, such as virtual machines, databases, etc., within a CSP’s cloud environment.	None. All CSPs provide virtual network / subnet capability by default to their customers without any extra cost. However, resources used within the virtual network / subnet may be charged by the CSPs.

3.1.4.2 Load Balancer

Sr. No.	Service Name	Service Definition	Service Procurement Parameter ¹	
			Throughput (MBPS)	
1	Application Load Balancer (Virtual/Physical)	This service may be used to distribute the traffic across many computing resources within the same site to increase the responsiveness and availability of applications.	Choose an item.	
2	Network Load Balancer (Virtual/Physical)	This service may be used to balance the traffic across two WAN links (two different sites).	Choose an item.	

¹Hourly, monthly and yearly prices will be discovered for these configurations of application and network load balancers.

3.1.4.3 VPN Gateway

Sr. No.	Service Name	Service Definition	Service Procurement Parameter ¹	
			Bandwidth (Mbps)	No. of Site to Site Connections Required
1	VPN Gateway – Site to Site Connection	This service may be used to establish secure site to site connectivity between the subnets in CSP’s environment and Government Organization’s on-premises IT infrastructure. It can	Choose an item.	Choose an item.

		also be used to provide site to site connectivity two different subnets within the CSP's Cloud environment.		
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¹ For the bandwidth mentioned above, price per site to site connection for each of the two ranges specified will be discovered.

Sr. No.	Service Name	Service Definition	Service Procurement Parameter ¹	
			Bandwidth (Mbps)	No. of Point to Site Connections Required
2	VPN Gateway – Point to Site Connection	This service may be used to establish a secure point to site connection between an individual client computer and a subnet in CSP's environment.	Choose an item.	Choose an item.

¹ For the bandwidth mentioned above, price per point to site connection for each of the two ranges specified will be discovered.

3.1.4.4 Firewall

Sr. No.	Service Name	Service Definition	Service Procurement Parameter ¹
			Throughput (MBPS)
1	Firewall (Virtual/Physical)	This service is used to monitor and control the incoming and outgoing traffic of a subnet by configuring some rules.	Choose an item.

¹Hourly, monthly and yearly prices will be discovered for the firewall for the specified throughput.

3.1.4.5 Public IP

Sr. No.	Service Name ^{4,5}	Service Definition	Service Procurement Parameter	
			Type of IP	No. of IPs Needed
6	Public IP	This service can be used to assign Public IP(s) to resources within a subnet in the Cloud environment.	Choose an item.	Choose an item.

⁴ Hourly, monthly and yearly price per Public IP will be discovered.

⁵ CSPs are required to provide IPv6 support without any extra cost.

3.1.4.6 Web Application Firewall

Sr. No.	Service Name	Service Definition	Service Procurement Parameter ¹
			Throughput (MBPS)
1	Web Application Firewall	This service may be used to create rules to protect web applications from unwanted web traffic, hacks, brute force attacks, cross-site scripting, SQL injection, and other common exploits. The WAF must also provide protection against the OWASP top ten risks.	Choose an item.

¹Hourly, monthly and yearly prices will be discovered for the Web Application Firewall for the specified throughput.

3.1.5 Security Services

3.1.5.1 Identity and Access Management

Sr. No.	Service Name	Service Definitions	Service Procurement Parameter ¹
			No. of Users
1	Active Directory Services	This service may be used to authenticate and authorize users and computing resources within a network by assigning and enforcing security policies.	Choose an item.

¹For the above range of users, monthly and yearly price per user will be discovered.

3.1.6 Support Services

Sr. No.	Service Name	Minimum Inclusions*
1	Basic Support Services	(i) 24x7 access to email, chat and phone support to notify and register the incidents (ii) 24x7 support for general guidance (iii) Response to be made available within 1 hour for any kind of service / system outage
2	Enterprise Support Services	(i) Basic Support Services (ii) Response to be made available within 15 minutes for Business Critical System outage

* Monthly price for both types of support services shall be discovered.

3.2. Advanced Cloud Services

These services, as mentioned earlier, are optional for CSPs to offer. The prices of these advanced Cloud services may be displayed by the CSPs on the GeM marketplace or the Government Organizations may discover prices of these advanced Cloud services through the bid process functionality available on the GeM platform.

3.2.1 Compute Services

3.2.1.1 Containers

Containers are the lightweight alternatives to Virtual Machines. Containers allow to encapsulate an application's code, libraries, configuration and other dependent files into one single package. This packaging of the application and its dependent files offers improved developer productivity and environmental neutrality. The developers can continue focusing on improving/updating their applications without being worried about the different environments, such as development, test and production, in which their applications would be deployed and run.

Sr. No.	Service Name ¹	Service Procurement Parameter	
		vCPU	RAM (GB)
1	Container as a Service	Choose an item.	Choose an item.

¹ For the above configuration of containers, per second price will be discovered keeping their intrinsic nature in consideration. Government Organizations will be charged separately for storage and other Cloud services that they consume.

3.2.2 Database Services

3.2.2.1 Managed Database as a Service

Database as a Service is a managed service offering by the Cloud Service Providers wherein in operating system and all low level components such as drivers, I/O, network, etc. are managed and optimized by the Cloud Service Providers. All objects created using "Database as a Service" are transparent to the underlying operating system. Activities such as OS management, antivirus, encryption, hardening, etc. are included under this service. Automated failover, backup & recovery, isolation & security, scaling, automated patching, advanced monitoring, and routine

maintenance are responsibilities of the CSP. Each database as a service will be offered by the Cloud Service Providers with a minimum storage inclusion of 50 GB HDD or 50 GB SSD. CSPs shall be required to provide a transparent view of the database activities managed by them.

Sr. No.	Database Service Name ¹	Service Procurement Parameter				
		vCPU	RAM (GB)	Storage (GB)	CPU Launch Year	Physical Core to vCPU Ratio
1.	MySQL as a Service	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
2.	PostgreSQL as a Service	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
3.	Oracle as a Service	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
4.	MariaDB as a Service	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

¹ For the above configuration of database as a service, CSPs will be required to provide hourly and/or monthly and/or yearly prices on the GeM platform.

For the following list of database services, CSPs may list their services on the GeM platform clearly providing the service capabilities and service procurement parameters.

Sr. No.	Service Name ¹	Service Definition	Service Procurement Parameter
1.	NoSQL Database as a Service	This service may be used to store and retrieve data in means other than the tabular relations used in relational databases. There are many NoSQL databases available in the market, such as, MongoDB, CouchDB, Memcached, Redis, Cassandra, etc. While listing the NoSQL Database Service on GeM platform,	To be specified by CSPs

	CSPs will clearly specify the databases that they are offering and their capabilities.
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¹ For the above configuration of database as a service, CSPs will be required to provide hourly and/or monthly and/or yearly prices on the GeM platform.

3.2.2.2 Database Licenses

CSPs may also offer database licenses to Government Organizations which they can use in that particular CSP’s Cloud environment. These are unmanaged databases. All these databases would have enterprise support included.

Sr. No.	Service Name	Service Procurement Parameter
		No. of Licenses ¹
1.	MS SQL Server 2012 Standard Edition	Choose an item.
2.	MS SQL Server 2012 Enterprise Edition	Choose an item.
3.	MS SQL Server 2014 Standard Edition	Choose an item.
4.	MS SQL Server 2014 Enterprise Edition	Choose an item.
5.	MS SQL Server 2016 Standard Edition	Choose an item.
6.	MS SQL Server 2016 Enterprise Edition	Choose an item.
7.	MS SQL Server 2017 Standard Edition	Choose an item.
8.	MS SQL Server 2017 Enterprise Edition	Choose an item.

9.	Oracle 11 Standard Edition	Choose an item.
10.	Oracle 11 Enterprise Edition	Choose an item.
11.	Oracle 12 Standard Edition	Choose an item.
12.	Oracle 12 Enterprise Edition	Choose an item.
13.	MySQL Standard Edition	Choose an item.
14.	MySQL Enterprise Edition	Choose an item.
15.	PostgreSQL Enterprise Edition	Choose an item.
16.	MongoDB (NoSQL) Enterprise Edition	Choose an item.
17.	Cassandra (NoSQL) Enterprise Edition	Choose an item.
18.	IBM DB2 Version	Choose an item.

¹ For all the license ranges specified, yearly price per license will be discovered.

3.2.3 Network Services

3.2.3.1 Content Delivery Network

Service Name	Service Definition	Service Procurement Parameter¹
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Sr. No.			Outbound Data Transfer (TB/Month)
1	Content Delivery Network (CDN)	CDN service may be used to securely deliver audio, video, images, data, application, etc., quickly by using the servers closest to each user. CDN reduces load time and saves bandwidth.	Choose an item.

¹ Hourly and monthly price per GB of Outbound Data Transfer will be discovered.

3.2.3.2 MPLS Connectivity (Port Charges)

Sr. No.	Service Name	Service Definition	Service Procurement Parameter ¹
			Throughput (MBPS)
1	MPLS Connectivity (Port Charges)	This service may be used to have a dedicated MPLS connectivity between Government Organization’s office / data centre with CSP’s Cloud environment. (The User Department shall be required to pay separately to the network service provider.)	Choose an item.

¹ Monthly and yearly price for the above combinations of throughputs will be discovered.

3.2.4 Security Services

3.2.4.1 Hardware Security Module

Sr. No.	Service Name	Service Definitions	Service Procurement Parameter ²	
			No. of Dedicated HSM Required	Number of RSA 2048-bit Key Generation Per 10 Seconds
1	Cloud Based Hardware Security Module (HSM)	This service can be used where a dedicated hardware security module is required to create, manage and control keys. The HSM must comply with FIPS 140-2 Level 3 requirements.	Choose an item.	Choose an item.

² Hourly, monthly and yearly price per dedicated HSM will be discovered for each of the performance categories (number of RSA 2048-bit key generation per 10 seconds).

3.2.4.2 Distributed Denial of Services

Sr. No.	Service Name	Service Definition	Service Procurement Parameter ¹	
			No. of Public IPs to be Protected	Amount of Outbound Data Transfer (TB)
1	Distributed Denial of Service (DDoS)	This service can be used to protect various resources within the Cloud environment of CSP against malicious attempt to disrupt normal traffic of a target, service or network by overwhelming the target or its surrounding infrastructure with a flood of internet traffic.	Choose an item.	Choose an item.

¹ Monthly price per Public IP to be protected and per GB of outbound data transfer will be discovered.

3.2.4.3 TLS / SSL Certificate Management

Sr. No.	Service Name	Service Definitions	Service Procurement Parameter	
			Type of Certificate	No. of Certificates ¹
1	TLS/SSL Certificate Management	This service may be used to request (create), manage, and deploy public and private SSL/TLS certificates in CSP’s cloud environment. This service frees the user from the cumbersome process of buying, uploading, and renewing SSL/TLS certificates.	Choose an item.	Choose an item.

¹ For each type of certificate, price per certificate will be discovered for the above range of certificates.

3.2.4.4 Dual / Multifactor Authentication

Sr. No.	Service Name	Service Definitions	Service Procurement Parameter
			No. of Users
1	Dual /Multi Factor Authentication	This service may be used to protect the IT resources by providing an extra layer of security that requires not only a username and password but also other information that user of the service has. The service must provide capability to integrate with LDAP or other directory services.	Choose an item.

¹ For the above range of users, monthly and yearly price per user will be discovered.

3.2.5 Monitoring Services

3.2.5.1 Log Analysis

Sr. No.	Service Name	Service Definition	Service Procurement Parameter	
			Amount of Data to be Analyzed (GB) ¹	
1	Log Analyzer	This service may be used to generate insights from of the logs, by running queries against these logs. The service must retain the log for at least 30 days.	Choose an item.	

¹ For the above range of data, monthly price per GB will be discovered. The price includes the prices for data ingestion into the service, data retention and query execution. There not be any additional cost associated with availing this service.

3.2.5.2 Operational Metric Collection

Sr. No.	Service Name	Service Definition	Service Procurement Parameter	
			Type of Metric	Number of Metrics ¹
1	Operational Metric Collection	This service may be used to collect the operational metrics such as CPU utilization, memory utilization, etc., defined by the CSP. The service also allows Government Organizations to create their own custom metrics.	Choose an item.	Choose an item.

¹ For above range of metrics, monthly price per metric will be discovered for both the types – Built-In and Custom.

3.2.5.3 Alarm Service

Sr. No.	Service Name	Service Definition	Service Procurement Parameter
			Number of Alerts ¹
1	Alarm Service	<p>This service may be used to set threshold value for built-in (provided by CSP) and custom (defined by Government Organization) metrics. Once the threshold is reached, an alarm/alert will be triggered and necessary actions may be taken.</p> <p>*This service may be procured only when the “Operational Metric Collection” service is procured.</p>	Choose an item.

¹ For the above range of alerts, monthly price per alert will be discovered.

3.2.5.4 Notification Service

Sr. No.	Service Name	Service Definition	Number of Notifications
1	Email Notification Service ¹	<p>This service may be used to send email notifications to the target recipient when an alarm / alert is triggered and the corresponding notification is configured.</p> <p>* This service may be procured only when the “Alarm Service” is procured.</p>	Choose an item.

¹ Monthly price per 100000 emails will be discovered.

2	SMS Notification Service ²	<p>This service may be used to send SMS notifications to the target recipient when an alarm / alert is triggered and the corresponding notification is configured.</p> <p>* This service may be procured only when the “Alarm Service” is procured.</p>	Choose an item.
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² For each of the ranges specified above, price per SMS will be discovered.

3	Voice Call Notification Service ³	<p>This service may be used to send voice call notifications to the target recipient when an alarm / alert is triggered and the corresponding notification is configured.</p> <p>* This service may be procured only when the “Alarm Service” is procured.</p>	Choose an item.
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³ For each of the ranges specified above, price per Voice Call will be discovered.

3.2.6 Office Productivity Suit

Sr. No.	Service Name	Service Definition	Service Procurement Parameter
			No. of Users ¹
1	Cloud based Enterprise Office Productivity Suit (COTS) – Microsoft Office 365	Microsoft Office 365	Choose an item.

¹ For the above range of users, monthly price per user shall be discovered.

Sr. No.	Service Name	Service Definition	Service Procurement Parameter
			No. of Users ¹
2	Cloud based Enterprise Open Source Office Productivity Suit	This service provides Office coverage for desktop, laptop, tablets and smart phones (Android, iOS and Windows) with per user subscription install rights. There is no need to pay for version upgrades; updates are included in the subscription along with new features rollout regularly.	Choose an item.

¹ For the above range of users, monthly price per user shall be discovered.

3.2.7 Analytics Services

3.2.7.1 Streaming Service

Sr. No.	Service Name	Service Definition	Service Procurement Parameter
1	Video Streaming Service	This service may be used to stream video from various devices located in Government Organization’s premises and ingest them into the CSP’s environment and provide storage, encryption and video indexing capabilities in real time and batch analysis mode.	To be specified by the CSPs
2	Data Streaming Service	This service may be used to capture and store data from sources such as website clicks, social media activity, location tracking and other events.	To be specified by the CSPs

3.2.7.2 Massive Data Processing Service

Sr. No.	Service Name	Service Definition	Service Procurement Parameter
1	Massive Data Processing using Big Data Frameworks	This service may be used to process huge amount of data using frameworks such as Hadoop, Apache Spark, HBase, Presto, etc.	To be specified by the CSPs

3.2.7.3 Data Warehousing Service

Sr. No.	Service Name	Service Definition	Service Procurement Parameter
1	Data warehouse	This service may be used to host a central repository of information which acts as a single source of truth and which can be used to generate variety of reports and dashboards to assist in the decision making process.	To be specified by the CSPs

4. Managed Services

The Cloud Services mentioned under Section 3 of this document come with their associated managed services. However, if a Government Organization requires additional managed services, which are not provided as part of the Cloud services mentioned under Section 3 of this document, they can procure those managed services separately as listed in this section. The managed services listed under this section are optional for CSPs to offer. These managed services have been listed below with a set of indicative inclusions which may change based on the individual Government Organization’s requirements.

Since the scope of the managed services is very wide and vary from customers to customers, Government Organizations will discover the prices of the managed services, tailored to meet their unique requirements, on the GeM platform through the bid functionality available on it.

4.1. Disaster Recovery as a Service (DRaaS)

Sr. No.	Service Name	Service Definition	Service Procurement Parameter ¹
1	DRaaS (DC and DR both in the Cloud)	<p>Under this service, Government Organizations will select the required Cloud Services at both DC and DR sites in Cloud, and specify the needed RPO and RTO.</p> <p>Service Inclusions:</p> <ul style="list-style-type: none"> • Tools disaster recovery management and replication • During the change from DC-Cloud to DR-Cloud or vice-versa (regular planned changes), there should not be any data loss. • There shall be asynchronous replication of data between DC-Cloud and DR-Cloud. • During normal operations, the DC-Cloud will serve the requests. The DR-Cloud site will not be performing any work but will remain on standby. • DC-Cloud Storage shall be replicated (Active-Active) on an ongoing basis at DR-Cloud site, as per the required RPO, RTO and replication strategy. 	Parameters may include RPO, RTO and actual scope of the work.

		<ul style="list-style-type: none"> • In the event of a site failover or switchover, DR-Cloud site will take over the active role, and all the requests will be routed through that site. • Application data and application states will be replicated between the two sites so that when an outage occurs, failover to the surviving DR-Cloud can be accomplished within the specified RTO. This is the period during which the compute environment for the application shall be equivalent to DC. The installed application instance and the database shall be usable and the same SLAs as DC-Cloud shall be provided. • The security at the DC-Cloud and DR-Cloud shall be same. • The CSP shall conduct DR drill once in every six months of operation wherein the DC-Cloud has to be deactivated and complete operations shall be carried out from the DR-Cloud site. However, during the change from DC-Cloud to DR-Cloud or vice-versa (or regular planned changes), there should not be any data loss. • Automated switchover/ failover facilities (during DC-Cloud failure & DR Drills) to be provided • The switchback mechanism shall also be automated. 	
<p>2</p>	<p>DRaaS (Only DR in the Cloud)</p>	<p>Under this service, Government Organizations will select the required Cloud Services at the DR site in Cloud, and specify the needed RPO and RTO.</p> <p>Service Inclusions:</p> <ul style="list-style-type: none"> • Tools disaster recovery management and replication • During the change from DC-Cloud to DR-Cloud or vice-versa (regular planned changes), there should not be any data loss. • There shall be asynchronous replication of data between DC-Cloud and DR-Cloud. • During normal operations, the DC-Cloud will serve the requests. The DR-Cloud site will not be performing any work but will remain on standby. 	<p>Parameters may include RPO, RTO and actual scope of the work.</p>

	<ul style="list-style-type: none"> • DC-Cloud Storage shall be replicated (Active-Active) on an ongoing basis at DR-Cloud site, as per the required RPO, RTO and replication strategy. • In the event of a site failover or switchover, DR-Cloud site will take over the active role, and all the requests will be routed through that site. • Application data and application states will be replicated between the two sites so that when an outage occurs, failover to the surviving DR-Cloud can be accomplished within the specified RTO. This is the period during which the compute environment for the application shall be equivalent to DC. The installed application instance and the database shall be usable and the same SLAs as DC-Cloud shall be provided. • The security at the DC-Cloud and DR-Cloud shall be same. • The CSP shall conduct DR drill once in every six months of operation wherein the DC-Cloud has to be deactivated and complete operations shall be carried out from the DR-Cloud site. However, during the change from DC-Cloud to DR-Cloud or vice-versa (or regular planned changes), there should not be any data loss. • Automated switchover/ failover facilities (during DC-Cloud failure & DR Drills) to be provided • The switchback mechanism shall also be automated. 	
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¹ Actual price will depend on the scope of the work.

4.2. Backup as a Service

Sr. No.	Service Name	Service Definition	Service Procurement Parameter ¹
1	Backup as a Service	<p>This service may be used to back up virtual machines, storage volumes, file systems and databases within the CSP’s own Cloud environment.</p> <p>Following activities are included under this service: monitoring, reporting, notifications/alerts & incident management, backup storage, scheduling & retention, restoration, backup data protection, etc.</p> <p>The backup service should support granular recovery of virtual machines, database servers, Active Directory including AD objects, etc. Government Organization should be able to recover individual files, complete folders, entire drive or complete system to source machine or any other machine available in network.</p> <p>The backup service must provide following capabilities.</p> <ul style="list-style-type: none"> ▪ Compression: Support compression of data at source before backup • Encryption: Support at least 128 bit encryption at source ▪ Alert: Support email notification on backup job’s success / failure ▪ File exclusion: Ability to exclude specific files, folders or file extensions from backup • Deduplication: Provide deduplication capabilities 	<p>Parameters may include type of backup (full backup and incremental backup), frequency of backup (weekly, monthly, etc.), retentions period (7 days, 30 days, etc.) and actual scope of the work.</p>

¹ Actual price will depend on the scope of the work.