Amazon Web Services Response to:
Infocomm Development Authority of Singapore (IDA)

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Submitted By:

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Submitted To:

Infocomm Development Authority Of
Singapore (IDA)-

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Cloud service provider disclosure

The form is to be completed for each cloud service provided. For questions not applicable or not disclosed, indicate accordingly in the remarks.

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Cloud Service Provider Background

Overview of service offering:

Amazon.com (Amazon) has a long history of using a decentralized IT infrastructure. This arrangement enabled our development teams to access compute and storage resources on demand, and it has increased overall productivity and agility. By 2005, Amazon had spent over a decade and millions of dollars building and managing the large-scale, reliable, and efficient IT infrastructure that powered one of the world's largest online retail platforms. Amazon launched Amazon Web Services, Inc. (AWS) so that other organizations could benefit from Amazon's experience and investment in running a large-scale distributed, transactional IT infrastructure. AWS has been operating since 2006, and today serves hundreds of thousands of customers worldwide. Today Amazon.com runs a global web platform serving millions of customers and managing billions of dollars' worth of commerce every year.

Using AWS, you can requisition compute power, storage, and other services in minutes and have the flexibility to choose the development platform or programming model that makes the most sense for the problems you are trying to solve. You pay only for what you use, with no up-front expenses or long-term commitments, making AWS a cost-effective way to deliver applications. Please see http://aws.amazon.com for detailed information on AWS's full service offerings.

- ☐ Virtual machine instances owned by the user
- ☐ Network facilities
- ☐ Compliance with applicable standards
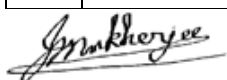
Deployment model: Private

- ☐ cloud Community
- ☐ cloud Hybrid
- ☐ cloud
- ☒ Public cloud

No.	Criteria	Description	Remarks
		Legal and Compliance- compliant Singapore PDPA contact Tim Sandage	*JMukherjee*

| 1. | Right to audit | The user has the right to audit:

☒ Virtual machine instances owned by the user

☐ Network facilities

☒ Compliance with applicable standards

☐ Technical controls

☒ Policies and governance

☐ Data centre facilities

☐ Others _____

☐ None

Audit / assessment reports that can be made available on request:

☒ Penetration test

☒ Threat and vulnerability risk assessment

☒ Vulnerability scan

☒ Audit reports (e.g. Statement on Standards for Attestation Engagements (SSAE) No. 16, Reporting on Controls at a Service Organisation) | Auditing for most layers and controls above the physical controls remains the responsibility of the customer. The definition of AWS defined logical and physical controls is documented in the SOC1 Type II report (SSAE 16), and the report is available for review by audit and compliance teams. AWS ISO 27001 and other certifications are also available for auditors to review. All documents are available under the terms of Amazon's non-disclosure agreement.

You can request the reports and certifications produced by our third-party auditors that attest to the design and operating effectiveness of the AWS environment. . All documents are available under the terms of Amazon's non-disclosure agreement. Report and certification requests can be made through an AWS account representative.

Please visit http://aws.amazon.com/compliance/ for more information.

Customers can request permission to conduct scans of their cloud infrastructure as long as they are limited to the customer's instances and do not violate the AWS Acceptable Use Policy. |

			Advance approval for these types of scans can be initiated by submitting a request via the AWS Vulnerability / Penetration Testing Request Form. AWS Security regularly engages independent security firms to perform external vulnerability threat assessments. The AWS SOC 1 Type II report provides additional details on the specific control activities executed by AWS.
2.	Compliance	The following guidelines / standards / regulations are adhered to: ☒ ISO / IEC 27001 ☐ ISO 9000 ☐ ISO / IEC 20000 ☒ CSA Open Certification Framework ☒ PCI-DSS ☒ Others _____	The AWS cloud infrastructure has been designed and managed in alignment with regulations, standards, and best-practices including: • HIPAA • SOC 1/SSAE 16/ISAE 3402 (formerly SAS70) • SOC 2 • SOC 3 • PCI DSS Level 1 • ISO 27001 • FedRAMP(SM) • DIACAP and FISMA • ITAR • FIPS 140-2 • CSA • MPAA
Data Control			
3.	Data ownership	All data on the cloud service is owned by the cloud user except for: none The cloud User retains the ownership on the derived data or attributes of cloud usage except for the following:	AWS customers own all right, title and interest in their content. Please review the following link for further information:

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Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this response.

			http://aws.amazon.com/agreement/
		☐ Advertising or marketing ☐ Statistics analysis on usage ☐ Others_____	
4.	Data retention	Data deleted by the user is retained as follows: ☐ Minimum data retention period is: ☐ Maximum data retention period is: ☒ Deleted immediately Log data is retained for a period of: ☐ Minimum data retention period as follows: _____ ☐ Maximum data retention period is: _____ ☐ Not retained User data is retained for a period of: ☐ Minimum data retention period is: ☐ Maximum data retention period is: ☐ Not retained The following types of data are available for download by the cloud user: ☒ Log data ☒ Other _____	AWS provide customers with the ability to delete their data. However, AWS customers retain control and ownership of their data so it is the customer's responsibility to manage data retention to their own requirements. Log data associated with AWS services are stored and retained using a service called AWS CloudTrail. AWS CloudTrail is a web service that records API calls made on your account and delivers log files to your Amazon S3 bucket. You control the retention policies for your AWS CloudTrail log files. By default, log files are stored indefinitely. You can use Amazon S3 object lifecycle management rules to define your own retention policy.
5.	Data sovereignty	The primary data locations are: ☐ Singapore ☐ Asia Pacific _____ ☐ Europe_____ ☐ United States	AWS provides customers the flexibility to place instances and store data within multiple geographic Regions. AWS customers designate in which physical region their data and their servers will be

			located. AWS does not move customer data and the customer has the complete control of their data. AWS has a Region in Singapore, Asia Pacific, Europe and the United States. For more information, please visit http://aws.amazon.com/about-aws/globalinfrastructure/.
		☐ Other _____ The backup data locations are: ☐ Singapore ☐ Asia Pacific_____ ☐ Europe_____ ☐ United States ☐ Other _____ No. of countries in which data centres are operated: The user's data stored in the cloud environment will never leave the locations specified in item 5: ☐ Yes ☒ Yes, except as required by law ☐ Yes, except as noted: _____ ☐ No User's consent is required prior to transferring data to a location not specified in item 5 or a third party: ☐ Yes ☒ Yes, except as required by law ☐ Yes, except as noted: _____ ☐ No *Note: Cloud users are responsible for determining the impact of data protection and data sovereignty laws on the locations where data is stored. In addition, users should understand the risks associated with relevant laws that may allow for law enforcement or other government access to data in-transit or storage with Cloud Service Providers.*	
6.	Non-disclosure	☒ Non-disclosure agreement template can be provided by Cloud Service Provider ☐ Cloud Service Provider may use customer's NDA (pending legal review)	
Provider Performance			

7.	Availability	The committed network uptime is: ☐ _____% ☐ Varies according to price plan The committed system uptime is: ☐ _____% ☐ Varies according to price plan The cloud environment has the following single points of failure: ☐ _____ ☐ none	Please refer to these links: http://aws.amazon.com/ec2-sla/ http://aws.amazon.com/s3-sla/ http://aws.amazon.com/rds-sla/ http://aws.amazon.com/route53/sla/ http://aws.amazon.com/cloudfront/sla/
8.	BCP / DR	☒ Disaster recovery protection ☒ Backup and restore service ☒ User selectable backup plans ☐ Escrow arrangements ☐ No BCP / DR is available ☐ RPO_____ ☐ RTO_____ ☐ Others, please specify: _____	The customer retains control of data and applications and they are responsible for architecting the DR plans. AWS gives you fine-grained control and many building blocks to build the appropriate DR solution given your DR objectives (RTO and RPO) and budget. Please visit http://d36cz9buwru1tt.cloudfront.net/AWS_Disaster_Recovery.pdf for more architecture guidelines.
9.	Liability	The following terms are available for the users on failure of the provider to meet the service commitment: ☒ Network failure Liability: _____ ☒ Infrastructure failure Liability: _____ ☒ Virtual machine instance failure Liability: _____	Please refer to these links: http://aws.amazon.com/ec2-sla/ http://aws.amazon.com/s3-sla/ http://aws.amazon.com/rds-sla/ http://aws.amazon.com/route53/sla/

		☐ Migrations	http://aws.amazon.com/cloudfront/sla/
		Liability:_____	
		☐ Unscheduled downtime	
		Liability:_____	
		☒ Database failure	
		Liability:_____	
		☐ Monitoring failure	
		Liability:_____	

Service Support

| 10. | Change management | The Cloud Service Provider has established the following for changes, migrations, downtime, and other potential interruptions to cloud services:

☒ Communication plan and procedures for proactive notification

☐ Assistance in migration to new services when legacy solutions are discontinued

☐ Ability to remain on old versions for a defined time period

☐ Ability to choose timing of impact | AWS SOC 1 Type II report provides an overview of the controls in place to manage change management in the AWS environment. In addition, refer to the ISO 27001 standard, Annex A, Domain 12.5 for further details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.

Changes are authorized, logged, tested, approved and documented.

Most updates are done in a manner that will not impact the customer.

AWS will communicate with customers, either via email, or through AWS Service Health Dashboard when there is a chance they may be affected. |

11.	Self-service provisioning and management portal	Provide self-service provisioning and management portal for users to manage cloud services: ☒ Yes ☐ No If yes, describe the functions of the self-service provisioning and management portal provided: ☒ Allow role-based access control (RBAC) ☒ Manage resource pools (e.g. VMs, storage, and network) and service templates ☒ Track and manage the lifecycle of each service ☒ Track consumption of services ☐ Others: _____	
12.	Incident and problem management	Delivery mode of support: ☒ Access via email ☒ Access via portal ☒ Access via phone support ☒ Direct access to support engineers Availability of support: ☒ 24 x 7 ☐ During office hours support, please specify the hours of operations: _____ ☐ After office hours support, please specify the hours of operations: _____ Service response time: _____ The following are available to users upon request: ☒ Permanent access to audit records of customer instances ☒ Incident management assistance Incident response time: _____	All AWS Support tiers offer customers of AWS Infrastructure Services an unlimited number of support cases with pay-by-the-month pricing and no long-term contracts. The four tiers provide developers and businesses the flexibility to choose the support tiers that meet their specific needs. Please visit http://aws.amazon.com/premiumsupport/ for further details. Log data associated with AWS Infrastructure Services are stored and retained using a service called AWS CloudTrail.

		Mean time to repair on detection of faults: _____	AWS CloudTrail is a web service that records API calls made on your account and delivers log files to your Amazon S3 bucket. You control the retention policies for your AWS CloudTrail log files. By default, log files are stored indefinitely. You can use Amazon S3 object lifecycle management rules to define your own retention policy.
13.	Billing	The following billing modes are available (please elaborate granularity of charges and measurement): ☒ Pay per usage _____ (up to per min/hour/day/month for compute/storage for IaaS/PaaS, and per user per hour/day/month/year for SaaS) ☐ Fixed pricing_____(up to yearly/monthly/daily) ☐ Other pricing model_____ ☐ Not disclosed ☐ Available billing history: _____ Months	Please refer to the following link for pricing information: http://aws.amazon.com/pricing
14.	Data portability	Importable VM formats: _____ Downloadable formats: _____ Supported operating systems: _____ Language versions of supported operating systems: _____ Supported database formats: _____ API: ☐ Common _____ ☐ Customised _____ Upon service termination, data is available through: ☐ Physical media	http://aws.amazon.com/ec2/vmimport/ Amazon Machine Images (AMIs) are preconfigured with an ever-growing list of operating systems. We work with our partners and community to provide you with the most choices possible. You are also empowered to use our bundling tools to upload your own operating systems. The operating systems currently available to use with your Amazon EC2 instances include:

			• CentOS • Debian • SUSE Linux Enterprise • Amazon Linux • Ubuntu • Red Hat Enterprise Linux Windows Server • Windows Server Any database can be run on AWS as long as it runs on Linux or Windows. For managed database services, Amazon RDS gives you access to the capabilities of a familiar MySQL, Oracle, Microsoft SQL Server, or PostgreSQL database engines.
		☐ Standard methods as described above ☐ Other methods _____ _____	
15.	Access	Type of access to the service is through: ☒ Public access ☒ Private access (e.g. VPN, dedicated link) ☐ IPv6 access is supported ☐ Other access methods _____ _____ _____ Public access speed (shared bandwidth) in Mbps: _____	IPv6 is supported at the ELB layer.
16.	User management	☒ Identity management ☒ Role based access control ☒ Federated access model ☒ Integration with Identity management solutions ☐ Others	
17.	Lifecycle	The cloud user may select the following for service upgrades and changes: ☒ Automatic provisioning	

		☐ User customisable provisioning	
Security Configurations			
18.	Security configuration enforcement checks	Security configuration enforcement checks are performed: ☐ Manually ☒ Using automated tools How often are enforcement checks being performed to ensure all security configurations are applied? _____	Security configuration at the OS level and up is the responsibility of the customer. AWS is responsible for patching systems supporting the delivery of service to customers, such as the hypervisor and networking services. This is done as required per AWS policy and in accordance with ISO 27001, NIST, and PCI requirements. Customers control their own guest operating systems, software and applications and are therefore responsible for patching their own systems. AWS SOC 1 Type II report provides an overview of the controls in place to manage change management in the AWS environment. In addition, refer to ISO 27001 standard, Annex A, domain 12.5 for further details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
19.	Multi-tenancy	☒ Distinct physical hosts ☐ Distinct physical network infrastructure ☒ Virtual instance grouping ☒ User definable security domains	On AWS, everything is virtual and the networking is software based. Please visit http://aws.amazon.com/vpc to learn about the

		networking feature. For dedicated hardware, please visit http://aws.amazon.com/dedicated-instances/.
	☒ User customisable firewall ☒ User definable access policies	

Service Elasticity		

| 20. | Capacity elasticity | The following capacity elasticity options are available:

☒ Programmatic interface to scale up or down

☒ Mean time to start and end new virtual instances _____

☒ Alerts to be sent for unusual high usage

☐ Minimum performance during peak periods: N/A

☐ Minimum duration to scale up computing resources: N/A

☐ Minimum additional capacity guaranteed per account: N/A (number of cores and GB memory) | Auto Scaling allows you to scale your Amazon EC2 capacity up or down automatically according to conditions you define. With Auto Scaling, you can ensure that the number of Amazon EC2 instances you're using increases seamlessly during demand spikes to maintain performance, and decreases automatically during demand lulls to minimize costs.

http://aws.amazon.com/autoscaling/ |
| 21. | Network resiliency and elasticity | The following network resiliency and elasticity options are available:

☒ Redundant Internet connectivity links

☒ Redundant Internal connectivity

☒ Selectable bandwidth up to: 10 Gbps

☒ Maximum usable IPs: None

☒ Load balancing port TCP ports: 25, 80, 443, and 1024-65535

☒ Load balancing protocols HTTP, HTTPS (Secure HTTP), SSL (Secure TCP) and TCP protocols.

☒ Anti-DDOS protection systems or services

☒ Defence-in-depth mechanisms, please specify: _____ | The AWS network provides significant protection against traditional network security issues and the customer can implement further protection. See the AWS Security Whitepaper for more information on this topic, including a discussion of DDoS attacks:

http://media.amazonwebservices.com/pdf/AW_S_Security_Whitepaper.pdf

Please visit http://aws.amazon.com/vpc to understand how you |

<table>

			have complete control over your virtual networking environment, including selection of your own IP address range, creation of subnets, and configuration of route tables and network gateways. AWS Direct Connect provides 1 Gbps and 10 Gbps connections, and you can easily provision multiple connections if you need more capacity.

</table>

☒ Network traffic isolation, please specify: VPC

☒ Shared or dedicated bandwidth, please specify: _____

_____

☒ QoS traffic control services

☒ Alerts to be sent for unusual high usage Minimum

☐ performance during peak periods: N/A Minimum

☐ period to scale up network throughput: N/A

22.	Storage redundancy and elasticity	The following storage redundancy and elasticity options are available:	Please visit the following links to understand the various storage options available on the AWS platform. Usage, SLA, performance, and scalability vary based on the storage options that you choose. http://aws.amazon.com/ebs http://aws.amazon.com/s3 http://aws.amazon.com/glacier http://aws.amazon.com/importexport/ http://aws.amazon.com/storagegateway/

☒ Redundant storage connectivity links within each data centre

☐ Redundant storage connectivity links between data centres belonging to the same cloud

☐ Storage traffic isolation, please specify: _____

_____

☒ Shared or dedicated storage network bandwidth, please specify:

_____

☐ Quality of service storage traffic control services

☐ Maximum storage capacity for entire cloud, please specify: N/A

☒ Maximum storage capacity for single user, please specify: Unlimited

☒ Maximum expandable storage, please specify: Unlimited

☒ Alerts to be sent for unusual high usage

☒ Minimum storage I / O performance during peak periods: N/A

☒ Minimum period to scale up storage I / O throughput: N/A