

Alibaba Cloud User Guide

Banking Regulations & Guidelines in Hong Kong

March 2019



Notices

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1. Introduction

The Hong Kong Monetary Authority (HKMA) sets out guidelines and releases circulars to oversee and supervise the banking industry in Hong Kong. With the tendency of adopting advanced technology to deliver banking services, the HKMA expects the banking institutions to have in place an effective technology risk management framework and address the supervisory concerns on management of outsourcing arrangements.

The HKMA promotes innovation of financial technology and solutions in recent years, with Virtual Banks being one of the key initiatives of smart banking. The HKMA reaffirmed in the consultation paper that they are open-minded to different forms of outsourcing including cloud computing services as long as the bank can demonstrate its capabilities to fulfill the HKMA's relevant supervisory requirements.

Alibaba Cloud is committed to facilitate the banking institutions to meet the HKMA's regulatory requirements and partner with the banking customers to make the transformation journey from on-premise infrastructure to cloud infrastructure as smooth as possible. In this article, Alibaba Cloud attempts to clarify its responsibilities and controls in key areas that the banking institutions would have focuses on to help banking customers to clear the roadblocks in their digital innovation journey.

2. Alibaba Cloud Security Compliance and Privacy

Alibaba Cloud adheres to domestic and international information security standards, as well as industry requirements. We integrate compliance requirements and standards into our internal control framework and implement such requirements and standards into our cloud platform and products by design. Alibaba Cloud is involved in the development of multiple standards for the cloud industry and contributes to industry best practices. We also engage with independent third parties to verify the compliance of Alibaba Cloud according to various requirements. Certified by more than ten standards across the globe, Alibaba Cloud is a cloud service provider with one of the most complete ranges of certifications in Asia.

2.1 Security and Compliance

Given the compliance requirements are different in contexts, industries, and regions, Alibaba Cloud's overall compliance framework is divided as follows:

1) *Management system compliance*. To demonstrate Alibaba Cloud's mature management mechanism and industry's best practices, it complies with:

- **ISO 27001**: Information Security Management System
- **ISO 27017**: Code of Practice for Cloud-specific Information Security Controls
- **ISO 27018**: Code of Practice for Protecting Personal Data in the Cloud
- **ISO 20000**: IT Service Management System
- **ISO 22301**: Business Continuity Management System
- **ISO 9001**: Quality Management Systems Standard
- **CSA STAR**: Maturity Model of Cloud Service Security

2) *Country specific attestations*. As the regulatory requirements vary from country to country, Alibaba Cloud is compliant with country-specific regulatory requirements:

- **MTCS** –Multi-Tier Cloud Security is the cloud security standard proposed by the Info-communications Development Authority of Singapore and released by Singapore Standards, Productivity and Innovation Board. MTCS security certification has three levels. Alibaba Cloud obtained Level-3 certification - the highest security level.
- **German Cloud Computing Compliance Controls Catalog (C5)**: The cloud requirements catalog in Germany for assessing the information security of cloud services, which defines a baseline for cloud security.
- **Trusted Cloud label**: Issued by the Trusted Cloud Competence Network, it is awarded to trustworthy cloud services which meet the minimum requirements with regard to transparency, security, quality and legal compliance.
- The **Multi-Level Protection Scheme (MLPS)** tiered protection system, by DJCP, is a basic information security system in China. The goal of this system is to develop a unified national information security protection management system and standards. Alibaba Cloud has obtained Level III certification for public cloud services and level IV for finance cloud services, which means our systems ensure the security and recovery capabilities of level three/four information in response to security threats.
- **China National Accreditation Service for Conformity Assessment (CNAS)** is the national accreditation body of China responsible for the accreditation of certification bodies, laboratories, and inspection bodies. China's State Information Center Software Testing Center (Testing Center), a CNAS accredited body,

performs regular and stringent evaluations on Alibaba Cloud's products and solutions. Alibaba Cloud's robust architecture is fully recognized by CNAS and Testing Center.

3) *Industry-specific authentication*: Alibaba Cloud has compliant with banking and financial industries specific security standards.

- **PCI-DSS** – Payment Card Industry Data Security Standard defines operational and technical requirements for organizations accepting or processing payment transactions, and for software developers and manufacturers of applications and devices used in those transactions. Alibaba Cloud is dedicated to payment security and is strictly compliant with PCI Data Security Standards v3.2.
- **SEC Rule-17a**: Alibaba Cloud completed the assessment related to the ability of our Object Storage Service (“OSS”) solution to comply with the broker-dealer media requirements promulgated by the Securities and Exchange Commission (SEC) Rule 17a-4(f) and Financial Industry Regulatory Authority (FINRA) Rule 4511. Through this assessment, Alibaba Cloud can serve more customers in the global financial industry, as these regulatory requirements have been widely adopted by many other countries outside of the US as part of the measurement of a product function and feature.

4) *Client-specific authentication*: Alibaba Cloud, as a service provider, has provided an attestation report over the internal controls related to services provided to the customers to address the risks associated with the outsourced services.

- **SOC 1&2 TYPE II and SOC3 Reports**: The Service Organization Control (SOC) reports are a series of audit reports from independent third-party auditors to indicate the effectiveness of Alibaba Cloud's control objectives and activities. These reports are designed to help customers and their auditors to get a picture of the control measures behind operation and compliance. Alibaba Cloud SOC reports are categorized into three types:
 - SOC 1 TYPE II: Internal control report on financial reporting
 - SOC 2 TYPE II: Report on trust service criteria including security, availability, and confidentiality
 - SOC 3: Report on security, availability, and confidentiality for general use purpose

Further information of certifications and compliance credentials can be found at the “Useful Resource – 1. Alibaba Cloud Security & Compliance Center”.

2.2 Privacy

Alibaba Cloud is committed to protecting customers' personal information and guarantees that such information is only used for the purposes agreed by customers. Alibaba Cloud's privacy policy is completely transparent to the public and can be found on our official website. At the same time, Alibaba Cloud takes various technical measures to ensure that the customers' personal information is well protected.

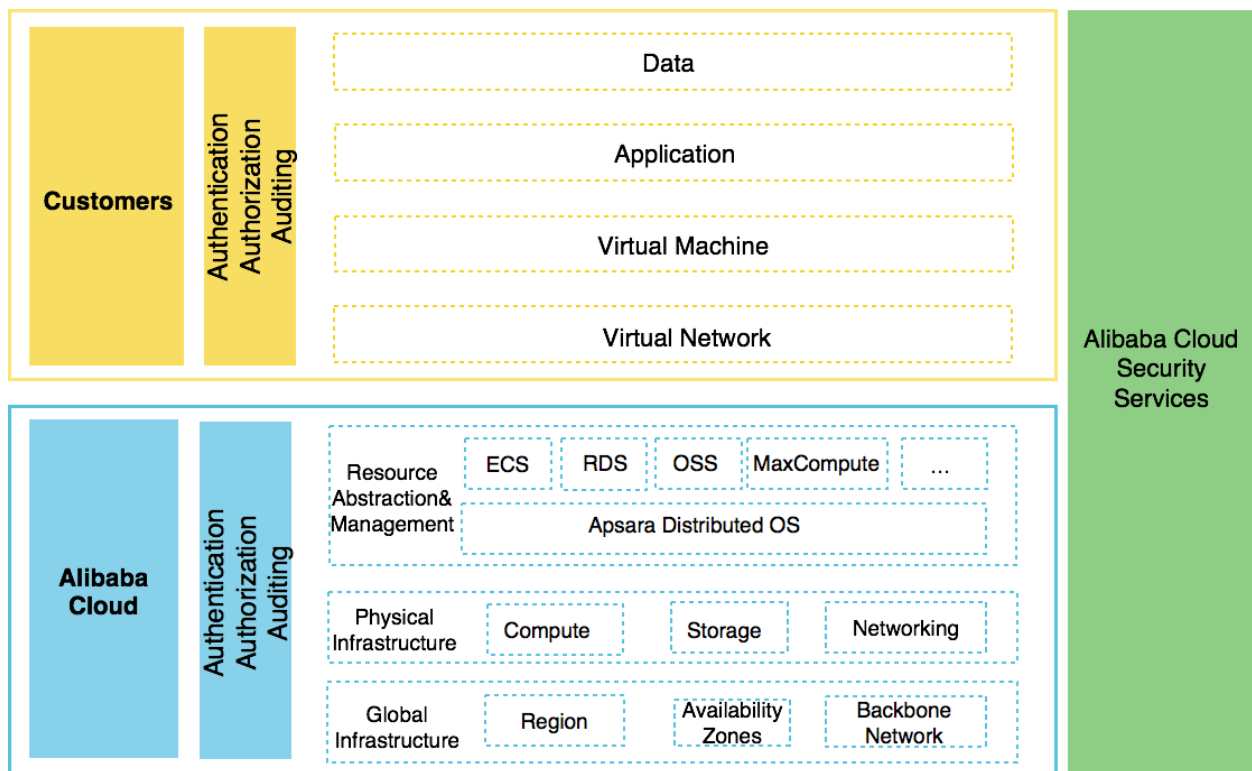
- **GDPR** – GDPR is a mandatory law requiring compliance with provisions that apply throughout the European Union to the business usage of personal data. Alibaba Cloud complies with the GDPR requirements. We also provide research paper and partner solution to help our customer on their journey to GDPR Compliance.
- **PDPA** – Personal data in Singapore is protected under the Personal Data Protection Act 2012 (PDPA). The PDPA establishes a data protection law that comprises various rules governing the collection, use, disclosure and care of personal data. Alibaba Cloud complies with the PDPA requirements.
- **EU Cloud Code of Conduct** – As a founding member and a member of the of the General Assembly, Alibaba Cloud is actively engaged in creating the EU Cloud Code of Conduct under GDPR Article 40, and support the role of the cloud computing industry in improving transparency and helping cloud customers understand how data protection issues are addressed by cloud service providers.
- **TRUSTe Enterprise Privacy Certification Standards** incorporate principles from privacy frameworks established by APEC, the OECD, and the FTC and also reflect input from consumers, clients, advocates and regulators. Alibaba Cloud demonstrated compliance with TRUSTe Certification Standards and commitment to privacy protection.

To improve Alibaba and the broader industry's understanding of data portability, Alibaba Cloud works with Carnegie Mellon University on a privacy program where their master's degree students helped us to deliver a technical research report on data portability. Download our research paper on Supporting Data Portability in the Cloud under "Useful Resource – 2. Alibaba Cloud GDPR Trust Center".

3. Shared Security Responsibilities

Shared security responsibility model is fundamental and critical for the customers to understand the concept of cloud services. Under the shared security responsibility model, Alibaba Cloud and its customers are jointly responsible for the security of

customers' applications built on Alibaba Cloud. Alibaba Cloud is responsible for the safety of the underlying cloud service platform and infrastructure, and customers are responsible for the security of applications built on top of or connected to the cloud. This shared security responsibility model, however, improves upon the typical security model a customer would see in an on-premises data center. Customers can leverage the underlying security assurance and capabilities that Alibaba Cloud provides, thus getting an overall better security return by using Alibaba Cloud.



Alibaba Cloud must ensure a securely managed and operated infrastructure (including but not limited to data centers deployed across regions and zones, and Alibaba backbone networks), physical devices (including computing, storage, and network devices), distributed cloud OS named Apsara, and various cloud services and products running on top of the Apsara OS.

By leveraging its years of expertise in attack prevention technologies, Alibaba Cloud offers various security features and services to help protect customers' applications and systems. In turn, customers must, in a secure manner, configure and use cloud products

(such as the Elastic Compute Service (ECS), Relational Database Service (RDS) instances, etc.), and build applications based on such securely configured cloud products. Customers can choose to use the Alibaba Cloud security services or any third-party security products in the Alibaba Cloud security ecosystem to protect their applications and assets.

With security responsibilities shared between Alibaba Cloud and its customers, Alibaba Cloud provides a secure infrastructure to help mitigate the security needs of customers, thus relieving much of the underlying security burdens while allowing customers to focus more on their core business needs. Combined with the right IT governance and controls within the customer, these should understandably help alleviate regulatory concerns relating to the adoption of cloud services.

For more information about the share security responsibility model, please refer to “Useful Resource - 3. Alibaba Cloud Security Whitepaper, Version 1.0”. The whitepaper covers the following aspects, such as security policies, organizational security, compliance, data security, access control, personnel security, physical security, infrastructure security, systems and software development and maintenance, disaster recovery and business continuity.

4. Alibaba Cloud’s Presence in Hong Kong

Alibaba Cloud provides a comprehensive suite of global cloud computing services to help power and grow customers’ business, worldwide. Hong Kong, being one of the international financial centers, is focusing on developing and promoting FinTech and digitalization by launching smart banking initiatives to maintain its role and competitive advantage as a financial hub. Alibaba Cloud serves the customers from financial industries in Hong Kong to support their rising demands in digital transformation.

We have worked with some financial institutions in Hong Kong to help them gain more flexibilities, improve operational efficiencies, achieve strategic objectives by integrating cloud computing technologies into their IT governance and business operations. Alibaba Cloud offers integrated cloud solutions to the financial customers in Hong Kong. Please refer to “Useful Resource - 4. Alibaba Cloud Financial Service Solutions” for details.

By setting up cloud data centers across multiple regions and zones, Alibaba Cloud offers the customers with secure and reliable cloud computing infrastructure. Currently, Alibaba

Cloud has **TWO** availability zones in Hong Kong and multiple data centers globally. Customer's businesses can be deployed across two availability zones in Hong Kong to implement a high availability architecture, such as same-city active-active architecture, remote data recovery, remote multi-active architecture, and also utilize data centers across regions for a geo-redundant disaster recovery architecture featuring same-city recovery and additional remote recovery.

5. HKMA Guideline on Authorization of Virtual Banks

As one of the initiatives of smart banking, the HKMA issued a guideline for the authorization of virtual banks in February 2018 and subsequently released a revised version in May 2018. The guideline encourages both financial firms and non-financial firms to apply for a virtual bank license in Hong Kong as long as they have concrete and credible business plans to promote financial technology and innovation in retail businesses and meanwhile meet the minimum authorization criteria under the Banking Ordinance.

Virtual banks will be subject to the same set of the supervisory requirements under the HKMA as the conventional retail banks. For the supervisory guidelines over technology risk management and the outsourcing arrangement management, the relevant HKMA SPMs are Supervisory Policy Manual on General Principles for Technology Risk Management (TM-G-1) and Supervisory Policy Manual on Outsourcing (SA-2).

As the virtual banks are running on the technology-driven business model, higher risks will be taken into consideration by the HKMA to make sure there are sufficient controls from managerial, technical and financial aspects to support the business model. Particularly, the HKMA mentioned the following risks including technology risks such as information security, system resilience, and business continuity management, as well as managerial and financial risks (i.e., credit, interest rate, market, liquidity, operational, reputation, legal and strategic risk).

Alibaba Cloud, as a cloud service provider, responds to how Alibaba Cloud can address the technology risks concerning the HKMA in below table.

Technology Risks	Alibaba Cloud's responses
Information security - data	Alibaba Cloud uses data encryption to ensure data security, including sensitive data encryption in applications, transparent

security	<p>data encryption in the database, block storage data encryption, object storage system encryption and hardware security modules. Alibaba Cloud provides Key Management Service (KMS) for key management and data encryption capabilities for the encrypted storage of sensitive data on the cloud platform. Such sensitive data include authorization credentials, passwords, and encryption keys.</p> <p>Alibaba Cloud enables HTTPS encryption to ensure data transmission security. The Alibaba Cloud console uses HTTPS encryption for data transmission. Alibaba Cloud services provide customers with API access points with HTTPS encryption enabled, allowing customers to use Access Keys to call Alibaba Cloud Service API securely. Alibaba Cloud uses industry standard SSL/TLS protocol with 256-bit key length to address the need for encrypted transmission of sensitive data.</p>
Information security - data isolation	<p>The isolation between multiple tenants in a cloud computing environment is realised via virtualization technology. Alibaba Cloud platform uses a virtualized environment where customer instances run as standalone virtual machines and the isolation is enforced by using different processing levels to avoid unauthorized access of a customer's virtual machine to the host and to another virtual machine. The virtual machine can only access the physical disk space allocated to it, thus realizing the security isolation of hard disk space between different virtual machines. Alibaba Cloud connects virtual machines to the Alibaba cloud virtual network. All the logical virtual networks are isolated from each other.</p>
Information security - data deletion	<p>Upon the contract termination, the storage service instances will be released, the original disk space and memory space will be reliably scrubbed to ensure customer data security. However, customers retain ownership and control of their content when using Alibaba Cloud services and they should be responsible for determining the data retention period and performing back up their own content.</p>
System resilience	<p>Alibaba Cloud offers high availability, secure, and reliable cloud computing infrastructure by: setting up cloud data centers across multiple regions and zones globally; delivering a better network access experience with multihomed BGP networks; providing cloud products with high availability infrastructure and</p>

	multi-replica data redundancy based on the Apsara distributed cloud OS; upgrading products and fixing vulnerabilities using the hotfix dynamic patching technology; and ensuring operation security while achieving national-leading compliance.
Business continuity management	Alibaba Cloud has established business continuity plans and the plans are reviewed on an annual basis. Business continuity management team performs business impact analysis and risk assessment every year, including identification of critical business processes, maximum tolerable downtime, recovery time objective, minimum service level and time needed to resume service. Alibaba Cloud, along with data centre service providers, conducts data centre business continuity drills every year and issues a data centre business continuity report for each drill. Alibaba Cloud is willing to jointly participate in the process of establishing customer's business continuity plan and conduct the drill together with the customer.

6. HKMA Supervisory Policy Manual on Outsourcing (SA-2)

The HKMA requires the Authorized Institutions (AIs) to conduct a comprehensive risk assessment over business operations, legal and reputational risks for outsourced service providers and the risk assessments shall be conducted regularly. AIs should be able to demonstrate their observance to the outsourcing guidelines by submitting the Risk Assessment Form on “Technology-related Outsourcing (including Cloud Computing)” on an annual basis.

In the below sections, Alibaba Cloud responds to the applicable requirements set out by the HKMA in this guideline.

6.1 Ability of Service Provider

Section 2.3 of the Guidelines on Outsourcing sets out non-exhaustive evaluation aspects over service providers to assess the risks associated with the outsourcing arrangements, which are listed in the following table.

Due Diligence Aspects	Alibaba Cloud's Responses
a. Financial Soundness	Alibaba Cloud is a fully owned subsidiary of Alibaba Group Holding Limited (NYSE: BABA). Alibaba Cloud's revenue grows very fast, primarily driven by increased spending from enterprise customers. Alibaba Cloud has been keeping launching new products and features including those related to core cloud offerings, data intelligence, AI applications, security and enterprise solutions.
b. Reputation	<p>Alibaba Cloud is an industry leading cloud provider in China and it has been officially recognized as one of the only six players in the Gartner magic quadrant for cloud IaaS, worldwide.</p> <p>Alibaba Cloud, as the official Cloud Services and Cloud Infrastructure provider for the Olympics, contributes cloud computing infrastructure and cloud services to help the Olympic Games operate more efficiently, effectively and securely, including supporting big data analytics.</p>
c. Managerial Skills	Alibaba Cloud performs a comprehensive risk assessment considering factors from financial, regulatory, customer service and reputational perspective, at least once a year, and updates the security controls and related policies based on the assessment results.
d. Technical Capabilities	Alibaba Cloud provides the technical foundation to the entire Alibaba Group, including the world renowned Taobao Marketplace. From the latest statistics generated internally by Alibaba Cloud in by March 2019, the Alibaba Cloud platform is capable of protecting approximately 40% of websites in China, detecting on a daily basis over 60,000 malicious IPs and defending over 3,600 million attacks and approximately 3,000 DDoS attacks every day.
e. Operational Capability and Capacity	Alibaba Cloud has established an information security management system (ISMS) and certified the ISMS according to ISO/IEC27001:2013. Alibaba Cloud has also established IT Service

Due Diligence Aspects	Alibaba Cloud's Responses
	<p>Management System (ITSM) policies which are based on ISO/IEC20000. On a yearly basis, Alibaba Cloud performs a management review and documents the review results. If weaknesses are discovered, follow-up action must be taken to ensure continuous improvement on the management system.</p>
<p>f. Compatibility with the AI's Corporate Culture and Future Development Strategies</p>	<p>Alibaba has established Corporate Governance Guidelines as well as Code of Ethics, which are available at the Alibaba Group's Investor Relations website.</p> <p>These guidelines set out the rules and principles for the Board and Senior Management, and cover the aspects including compliance with laws and ethical conduct, conflicts of interests, equal opportunity and non-discrimination, safety in the workplace, bribery, related party transactions, recordkeeping and insider trading.</p>
<p>g. Familiarity with the Banking Industry</p>	<p>Alibaba Cloud has worked with some banking customers in Hong Kong and globally to facilitate them to move on to cloud.</p> <p>In Hong Kong, Alibaba Cloud has appointed third party to perform an independent assessment over the HKMA regulations, including</p> <ul style="list-style-type: none"> • HKMA's SPM on "TM-G-1 General Principles for Technology Risk Management" (issued 24 June 2003) • HKMA's SPM on "TM-G-2 Business Continuity Planning" (issued 2 December 2002) • HKMA's SPM on "SA-2 Outsourcing" (issued 28 December 2001) • HKMA's Risk Assessment Form on "Technology-related Outsourcing (including

Due Diligence Aspects	Alibaba Cloud's Responses
	<p>Cloud Computing) Project" (Version 6.0, November 2016)</p> <ul style="list-style-type: none"> • HKMA's circular on "Customer Data Protection" (issued 14 October 2014) • HKMA's circular on "Incident and Management Procedures" (issued 22 June 2010) • HKMA's circular on "Examinations on Controls over IT Problem and System Change Management" (7 January 2008) <p>The assessment results indicated no significant weaknesses of the internal controls designed, established, and implemented in addressing the relevant internal control requirements set out by the HKMA.</p>
<p>h. Capacity to keep pace with Innovation in the Market</p>	<p>Alibaba Cloud is recognized by different industry analysts as one of the leading global cloud service providers. Alibaba Cloud has the financial, operational and managerial capacity to continue leading innovation in the market. Our Press Room (See "Useful Resource – 5. Alibaba Cloud Press Room") provides a wealth of our latest innovation and progress that would be of interests to the AIs.</p>

6.2 Outsourcing Agreement

Section 2.4 of the guidelines clarify that the written agreements between AIs and service providers must address, at least, the type and level of services to be provided and the contractual liabilities and obligations of the service provider. Alibaba Cloud has set out terms and conditions as well as SLAs for each product. For details, please refer to the Alibaba Cloud legal document center (See "Useful Resource – 6. Alibaba Cloud Legal Document Center").

Alibaba Cloud provides a template of an offline Cloud Services Purchase Agreement or Enterprise Agreement where the contract terms and conditions have been set out in accordance with the HKMA's requirements in the guidelines. Alibaba Cloud customers have the option to enter into an offline Cloud Services Purchase Agreement or Enterprise Agreement with Alibaba Cloud. The terms and conditions in the offline

agreements can be tailored to better meet the customers' needs. For more information, please contact Alibaba Cloud sales representative.

6.3 Customer Data Confidentiality

Section 2.5 of the guidelines emphasizes the responsibility for AIs to protect the integrity and confidentiality of the customer information by complying with the relevant statutory requirements such as the Personal Data Privacy Ordinance (PDPO). We are committed to protecting the personal information of customers worldwide, and to comply with applicable laws of countries where our business is operated.

Key Aspects	Alibaba Cloud's responses
<p>2.5.2 To ensure proper safeguards are established to protect the integrity and confidentiality of customer information</p>	<p>Alibaba Cloud's privacy policy is completely transparent to the public where security measures are adopted to protect the customer's personal data from unauthorized access. The access to customer's personal data will only be limited to people who need to access to such data for their work.</p> <p>Customer's content is segregated from other tenant's data in a public cloud computing environment via virtualization technology.</p>
<p>2.5.3 To notify the customers of the possibility that their data may be outsourced.</p>	<p>It is the banking institutions responsibilities to notify their customers of the data outsourcing.</p>
<p>2.5.4 To ensure all customer data is either retrieved from the service provider or destroyed.</p>	<p>Customers have the rights to delete their accounts by having their records and information deleted online via Alibaba Cloud's international web console. The customer's data will be destructed upon customer's request.</p>

6.4 Control over Outsourced Activities

Section 2.6 of the guidelines require that effective procedures are established to monitor

the performance of the service provider, and there should be an effective reporting procedure on the problems and issues relating to outsourced services. Alibaba Cloud assigns a technical account manager who is responsible for providing expertise, accelerated support and strategic advice tailored to the customer. This includes both continuous hands-on assistance and immediate escalation of urgent issues to speed resolution and keep mission-critical systems functioning.

Key Aspects	Alibaba Cloud's responses
<p>2.6.2 To monitor the contract performance, material problems encountered by the service provider, financial condition of the service provider, the effectiveness of their contingency plan</p>	<p>Alibaba Cloud will invite independent third party auditors to conduct auditing over the underlying cloud platform and submit the assurance reports to AIs regularly. AIs also can find Alibaba Cloud's most recent certificates and assurance reports via the Security and Compliance Center.</p> <p>For the security incidents with Alibaba Cloud's platform and infrastructure, the security incident response team would follow the incident handling procedures to resolve the incidents identified. A notification will be sent to the impacted customers of the security issue via web console, email and text channel right after the incidents have been identified and resolved.</p>
<p>2.6.4 To establish reporting procedures that can promptly escalate problems related to the outsourcing services</p>	<p>The reporting procedures and SLA will be included as one of the clauses in the outsourcing agreement. For security incidents or other problems within the customers' environment, the customer may raise a ticket to Alibaba Cloud via web console or contact the technical account manager directly. The after sales support team in Alibaba Cloud will follow up with the customer in accordance to the SLA.</p>

6.5 Contingency Planning

Section 2.7 of the guideline indicates that AIs should maintain and test the contingency plan on a regular basis together with service providers to ensure the business continuity. AIs are expected to ensure service providers have satisfactory business continuity plans, regularly test the business continuity plans, and provide data resolvability and data recovery measures upon closure or failure of service providers.

As mentioned in the section 5 above, Alibaba Cloud has established business continuity plans and the plans have been regularly tested. Alibaba Cloud facilitates various options to enable resilient solutions that fit AIs' different contingency planning requirements. Alibaba Cloud can work with the AI and establish a viable contingency plan for different contingency scenarios, including system failure, security breach and etc. Alibaba Cloud is also willing to perform test over the contingency plan jointly with the AIs on a regular basis.

Customers retain ownership and control of their content while using the Alibaba Cloud services. Under the circumstances that AIs would like to move their data back to on-premises or to other cloud service providers, AIs can retrieve their transaction data and account information from the web console or via the ticketing services.

6.6 Access to Outsourced Data

Section 2.8 of the guidelines clarify that the outsourcing services should not impede both HKMA and AI from accessing such data on a timely basis or inspecting the controls over operations. Alibaba Cloud assures the customers that they have complete ownership and control over their data stored in the cloud environment.

Key Aspects	Alibaba Cloud's responses
<p>2.8.1 To ensure the data retrieved from the service provider are accurate and available in Hong Kong on a timely basis</p>	<p>Customers have full ownership over the content they stored in the cloud environment. Alibaba Cloud will not have access to the customer's content without their authorisation. It's the customer's responsibilities to make sure their content has been backed up properly and to ensure data integrity and security.</p> <p>Alibaba Cloud provides different data storage, backup and protection facilities to help the customer achieve the data availability and information timely retrieval capability. Alibaba Cloud also provides security services to help customer detect any unauthorised access and modification of information.</p>
<p>2.8.2 To ensure HKMA and AI's internal and external auditors have</p>	<p>Upon request from the HKMA, an independent assessment can be performed over Alibaba Cloud's data center facilities following the Alibaba Cloud's</p>

Key Aspects	Alibaba Cloud's responses
the right to access to data as well as inspect the service provider's relevant controls	internal procedures.

7. HKMA Supervisory Policy Manual on Technology Risk Guidelines (TM-G-1)

The HKMA requires AIs to establish a comprehensive technology risk management process for risk identification, calculation and monitoring from the aspects of IT governance, security management, system development, and change management, information processing, communication network and management of technology service providers. Alibaba Cloud, as a Cloud Services Provider, adheres to the guidelines where the governed areas are relevant to the Cloud Services provided to the AIs.

Alibaba Cloud has selected applicable requirements under security management and information processing section and provides the response to each of the requirements in the guidelines as below.

Key Aspects	Alibaba Cloud's responses
3.1 Information classification and protection	<p>The hard disks which store the customer contents will be degaussed and physically destructed to prevent the loss of the confidential data in the data center. The destructed hard disks will be disposed by batches and registered in the disposal record.</p> <p>Customers can utilize Key Management Service (KMS) to protect the credential information such as generated cryptographic keys. The key management infrastructure of Alibaba Cloud conforms to the recommendations in (NIST) 800-57 and uses cryptographic algorithms that comply with the (FIPS) 140-2 standard.</p>
3.2 Authentication and access control	Alibaba Cloud has established a formal access control management policy that logical access management for network, cloud user accounts, operating systems, application and source code are

Key Aspects	Alibaba Cloud's responses
	<p>based on roles and job functions. Multi-factor authentications are enabled with strong password policies for logical access management.</p> <p>Alibaba Cloud also provides capabilities for the customers to utilise Resource Access Management (RAM) to manage their accounts and resources, set password rules, including password length, history, complexity and maximum validity period. Customers can also choose to enable multi-factor authentication via RAM console.</p> <p>Alibaba Cloud's operator may have one-time service permission or service account provisioned to customer's environment for troubleshooting purpose after obtaining the customer's approval. One-time access key will be granted for the account access and such access will be automatically revoked once the authorization is expired.</p>
3.3 Security administration and monitoring	<p>Alibaba Cloud utilizes a threat monitoring platform to gather security events discovered internally or externally and automatically pushes alerts to the security department personnel. The threat monitoring platform also identifies anomalies by analysing the system logs retained of cloud products and servers as well as network devices according to preset rules.</p> <p>The security events will be reviewed by the security department and resolved on a timely basis. Alibaba Cloud has established a multi-channel communication method to announce security events that could impact customers.</p> <p>NIDS has been deployed to monitor the malicious attacks from network. Alibaba Cloud also deploys the security products such as Anti-DDoS and WAF at network boundary to provide DDoS attack detection and defense.</p>

Key Aspects	Alibaba Cloud's responses
3.4 System security	<p>File Integrity Monitoring tool has been deployed by Alibaba Cloud to scan configurations of operating systems, database management systems, network devices and virtual images; the scanning results are analyzed and deviations from configuration baseline standards are restored to the standard by operation personnel.</p> <p>Alibaba Cloud is responsible for the security of hardware, software and network of the cloud platform by means of OS- and database-patch management, while customers are responsible for the security of the operating systems, software and applications and therefore responsible for performing security patching over their own systems.</p> <p>Alibaba Cloud invites external experts to conduct penetration tests every half year. Discovered vulnerabilities are analyzed, documented and followed up. Again, it is customer's responsibilities to perform the penetration tests over the internet-facing systems regularly.</p>
5.2 Performance monitoring and capacity planning	Please refer to Section 6.4 above for the monitoring over the Alibaba Cloud's performance. Alibaba Cloud's services provide the customers with elastic scalability which allows the customers to scale up and down bases on their needs, and as such, supports the customers growing capacities continuously.
5.3 IT facilities and equipment maintenance	Alibaba Cloud has established a Configuration Management Database (CMDB) for managing the assets related to cloud services. All inventoried assets are assigned to an asset owner, and the assignment of assets to each asset owner is documented in CMDB. In this CMDB, all the history of the changes to the entries in the inventory will be maintained.
5.4 Disaster recovery	Please refer to Section 6.5 above.

Key Aspects	Alibaba Cloud's responses
planning	

Alibaba Cloud understands the regulatory requirements imposed on the AIs and helps the AIs to fulfill such requirements by conducting regular audits following the HKMA requirements. For more information, please feel free to contact our sales representative.

8. Next Steps with Alibaba Cloud

Alibaba Cloud empowers customers to deploy on a trusted and high-performance cloud architecture worldwide. As a globally recognized industry-leading cloud service provider, we have been partners with many banking institutes in their cloud strategy, governance, and adoption processes.

To ensure on-going regulatory compliance and to fulfill their own risk management duty of care, financial institutions must make changes to the existing strategy, governance, policies, operating model, processes when adopting cloud services. The level of necessary change though will be on a sliding scale relative to the architectures deployed and the criticality of workloads hosted in the cloud environment. We provide professional services to assist the planning, design, execution and evaluation processes. (See “Useful Resource – 7. Alibaba Cloud Professional Services”).

While the Alibaba Cloud official website and this user guide facilitate a wealth of information relevant to your considerations, our sales representative should undoubtedly be able to assist you to address your concerns. In case we are not already in touch, please reach us at <https://www.alibabacloud.com/contact-sales>. We look forward to partnering with your organization to enable your digital transformation and IT modernization journey.

9. Useful Resources

1. Alibaba Cloud Security & Compliance Center
2. Alibaba Cloud GDPR Trust Center
3. Alibaba Cloud Security Whitepaper, Version 1.0
4. Alibaba Cloud Financial Service Solutions
5. Alibaba Cloud Press Room
6. Alibaba Cloud Legal Document Center
7. Alibaba Cloud Professional Services

10. Version History

November 2018: First Edition – Version 1.0

March 2019: Updated the newly obtained certificates information, revised Alibaba Cloud's responses, edited formatting – Version 1.1