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## INDEPENDENT ACCOUNTANT'S REPORT

To the Management of Visa U.S.A. Inc. ("Visa"):

We have examined for Visa's Certification Authority (CA) operations at Highlands Ranch, Colorado and Ashburn, Virginia:

- Visa's disclosure of its business, key lifecycle management, certificate lifecycle management, and CA environmental control practices, the consistency of its Certification Practice Statement with its Certificate Policy, the provision of services in accordance with its Certificate Policy and Certification Practice Statement, and
- the effectiveness of Visa's controls over key and certificate integrity, the authenticity and confidentiality of subscriber and relying party information, the continuity of key and certificate lifecycle management operations, and development, maintenance, and operation of CA systems integrity throughout the period April 1, 2016 to March 31, 2017 for its root and subordinate CAs, collectively referred to as Visa eCommerce CAs, listed in [Appendix A](#).

Visa's management is responsible for these disclosures and for maintaining effective controls, based on the [Trust Service Principles and Criteria for Certification Authorities, Version 2.0](#). Our responsibility is to express an opinion based on our examination.

The relative effectiveness and significance of specific controls at Visa and their effect on assessments of control risk for subscribers and relying parties are dependent on their interaction with the controls, and other factors present at individual subscriber and relying party locations. Our examination did not extend to controls at individual subscriber and relying party locations and we have not evaluated the effectiveness of such controls.

Our examination was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants. Those standards require that we plan and perform the examination to obtain reasonable assurance about whether, throughout the period April 1, 2016 to March 31, 2017, for its root and subordinate CAs listed in [Appendix A](#), in all material respects, VISA,:

- a. disclosed its business, key life cycle management, certificate life cycle management, and CA environment control practices in its:
  - [Visa Public Key Infrastructure Certification Practice Statement, Version 3.1, Effective March 31, 2017](#);
  - Visa Public Key Infrastructure Certification Practice Statement, Version 3.0, Effective March 3, 2016;
  - [Visa Public Key Infrastructure Certificate Policy, Version 3.1, Effective March 31, 2017](#); and
  - Visa Public Key Infrastructure Certificate Policy, Version 3.0, Effective March 3, 2016.



b. maintained effective controls to provide reasonable assurance that:

- Visa's Certification Practice Statement is consistent with its Certificate Policy;
- Visa provides its services in accordance with its Certificate Policy and Certification Practice Statement;
- the integrity of keys and certificates it manages is established and protected throughout their lifecycles;
- the integrity of subscriber keys and certificates it manages is established and protected throughout their lifecycles;
- subscriber information is properly authenticated;
- subordinate CA certificate requests are accurate, authenticated, and approved;
- logical and physical access to CA systems and data is restricted to authorized individuals;
- the continuity of key and certificate management operations is maintained; and
- CA systems development, maintenance, and operations are properly authorized and performed to maintain CA systems integrity based on the [Trust Service Principles and Criteria for Certification Authorities, Version 2.0](#).

An examination involves performing procedures to obtain evidence about management's assertion. The nature, timing, and extent of the procedures selected depend on our judgment, including an assessment of the risks of material misstatement of management's assertion, whether due to fraud or error. We believe that the evidence we obtained is sufficient and appropriate to provide a reasonable basis for our opinion.

We noted the following matters that resulted in a modification of our opinion.

Impacted Trust Service Principles and Criteria for Certification Authorities		Control Deficiency Noted
6.6	Certificate Revocation The CA maintains controls to provide reasonable assurance that certificates are revoked, based on authorized and validated certificate revocation requests within the time frame in accordance with the CA's disclosed business practices.	We were unable to obtain evidence of the original revocation request to verify it was submitted by an authorized individual for a selection of revoked certificates.
		We were unable to obtain evidence to verify the revocation was completed within the 24 hour requirement for a selection of revoked certificates.

This caused the Trust Service Principles and Criteria for Certification Authorities criterion outlined above to not be met.

In our opinion, except for the effect of the matters discussed in the preceding paragraph, throughout the period April 1, 2016 to March 31, 2017, in all material respects, Visa has:

- disclosed its business, key lifecycle management, certificate lifecycle management, and CA environment control practices in its:
  - [Visa Public Key Infrastructure Certification Practice Statement, Version 3.1, Effective March 31, 2017](#);



- Visa Public Key Infrastructure Certification Practice Statement, Version 3.0, Effective March 3, 2016;
  - [Visa Public Key Infrastructure Certificate Policy, Version 3.1, Effective March 31, 2017](#); and
  - Visa Public Key Infrastructure Certificate Policy, Version 3.0, Effective March 3, 2016
- maintained effective controls to provide reasonable assurance that:
    - Visa Public Key Infrastructure Certification Practice Statement is consistent with its Visa Public Key Infrastructure Certificate Policy; and
    - Visa provides its services in accordance with its Visa Public Key Infrastructure Certificate Policy and Visa Public Key Infrastructure Certification Practice Statement
  - maintained effective controls to provide reasonable assurance that:
    - the integrity of keys and certificates it manages is established and protected throughout their lifecycles;
    - the integrity of subscriber keys and certificates it manages is established and protected throughout their lifecycles;
    - subscriber information is properly authenticated; and
    - subordinate CA certificate requests are accurate, authenticated, and approved
  - maintained effective controls to provide reasonable assurance that:
    - logical and physical access to CA systems and data is restricted to authorized individuals;
    - the continuity of key and certificate management operations is maintained; and
    - CA systems development, maintenance, and operations are properly authorized and performed to maintain CA systems integrity

based on the [Trust Service Principles and Criteria for Certification Authorities, Version 2.0](#).

Because of the nature and inherent limitations of controls, Visa's ability to meet the aforementioned criteria may be affected. For example, controls may not prevent, or detect and correct, error, fraud, unauthorized access to systems and information, or failure to comply with internal and external policies or requirements. Also, the projection of any conclusions based on our findings to future periods is subject to the risk that changes may alter the validity of such conclusions.

This report does not include any representation as to the quality of Visa's services beyond those covered by the [Trust Service Principles and Criteria for Certification Authorities, Version 2.0](#), nor the suitability of any of Visa's services for any customer's intended purpose.

*BDO USA, LLP*

Certified Public Accountants  
St. Louis, Missouri  
July 26, 2017



## Visa U.S.A. Inc. Management's Assertion

Visa U.S.A. Inc. ("Visa") operates the Certification Authority ("CA") services known as the root and issuing CAs, collectively referred to as Visa eCommerce CAs, in scope listed in [Appendix A](#), and provides the following CA services:

- Subscriber registration
- Certificate renewal
- Certificate issuance
- Certificate distribution
- Certificate revocation
- Certificate suspension
- Certificate validation

The management of Visa is responsible for establishing and maintaining effective controls over its CA operations, including its CA business practices disclosure in its [repository](#), CA business practice management, CA environmental controls, CA key lifecycle management controls, subscriber key lifecycle management controls, certificate lifecycle management controls, and subordinate CA certificate lifecycle management controls. These controls contain monitoring mechanisms, and actions are taken to correct deficiencies identified.

There are inherent limitations in any controls, including the possibility of human error, and the circumvention or overriding of controls. Accordingly, even effective controls can only provide reasonable assurance with respect to Visa's CA operations. Furthermore, because of changes in conditions, the effectiveness of controls may vary over time.

Visa's management has assessed its disclosures of its certificate practices and controls over its CA services. Based on that assessment, in Visa management's opinion, in providing its CA services at Highlands Ranch, Colorado and Ashburn, Virginia throughout the period April 1, 2016 to March 31 2017, Visa has:

- disclosed its business, key lifecycle management, certificate lifecycle management, and CA environment control practices in its:
  - [Visa Public Key Infrastructure Certification Practice Statement, Version 3.1, Effective March 31, 2017](#);
  - Visa Public Key Infrastructure Certification Practice Statement, Version 3.0, Effective March 3, 2016;
  - [Visa Public Key Infrastructure Certificate Policy, Version 3.1, Effective March 31, 2017](#); and
  - Visa Public Key Infrastructure Certificate Policy, Version 3.0, Effective March 3, 2016



- maintained effective controls to provide reasonable assurance that:
  - Visa's Certification Practice Statement is consistent with its Certificate Policy; and
  - Visa provides its services in accordance with its Certificate Policy and Certification Practice Statement
- maintained effective controls to provide reasonable assurance that:
  - the integrity of keys and certificates it manages is established and protected throughout their lifecycles;
  - the integrity of subscriber keys and certificates it manages is established and protected throughout their lifecycles;
  - subscriber information is properly authenticated; and
  - subordinate CA certificate requests are accurate, authenticated, and approved
- maintained effective controls to provide reasonable assurance that:
  - logical and physical access to CA systems and data is restricted to authorized individuals;
  - the continuity of key and certificate management operations is maintained; and
  - CA systems development, maintenance, and operations are properly authorized and performed to maintain CA systems integrity based on the [Trust Service Principles and Criteria for Certification Authorities, Version 2.0](#), including the following:

#### **CA Business Practices Disclosure**

- Certification Practice Statement (CPS)
- Certificate Policy (CP)

#### **CA Business Practices Management**

- Certificate Policy Management
- Certification Practice Statement Management
- CP and CPS Consistency

#### **CA Environmental Controls**

- Security Management
- Asset Classification and Management
- Personnel Security
- Physical & Environmental Security
- Operations Management
- System Access Management
- System Development and Maintenance
- Business Continuity Management
- Monitoring and Compliance
- Audit Logging



#### CA Key Lifecycle Management Controls

- CA Key Generation
- CA Key Storage, Backup, and Recovery
- CA Public Key Distribution
- CA Key Usage
- CA Key Archival and Destruction
- CA Key Compromise
- CA Cryptographic Hardware Lifecycle Management

#### Certificate Lifecycle Management Controls

- Subscriber Registration
- Certificate Renewal
- Certificate Issuance
- Certificate Distribution
- Certificate Revocation
- Certificate Suspension
- Certificate Validation

#### Subordinate CA Certificate Lifecycle Management Controls

##### Subordinate CA Certificate Lifecycle Management

except for the effects of the matters noted below:

Impacted Trust Service Principles and Criteria for Certification Authorities		Control Deficiency Noted	Management Response
6.6	Certificate Revocation The CA maintains controls to provide reasonable assurance that certificates are revoked, based on authorized and validated certificate revocation requests within the time frame in accordance with the CA's disclosed business practices.	We were unable to obtain evidence of the original revocation request to verify it was submitted by an authorized individual for a selection of revoked certificates.	Visa notes a plan to standardize and establish consistency across all revocation requests, approvals and validation evidence is in progress. This plan will be implemented in Q1 FY18 and will include training to relevant personnel about the new standardized process.
		We were unable to obtain evidence to verify the revocation was completed within the 24 hour requirement for a selection of revoked certificates.	Visa notes a plan to standardize and establish consistency across all revocation requests (including the 24 hour revocation requirement), approvals and validation evidence is in progress. This plan

			will be implemented in Q1 FY18 and will include training to relevant personnel about the new standardized process.
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Visa did not escrow CA keys, nor did Visa provide Integrated Circuit Card Life Cycle Management or Certificate Rekey Services. Visa only provided Subscriber Key Generation and Subscriber Key Storage and Recovery services when the subscriber was Visa or an affiliate of Visa.

  
Adam Clark, Senior Director of Applied Cryptography

#### Root CA's

CA Name	Serial Number	SHA1 Thumbprint
CN = Visa eCommerce Root OU = Visa International Service Association O = VISA C = US	13 86 35 4d 1d 3f 06 f2 c1 f9 65 05 d5 90 1c 62	70 17 9b 86 8c 00 a4 fa 60 91 52 22 3f 9f 3e 32 bd e0 05 62
CN = Visa eCommerce Root CA - G2 OU = Visa International Services Association O = VISA L = Ashburn S = Virginia C = US	51 3e 96 00 00 00 68 10 fc 6e 08 a3 d6 14 67	fc 7e fd 44 ef b6 9a e2 12 f3 47 41 68 5f 90 ec ca 6b 0d a8

#### Issuing CA

CA Name	Serial Number	SHA1 Thumbprint
CN = Visa eCommerce Issuing CA OU = Visa International Service Association O = VISA C = US	00 d8 74 61 30 41 fc 3c 44 a0 bc c6 5d 6c 36 f1 10	80 7a 77 b2 44 51 57 6c fb 3f b9 1e 97 73 52 27 fa b4 04 dd