Tel: 314-889-1100
Fax: 314-889-1101
www.bdo.com

101 S Hanley Rd, #800
St. Louis, MO 63105

REPORT OF THE INDEPENDENT ACCOUNTANT

To the Management of Microsoft Corporation Core Services Engineering & Operations ("Microsoft CSEO"):

We have examined for Microsoft CSEO's certification authority ("CA") operations in the United States of America and territories,

- Microsoft CSEO's disclosure of its SSL certificate lifecycle management business practices in its DSRE PKI Certificate Policy/Certification Practice Statement for TLS CAs, Version 2.0, Effective May 1, 2018 including its commitment to provide SSL certificates in conformity with the CA/Browser Forum Requirements on the Microsoft CSEO repository

- maintained effective controls to provide reasonable assurance that:
  - the integrity of keys and SSL certificates it manages is established and protected throughout their lifecycles; and
  - SSL subscriber information is properly authenticated

- 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

- maintained effective controls to provide reasonable assurance that it meets the Network and Certificate System Security Requirements as set forth by the CA/Browser Forum

throughout the period July 1, 2018 to January 31, 2019 for its CAs enumerated in Attachment A, in scope for SSL Baseline Requirements and Network Security Requirements.

Microsoft CSEO's management is responsible for these disclosures and for maintaining effective controls based on the WebTrust Principles and Criteria for Certification Authorities – SSL Baseline with Network Security v2.3. Our responsibility is to express an opinion based on our examination.

The relative effectiveness and significance of specific controls at Microsoft CSEO 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 July 1, 2018 to January 31, 2019, for its CAs enumerated in Attachment A, in all material respects, Microsoft CSEO:

- disclosed its SSL certificate lifecycle management business practices, including its commitment to provide SSL certificates in conformity with the CA/Browser Forum Requirements on the Microsoft CSEO repository

- maintained effective controls to provide reasonable assurance that:
  - the integrity of keys and SSL certificates it manages is established and protected throughout their lifecycles; and
  - SSL subscriber information is properly authenticated

- 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

- maintained effective controls to provide reasonable assurance that it meets the Network and Certificate System Security Requirements as set forth by the CA/Browser Forum

based on the WebTrust Principles and Criteria for Certification Authorities – SSL Baseline with Network Security v2.3.

During our examination, we noted the following which caused a modification of our opinion:

Impacted WebTrust Principles and Criteria for Certification Authorities – SSL Baseline with Network Security		Control Deficiency Noted
2-7.3	The CA maintains controls to provide reasonable assurance that audit logs generated are retained for at least seven years.	Firewall and router logs are not being retained for the required seven years.
3-6	The CA maintains controls to provide reasonable assurance that: • physical access to CA facilities and equipment is limited to authorized individuals, protected through restricted security perimeters, and is operated under multiple person (at least dual custody) control; • CA facilities and equipment are protected from environmental hazards; • loss, damage or compromise of assets and interruption to business activities are prevented; and • compromise of information and information processing facilities is prevented.	Microsoft CSEO requires at least two individuals in trusted roles to be present when accessing the CA equipment. During the period two events were identified where procedures were not followed and a single individual accessed the CA equipment.

Because of the nature and inherent limitations of controls, Microsoft CSEO'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.

In our opinion, except for the effect of the matters described in the preceding table, throughout the period February 1, 2018 to June 30, 2018, Microsoft CSEO has, in all material respects:

- disclosed its SSL certificate lifecycle management business practices in its DSRE PKI Certificate Policy/Certification Practice Statement for TLS CAs, Version 2.0, Effective May 1, 2018 including its commitment to provide SSL certificates in conformity with the CA/Browser Forum Requirements on the Microsoft CSEO repository

- maintained effective controls to provide reasonable assurance that:
  - the integrity of keys and SSL certificates it manages is established and protected throughout their lifecycles; and
  - SSL subscriber information is properly authenticated

- 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

- maintained effective controls to provide reasonable assurance that it meets the Network and Certificate System Security Requirements as set forth by the CA/Browser Forum

based on the WebTrust Principles and Criteria for Certification Authorities – SSL Baseline with Network Security v2.3.

This report does not include any representation as to the quality of Microsoft CSEO's services beyond those covered by the WebTrust Principles and Criteria for Certification Authorities – SSL Baseline with Network Security v2.3, nor the suitability of any of Microsoft CSEO's services for any customer's intended purpose.

BDO USA, LLP

St. Louis, Missouri
April 9, 2019

ATTACHMENT A – IN-SCOPE CAs

CA	Serial Number	SHA1 Thumbprint	SHA2 Thumbprint
CN = Microsoft IT TLS CA 1 OU = Microsoft IT O = Microsoft Corporation L = Redmond S = Washington C = US	08 b8 7a 50 1b be 9c da 2d 16 4d 3e 39 51 bf 55	41 7e 22 50 37 fb fa a4 f9 57 61 d5 ae 72 9e 1a ea 7e 3a 42	4f f4 04 f0 2e 2c d0 01 88 f1 5d 1c 00 f4 b6 d1 e3 8b 5a 39 5c f8 53 14 ea eb a8 55 b6 a6 4b 75
CN = Microsoft IT TLS CA 2 OU = Microsoft IT O = Microsoft Corporation L = Redmond S = Washington C = US	0f 2c 10 c9 5b 06 c0 93 7f b8 d4 49 f8 3e 85 69	54 d9 d2 02 39 08 0c 32 31 6e d9 ff 98 0a 48 98 8f 4a df 2d	4e 10 7c 98 1b 42 ac be 41 c0 10 67 e1 6d 44 db 64 81 4d 41 93 e5 72 31 7e a0 4b 87 c7 9c 47 5f
CN = Microsoft IT TLS CA 4 OU = Microsoft IT O = Microsoft Corporation L = Redmond S = Washington C = US	0b 6a b3 b0 3e b1 a9 f6 c4 60 92 6a a8 cd fe b3	8a 38 75 5d 09 96 82 3f e8 fa 31 16 a2 77 ce 44 6e ac 4e 99	5f fa c4 3e 0d dc 5b 4a f2 b6 96 f6 bc 4d b7 e9 1d f3 14 bb 8f e0 d0 71 3a 0b 1a 7a d2 a6 8f ac
CN = Microsoft IT TLS CA 5 OU = Microsoft IT O = Microsoft Corporation L = Redmond S = Washington C = US	08 88 cd 52 5f 19 24 44 4d 14 a5 82 91 de b9 52	ad 89 8a c7 3d f3 33 eb 60 ac 1f 5f c6 c4 b2 21 9d db 79 b7	f0 ee 59 14 ed 94 c7 25 2d 05 8b 4e 39 80 8a ee 6f a8 f6 2c f0 97 4f b7 d6 d2 a9 df 16 e3 a8 7f

Microsoft Corporation
One Microsoft Way
Redmond, WA 98052-6399

Tel 425 882 8080
Fax 425 706 7329
www.microsoft.com

Microsoft

Microsoft Corporation Core Services Engineering & Operations Management's Assertion

Microsoft Corporation Core Services Engineering & Operations ("Microsoft CSEO") operates the Certification Authority ("CA") services for its CAs enumerated in Attachment A in scope for SSL Baseline and Network Security Requirements and provides SSL CA services.

Microsoft CSEO's management has assessed its disclosures of its certificate practices and controls over its SSL CA services. Based on that assessment, in providing its SSL CA services in the United States of America and territories, throughout the period July 1, 2018 to January 31, 2019, Microsoft CSEO has:

- disclosed its SSL certificate lifecycle management business practices in its DSRE PKI Certificate Policy/Certification Practice Statement for TLS CAs, Version 2.0, Effective May 1, 2018 including its commitment to provide SSL certificates in conformity with the CA/Browser Forum Requirements on the Microsoft CSEO repository, and provided such services in accordance with its disclosed practices

- maintained effective controls to provide reasonable assurance that:
  - the integrity of keys and SSL certificates it manages is established and protected throughout their lifecycles; and
  - SSL subscriber information is properly authenticated

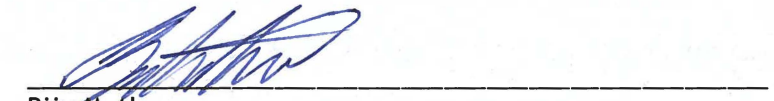
- maintained effective controls to provide reasonable assurance that:
  - logical and physical access to CA systems and data is restricted to authorized individuals;
  - the continuity of key and certificate management operations is maintained; and
  - CA systems development, maintenance, and operations are properly authorized and performed to maintain CA systems integrity

- maintained effective controls to provide reasonable assurance that it meets the Network and Certificate System Security Requirements as set forth by the CA/Browser Forum

based on the WebTrust Principles and Criteria for Certification Authorities - SSL Baseline with Network Security v2.3, except for the effect of the matters noted below:

Impacted WebTrust Principles and Criteria for Certification Authorities - SSL Baseline with Network Security		Control Deficiency Noted
2.7.3	The CA maintains controls to provide reasonable assurance that audit logs generated are retained for at least seven years.	Firewall and router logs are not being retained for the required seven years. **Management Response** Environmental changes in log types, supporting organization and storage retention intervals led to gaps in reporting and retention of the required events. This was addressed

		and new automated processes were implemented during the audited period.
3-6	The CA maintains controls to provide reasonable assurance that: • physical access to CA facilities and equipment is limited to authorized individuals, protected through restricted security perimeters, and is operated under multiple person (at least dual custody) control; • CA facilities and equipment are protected from environmental hazards; • loss, damage or compromise of assets and interruption to business activities are prevented; and • compromise of information and information processing facilities is prevented.	Microsoft CSEO requires at least two individuals in trusted roles to be present when accessing the CA equipment. During the period an event was identified where procedures were not followed and a single individual accessed the CA equipment. Microsoft CSEO requires at least two individuals in trusted roles to be present when accessing the CA equipment. During the period two events were identified where procedures were not followed and a single individual accessed the CA equipment. **Management Response** Microsoft acknowledges the fact that authorized personnel opened the secure rack to record asset tag numbers without two designated trusted role holders present. Our video evidence shows there was no physical contact with any assets secured in that rack. There has been no compromise in the integrity or security of the systems that provide TLS certificates. Technical controls have been modified to ensure no further events of this type will occur.



Biju Mathew
Principal Service Engineer Management IAM
April 9, 2019

ATTACHMENT A - IN-SCOPE CAs

Issuing CAs	Serial Number	SHA1 Thumbprint	SHA2 Thumbprint
CN = Microsoft IT TLS CA 1 OU = Microsoft IT O = Microsoft Corporation L = Redmond S = Washington C = US	08 b8 7a 50 1b be 9c da 2d 16 4d 3e 39 51 bf 55	41 7e 22 50 37 fb fa a4 f9 57 61 d5 ae 72 9e 1a ea 7e 3a 42	4f f4 04 f0 2e 2c d0 01 88 f1 5d 1c 00 f4 b6 d1 e3 8b 5a 39 5c f8 53 14 ea eb a8 55 b6 a6 4b 75
CN = Microsoft IT TLS CA 2 OU = Microsoft IT O = Microsoft Corporation L = Redmond S = Washington C = US	0f 2c 10 c9 5b 06 c0 93 7f b8 d4 49 f8 3e 85 69	54 d9 d2 02 39 08 0c 32 31 6e d9 ff 98 0a 48 98 8f 4a df 2d	4e 10 7c 98 1b 42 ac be 41 c0 10 67 e1 6d 44 db 64 81 4d 41 93 e5 72 31 7e a0 4b 87 c7 9c 47 5f
CN = Microsoft IT TLS CA 4 OU = Microsoft IT O = Microsoft Corporation L = Redmond S = Washington C = US	0b 6a b3 b0 3e b1 a9 f6 c4 60 92 6a a8 cd fe b3	8a 38 75 5d 09 96 82 3f e8 fa 31 16 a2 77 ce 44 6e ac 4e 99	5f fa c4 3e 0d dc 5b 4a f2 b6 96 f6 bc 4d b7 e9 1d f3 14 bb 8f e0 d0 71 3a 0b 1a 7a d2 a6 8f ac
CN = Microsoft IT TLS CA 5 OU = Microsoft IT O = Microsoft Corporation L = Redmond S = Washington C = US	08 88 cd 52 5f 19 24 44 4d 14 a5 82 91 de b9 52	ad 89 8a c7 3d f3 33 eb 60 ac 1f 5f c6 c4 b2 21 9d db 79 b7	f0 ee 59 14 ed 94 c7 25 2d 05 8b 4e 39 80 8a ee 6f a8 f6 2c f0 97 4f b7 d6 d2 a9 df 16 e3 a8 7f