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INDEPENDENT ASSURANCE REPORT

To the management of Entrust Corporation ("Entrust"):

Scope

We have been engaged, in a reasonable assurance engagement, to report on Entrust management's statement that for its Certification Authority (CA) operations in Ottawa, Ontario, Canada and Toronto, Ontario, Canada throughout the period 1 March 2020 to 28 February 2021 (the "Period") for its CAs as enumerated in Attachment A, Entrust has:

- disclosed its business, key lifecycle management, certificate lifecycle management, and CA environmental control practices in its Certification Practice Statements as enumerated in Attachment B

- maintained effective controls to provide reasonable assurance that Entrust provides its services in accordance with its Certification Practice Statements

- 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 (for the registration activities performed by Entrust); 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 authorised individuals;
    - the continuity of key and certificate management operations is maintained; and
    - CA systems development, maintenance, and operations are properly authorised and performed to maintain CA systems integrity

in accordance with the WebTrust Principles and Criteria for Certification Authorities v2.2.

Entrust does not escrow its CA keys and does not provide certificate suspension services. Accordingly, our procedures did not extend to controls that would address those criteria.

Entrust has issued cross-certificates to third-party certification authorities which were valid during the Period. The operations of these third-party certification authorities were not in scope for our engagement, and, accordingly, we express no opinion on these third-party certification authorities.

Certification authority's responsibilities

Entrust's management is responsible for its statement, including the fairness of its presentation, and the provision of its described services in accordance with the WebTrust Principles and Criteria for Certification Authorities v2.2.

Our independence and quality control

We have complied with the relevant rules of professional conduct / code of ethics applicable to the practice of public accounting and related to assurance engagements, issued by various professional accounting bodies, which are founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

The firm applies Canadian Standard on Quality Control 1, *Quality Control for Firms that Perform Audits and Reviews of Financial Statements, and Other Assurance Engagements*, and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

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Practitioner's responsibilities

Our responsibility is to express an opinion on management's statement based on our procedures. We conducted our procedures in accordance with Canadian Standard on Assurance Engagements 3000, *Attestation Engagements Other than Audits or Reviews of Historical Financial Information,* set out in the CPA Canada Handbook – Assurance. This standard requires that we plan and perform our procedures to obtain reasonable assurance about whether, in all material respects, management's statement is fairly stated, and, accordingly, included:

(1) obtaining an understanding of Entrust's key and certificate lifecycle management business practices and its controls over key and certificate integrity, over the authenticity and confidentiality of subscriber and relying party information, over the continuity of key and certificate lifecycle management operations and over development, maintenance and operation of systems integrity;
(2) selectively testing transactions executed in accordance with disclosed key and certificate lifecycle management business practices;
(3) testing and evaluating the operating effectiveness of the controls; and
(4) performing such other procedures as we considered necessary in the circumstances.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Relative effectiveness of controls

The relative effectiveness and significance of specific controls at Entrust 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. We have performed no procedures to evaluate the effectiveness of controls at individual subscriber and relying party locations.

Inherent limitations

Because of the nature and inherent limitations of controls, Entrust's ability to meet the aforementioned criteria may be affected. For example, controls may not prevent, or detect and correct, error, fraud, unauthorised 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.

Other matters

Without modifying our opinion, we noted the following other matters during our procedures:

	Matter topic	Matter description
1	**Mozilla 'bug' responses**	As described in management's statement, management has reported or responded to certain 'bugs' on Mozilla's Bugzilla reporting system. Management's statement contains information on their outcome or resolution.
2	**AATL1 CA placed in production**	The AATL1 Intermediate CA (*Attachment A, CA #7*) was cross-signed by the G4 Root CA (*Attachment A, CA #4*) and placed into production on 20 July 2020. The AATL1 asymmetric key pair was generated within its secure cryptographic module on 17 June 2020 and remained in a non-active state until 20 July 2020.
3	**Siemens CA placed in production**	The Siemens Issuing CA (*Attachment A, CA #11*) was cross-signed by the G2 Root CA (*Attachment A, CA #4*) and placed into production on 10 August 2020. The Siemens Issuing CA asymmetric key pair was generated within its secure cryptographic module on 17 June 2020 and remained in a non-active state until 10 August 2020.
4	**DE QWAC1 CA placed in production**	The DE QWAC1 CA (*Attachment A, CA #17*) was cross-signed by the G2 Root CA (*Attachment A, CA #4*) and placed into production on 29 July 2020. The DE QWAC1 CA asymmetric key pair was generated within its secure cryptographic module on 17 June 2020 and remained in a non-active state until 29 July 2020.

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	Matter topic	Matter description
5	**ES QSig1 CA placed in production**	The ES QSig1 CA (*Attachment A, CA #25*) was cross-signed by the AATL1 Intermediate CA (*Attachment A, CA #7*) and placed into production on 29 July 2020. The ES QSig1 CA asymmetric key pair was generated within its secure cryptographic module on 17 June 2020 and remained in a non-active state until 29 July 2020.
6	**ES QSeal1 CA placed in production**	The ES QSeal1 CA (*Attachment A, CA #26*) was cross-signed by the AATL1 Intermediate CA (*Attachment A, CA #7*) and placed into production on 27 July 2020. The ES QSeal1 CA asymmetric key pair was generated within its secure cryptographic module on 17 June 2020 and remained in a non-active state until 27 July 2020.
7	**DE QSig1 CA placed in production**	The DE QSig1 CA (*Attachment A, CA #27*) was cross-signed by the AATL1 Intermediate CA (*Attachment A, CA #7*) and placed into production on 29 July 2020. The DE QSig1 CA asymmetric key pair was generated within its secure cryptographic module on 17 June 2020 and remained in a non-active state until 29 July 2020.
8	**DE QSeal1 CA placed in production**	The DE QSeal1 CA (*Attachment A, CA #28*) was cross-signed by the AATL1 Intermediate CA (*Attachment A, CA #7*) and placed into production on 27 July 2020. The DE QSeal1 CA asymmetric key pair was generated within its secure cryptographic module on 17 June 2020 and remained in a non-active state until 27 July 2020.
9	**L1D CA EKU extension**	Valid CA certificates exist for the L1D (*Attachment A, CA #18, Certificates #1-3*) Organisational Validation Code Signing CA that do not contain an Extended Key Usage (EKU) extension. This CA is not configured to issue end-entity certificates containing an Extended Key Usage of TLS Web Server Authentication. Certificates issued during the Period only contained Extended Key Usage of Code Signing and/or Time Stamping.
10	**Class 1 and Class 2 S/MIME CAs EKU extension**	Valid CA certificates exist for the Class 1 (*Attachment A, CA #21, Certificates #1-3*) and Class 2 (*Attachment A, CA #23, Certificates #1-3*) S/MIME CAs that do not contain an Extended Key Usage (EKU) extension. These CAs are not configured to issue end-entity certificates containing an Extended Key Usage of TLS Web Server Authentication. Certificates issued during the Period only contained Extended Key Usages of TLS Web Client Authentication and/or E-mail Protection. CA certificates for these CAs containing Extended Key Usages of TLS Web Client Authentication and E-mail Protection were issued by the 2048 Root CA (*Attachment A, CA #1*) on 20 June 2017 (*Attachment A, CA #21, Certificate #4; CA #23, Certificate #4*).

Practitioner's opinion

In our opinion, throughout the period 1 March 2020 to 28 February 2021, Entrust management's statement, as referred to above, is fairly stated, in all material respects, in accordance with the WebTrust Principles and Criteria for Certification Authorities v2.2.

This report does not include any representation as to the quality of Entrust's services beyond those covered by the WebTrust Principles and Criteria for Certification Authorities v2.2, nor the suitability of any of Entrust's services for any customer's intended purpose.

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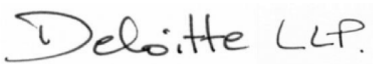
Use of the WebTrust seal

Entrust's use of the WebTrust for Certification Authorities Seal constitutes a symbolic representation of the contents of this report and it is not intended, nor should it be construed, to update this report or provide any additional assurance.



Deloitte LLP
Chartered Professional Accountants
Toronto, Ontario, Canada
22 April 2021

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ATTACHMENT A

LIST OF IN SCOPE CAs

Root CAs
1. Entrust.net Certification Authority (2048) 2. Entrust Root Certification Authority 3. Entrust Root Certification Authority – G2 4. Entrust Root Certification Authority – G4 5. Entrust Root Certification Authority – EC1 6. Entrust Root Certification Authority – EC2
Intermediate CAs
7. Entrust Certification Authority - AATL1
OV SSL Issuing CAs
8. Entrust Certification Authority – L1C 9. Entrust Certification Authority – L1F 10. Entrust Certification Authority – L1K 11. Siemens Issuing CA Internet Server 2020
EV SSL Issuing CAs
12. Entrust Certification Authority – L1E 13. Entrust Certification Authority – L1J 14. Entrust Certification Authority – L1M 15. Entrust Certification Authority – L1N
Qualified Certificate EV SSL Issuing CAs
16. Entrust Certification Authority - QTSP1 17. Entrust Certification Authority - DE QWAC1
Non-EV Code Signing Issuing CAs
18. Entrust Code Signing Certification Authority – L1D 19. Entrust Code Signing CA – OVCS1
EV Code Signing Issuing CAs
20. Entrust Extended Validation Code Signing CA – EVCS1
Secure Email (S/MIME) CAs
21. Entrust Class 1 Client CA 22. Entrust Class 1 Client CA - SHA256 23. Entrust Class 2 Client CA
Document Signing CAs
24. Entrust Class 3 Client CA - SHA256 25. Entrust Certification Authority - ES QSig1 26. Entrust Certification Authority - ES QSeal1 27. Entrust Certification Authority - DE QSig1 28. Entrust Certification Authority - DE QSeal1
Timestamp CAs
29. Entrust Timestamping CA – TS1
Visual Marks CAs
30. Entrust Certificate Authority - VMC1

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CA IDENTIFYING INFORMATION

CA #	Cert #	Subject	Issuer	Serial Number	Key Type	Hash Type	Not Before	Not After	Revoked Date	Extended Key Usage	Subject Key Identifier	SHA256 Fingerprint
1	1	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	3863def8	RSA 2048-bits	RSA SHA-1	1999-12-24 17:50:51	2029-07-24 14:15:12			55e481d11180bed889b908a331f9a1240916b970	6dc47172e01cbcb0bf62580d895fe2b8ac9ad4f873801e0c10b9c837d21eb177
2	1	CN=Entrust Root Certification Authority OU=(c) 2006 Entrust, Inc. OU=www.entrust.net/CPS is incorporated by reference O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority OU=(c) 2006 Entrust, Inc. OU=www.entrust.net/CPS is incorporated by reference O=Entrust, Inc. C=US	456b5054	RSA 2048-bits	RSA SHA-1	2006-11-27 20:23:42	2026-11-27 20:53:42			6890e467a4a65380c78666a4f1f74b43fb84bd6d	73c176434f1bc6d5adf45b0e76e727287c8de57616c1e6e6141a2b2cbc7d8e4c
3	1	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	4a538c28	RSA 2048-bits	RSA SHA-256	2009-07-07 17:25:54	2030-12-07 17:55:54			6a72267ad01eef7de73b6951d46c8d9f901266ab	43df5774b03e7fef5fe40d931a7bedf1bb2e6b42738c4e6d3841103d3aa7f339
3	2	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority OU=(c) 2006 Entrust, Inc. OU=www.entrust.net/CPS is incorporated by reference O=Entrust, Inc. C=US	51d33f09	RSA 2048-bits	RSA SHA-1	2014-09-12 17:28:27	2024-09-13 03:12:02			6a72267ad01eef7de73b6951d46c8d9f901266ab	cbce622d06f9d2c093fad75cebb7852ef553ffff146ad522ab321b3a4b2bd8f8
3	3	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority OU=(c) 2006 Entrust, Inc. OU=www.entrust.net/CPS is incorporated by reference O=Entrust, Inc. C=US	51d33f24	RSA 2048-bits	RSA SHA-1	2014-09-12 19:23:57	2024-09-13 03:12:23			6a72267ad01eef7de73b6951d46c8d9f901266ab	16296e3bef9a64cfede3509f36d700a5cd61cf938ec3a955bf36d17d97e16e8d
3	4	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority OU=(c) 2006 Entrust, Inc. OU=www.entrust.net/CPS is incorporated by reference O=Entrust, Inc. C=US	51d34044	RSA 2048-bits	RSA SHA-256	2014-09-22 17:14:57	2024-09-23 01:31:53			6a72267ad01eef7de73b6951d46c8d9f901266ab	6b143c2005d5539cc22eab5f772db2a9fe87467feffa07fcf0a9f7d28274ca7a
4	1	CN=Entrust Root Certification Authority - G4 OU=(c) 2015 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority - G4 OU=(c) 2015 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	00d9b5437fafa9390f000000005565ad58	RSA 4096-bits	RSA SHA-256	2015-05-27 11:11:16	2037-12-27 11:41:16			9f38c45623c339e8a0716ce8544ce4e83ab1bf67	db3517d1f6732a2d5ab97c533ec70779ee3270a62fb4ac4238372460e6f01e88
5	1	CN=Entrust Root Certification Authority - EC1 OU=(c) 2012 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority - EC1 OU=(c) 2012 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	00a68b79290000000050d091f9	EC 384-bits	ECDSA SHA-384	2012-12-18 15:25:36	2037-12-18 15:55:36			b763e71add8de908a65583a4e06a504165114249	02ed0eb28c14da45165c566791700d6451d7fb56f0b2ab1d3b8eb070e56edff5
5	2	CN=Entrust Root Certification Authority - EC1 OU=(c) 2012 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority OU=(c) 2006 Entrust, Inc. OU=www.entrust.net/CPS is incorporated by reference O=Entrust, Inc. C=US	008011196de613db1600000000051d3575e	EC 384-bits	RSA SHA-256	2016-06-10 14:58:55	2026-11-10 15:28:55			b763e71add8de908a65583a4e06a504165114249	3fde0d36e026b6e8ebe2c28883607c8651de10bd6c1fcad365e560f4ea2f3b03
6	1	CN=Entrust Root Certification Authority - EC2 OU=(c) 2015 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority - EC2 OU=(c) 2015 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	00bbd3315a80485c990000000005565cdaf	EC 521-bits	ECDSA SHA-256	2015-05-27 13:29:11	2037-12-27 13:59:11			a1f88d67c167c938a415d6005a20823d8f2e0ef3	f11aaa40753fda0629cbda80e56bb73f3dea1ce2a8b3aa9bc3abfd0123725159
7	1	C=US O=Entrust, Inc. CN=Entrust Certification Authority - AATL1	CN=Entrust Root Certification Authority - G4 OU=(c) 2015 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	00c727f51f8f922b02000000005565d8ad	RSA 4096-bits	RSA SHA-512	2020-07-20 15:46:21	2037-12-20 16:16:21		1.3.6.1.4.1.311.10.3.12, 1.2.840.113583.1.1.5, E-mail Protection	63f184dd03bea39f64fa767a47c4567ec06da020	839f9b91c2e49218a66416df181b984e9be634d12a95483d98a6199fc0788d74
8	1	CN=Entrust Certification Authority - L1C OU=(c) 2009 Entrust, Inc. OU=www.entrust.net/rpa is incorporated by reference O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	4c0e8c1d	RSA 2048-bits	RSA SHA-256	2011-11-11 15:26:22	2021-11-11 17:45:09			1ef1ab8906f8490f013377ee147aee197c93284d	ca971c936c699bc5d6a609d2529f903a60f6e141a2cf12be72313da50ca64e17
8	2	CN=Entrust Certification Authority - L1C OU=(c) 2009 Entrust, Inc. OU=www.entrust.net/rpa is incorporated by reference O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	4c0e8c39	RSA 2048-bits	RSA SHA-1	2011-11-11 15:40:40	2021-11-12 02:51:17			1ef1ab8906f8490f013377ee147aee197c93284d	0ee4daf71a85d842d23f4910fd4c909b7271861931f1d5feac868225f52700e2
9	1	CN=Entrust Certification Authority - L1F OU=(c) 2016 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority - EC1 OU=(c) 2012 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	00b601913d8553bafa0000000051d4c1f6	EC 384-bits	ECDSA SHA-384	2016-04-05 20:17:29	2037-10-05 20:47:29		TLS Web Server Authentication, TLS Web Client Authentication	2e62f014ee87cdb335033defe4b99efd3bb8a3c9	1835b0e482ea65536fc010e4bc13c060f65668165fba97e2f542ce96ca6dfefc

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CA #	Cert #	Subject	Issuer	Serial Number	Key Type	Hash Type	Not Before	Not After	Revoked Date	Extended Key Usage	Subject Key Identifier	SHA256 Fingerprint
9	2	CN=Entrust Certification Authority - L1F OU=(c) 2016 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	70022c8fc251076b0000000051ce193f	EC 384-bits	RSA SHA-256	2021-02-05 13:55:35	2029-07-05 14:25:35	2021-02-05 18:01:20	TLS Web Server Authentication, TLS Web Client Authentication	2e62f014ee87cdb335033defe4b99efd3bb8a3c9	305ee80647954d30edef8b9fd147222803fc3cdec03de681de63d2ca875fc074
9	3	CN=Entrust Certification Authority - L1F OU=(c) 2016 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	2ab220f2ee4f984a0000000051ce1940	EC 384-bits	RSA SHA-256	2021-02-05 15:17:49	2029-07-05 15:47:49	2021-02-05 18:01:58	TLS Web Server Authentication, TLS Web Client Authentication	25abe719c9e2d3c2f286c16558d9ebcb0e52ecab	b2d32bed34744ab19afcc0ff91753cc4bc71caabd18abc5b79bc464f34743912
9	4	CN=Entrust Certification Authority - L1F OU=(c) 2016 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	00a25b1769bad80ad70000000051ce1941	EC 384-bits	RSA SHA-256	2021-02-05 16:34:34	2029-07-05 17:04:34		TLS Web Server Authentication, TLS Web Client Authentication	2e62f014ee87cdb335033defe4b99efd3bb8a3c9	0c5a09db8aedf7d2d1dde14dccc2db6ea959bcf6f010360d836c342c624d7e0e
10	1	CN=Entrust Certification Authority - L1K OU=(c) 2012 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	51d360ce	RSA 2048-bits	RSA SHA-256	2014-08-26 17:07:28	2024-08-27 05:48:52			82a27074ddbc533fcf7bd4f7cd7fa760c60a4cbf	3b6dd5581c9853092007db1bb0106fc61205e88e360543d7cae02d68e7a25ac3
10	2	CN=Entrust Certification Authority - L1K OU=(c) 2012 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	51d360cf	RSA 2048-bits	RSA SHA-256	2014-08-26 17:14:49	2024-08-27 08:34:47			82a27074ddbc533fcf7bd4f7cd7fa760c60a4cbf	3b0cc20384ad7f24eb438f2b80c63ebe003f7f215b8877e418ebb0484028db57
10	3	CN=Entrust Certification Authority - L1K OU=(c) 2012 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	51ce00fe	RSA 2048-bits	RSA SHA-256	2014-10-10 15:23:17	2024-10-11 06:22:47			82a27074ddbc533fcf7bd4f7cd7fa760c60a4cbf	d6c3fc493bacd1df8a1ba30f4ae26254b2a4528e4876081eacc6a16a090aa36a
10	4	CN=Entrust Certification Authority - L1K OU=(c) 2012 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	51d360ee	RSA 2048-bits	RSA SHA-256	2014-10-22 17:05:14	2024-10-23 07:33:22			82a27074ddbc533fcf7bd4f7cd7fa760c60a4cbf	f5c2f23c6518f9d19b6f39beaea4fbae10031ba9dc985ce1563a520da0ad4116
10	5	CN=Entrust Certification Authority - L1K OU=(c) 2012 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	0ee94cc30000000051d37785	RSA 2048-bits	RSA SHA-256	2015-10-05 19:13:56	2030-12-05 19:43:56			82a27074ddbc533fcf7bd4f7cd7fa760c60a4cbf	13efb39a2f6654e8c67bd04f4c6d4c90cd6cab5091bcedc73787f6b77d3d3fe7
11	1	C=DE O=Siemens CN=Siemens Issuing CA Internet Server 2020	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	00fabb27ddff80d09a0000000051d39440	RSA 2048-bits	RSA SHA-256	2020-08-10 14:11:48	2030-11-10 14:41:48		TLS Web Server Authentication, TLS Web Client Authentication	c9a757cb86c96107c6c2b48665a91ec1cae1029b	a665007a05efe1889d66a40deecbc6c1a271e919006811fdb8dbd7e0675212d1
12	1	CN=Entrust Certification Authority - L1E OU=(c) 2009 Entrust, Inc. OU=www.entrust.net/rpa is incorporated by reference O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority OU=(c) 2006 Entrust, Inc. OU=www.entrust.net/CPS is incorporated by reference O=Entrust, Inc. C=US	008666b02ac1cb54400000000051d3589c	RSA 2048-bits	RSA SHA-256	2019-06-19 16:52:08	2026-11-19 17:22:08		TLS Web Server Authentication, TLS Web Client Authentication	5b418ab2c443c1bdbfc85441559de096adffb9a1	232f6367cf561e00c83e180a9fca8546b3771fb450ebcb4a0526f8349c8ca139
13	1	CN=Entrust Certification Authority - L1J OU=(c) 2016 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority - EC1 OU=(c) 2012 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	0a83d4803e7e9f5100000000051d4c1f7	EC 384-bits	ECDSA SHA-384	2016-04-05 20:19:54	2037-10-05 20:49:54		TLS Web Server Authentication, TLS Web Client Authentication	c3f94503bec8f90b3c4535f3eb72ece7e8eb949b	3447b74b5e500a549983fa2ced73a5642e6aaec78829546158437df66d7435b8
14	1	CN=Entrust Certification Authority - L1M OU=(c) 2014 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority OU=(c) 2006 Entrust, Inc. OU=www.entrust.net/CPS is incorporated by reference O=Entrust, Inc. C=US	51d346e1	RSA 2048-bits	RSA SHA-256	2014-11-18 20:59:32	2024-11-19 06:33:02		TLS Web Client Authentication, TLS Web Server Authentication	c3f7d0b52a30adaf0d9121703954ddbc8970c73a	ca290389e0d8c62a4083f628a39f52fe3f38b73199cffaf7c0372378a440fb6a
14	2	CN=Entrust Certification Authority - L1M OU=(c) 2014 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	61a1e7d20000000051d366a6	RSA 2048-bits	RSA SHA-256	2014-12-15 15:25:03	2030-10-15 15:55:03		TLS Web Client Authentication, TLS Web Server Authentication	c3f7d0b52a30adaf0d9121703954ddbc8970c73a	75c5b3f01fd1f51a2c447ab7c785d72e69fa9c472c08571e7eadf3b8eabae70c
15	1	CN=Entrust Certification Authority - L1N OU=(c) 2014 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority - G4 OU=(c) 2015 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	00abec77ff1b410c07000000005565d805	RSA 2048-bits	RSA SHA-256	2017-11-22 20:04:20	2030-12-22 20:34:20		TLS Web Server Authentication, TLS Web Client Authentication	ee47d18571f1fd2db73fbb3e6358771749400e95	b14d5089079c1d8f7649db9a5d3cefb1aac06f66afc49225c5be2aa19fd41a35
16	1	C=ES O=Entrust Datacard Europe S.L. organizationIdentifier=VATES-B81188047 CN=Entrust Certification Authority - QTSP1	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	009c6cf695700c60000000000051d393a6	RSA 2048-bits	RSA SHA-256	2019-07-26 18:31:45	2030-11-26 19:01:45		TLS Web Server Authentication, TLS Web Client Authentication	1cad3f9cd72d2219a19c4be9daf12a33f7fbba0d	681ebc1822b079b97e0404e4687d9b6c0c0892c820f55738a282aae62529bdd8
17	1	C=DE O=Entrust Datacard Deutschland GmbH organizationIdentifier=VATDE-119264316 CN=Entrust Certification Authority - DE QWAC1	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	00ec8a269b09eb4e9d0000000051d39423	RSA 2048-bits	RSA SHA-256	2020-07-29 19:16:08	2030-11-29 19:46:08		TLS Web Server Authentication, TLS Web Client Authentication	19233ae746ebe4d894e2f7daf1b3f8aa95340e63	ca14cf9b309ba032bb21910c1aedae4d29fe0656b4f8bffa23cbe94d431c0674

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CA #	Cert #	Subject	Issuer	Serial Number	Key Type	Hash Type	Not Before	Not After	Revoked Date	Extended Key Usage	Subject Key Identifier	SHA256 Fingerprint
18	1	CN=Entrust Code Signing Certification Authority - L1D OU=(c) 2009 Entrust, Inc. OU=www.entrust.net/rpa is incorporated by reference O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	4c0e8c1e	RSA 2048-bits	RSA SHA-256	2011-11-11 15:29:00	2021-11-12 03:28:50			a7b1aac4b606edddca9f88949682d5e74341d125	fa9d6df1af0275300d52a485d036b0543b53dfb4441bec0b8c9a0dff811b6d88
18	2	CN=Entrust Code Signing Certification Authority - L1D OU=(c) 2009 Entrust, Inc. OU=www.entrust.net/rpa is incorporated by reference O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	4c0e8c3a	RSA 2048-bits	RSA SHA-1	2011-11-11 15:41:26	2021-11-12 08:51:52			a7b1aac4b606edddca9f88949682d5e74341d125	8b16d48f721dfab157214b9ace9dda8efba5a06b4eed901806f086d1df8ead37
19	1	CN=Entrust Code Signing CA - OVCS1 OU=(c) 2015 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	7ab8c4fc0000000051d373d4	RSA 2048-bits	RSA SHA-256	2015-06-09 18:03:40	2025-06-09 18:33:40		Code Signing	7e1a1f1a11745c64c90c1f9401abfd81642ea12c	7fba43a4ccbb37b1ccc2dd11ce0c911da3a2917b0ca0e846056854ef464c50c4
19	2	CN=Entrust Code Signing CA - OVCS1 OU=(c) 2015 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	43c10b1c0000000051d373da	RSA 2048-bits	RSA SHA-256	2015-06-10 13:46:05	2030-11-10 14:16:05		Code Signing	7e1a1f1a11745c64c90c1f9401abfd81642ea12c	cc5b7a0e5d6771ba348d3d763752f0667026b3531c5396edbe24adce93215723
20	1	CN=Entrust Extended Validation Code Signing CA - EVCS1 OU=(c) 2015 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	417ace390000000051d373bb	RSA 2048-bits	RSA SHA-256	2015-06-09 17:54:53	2025-06-09 18:24:53		Code Signing	2a0a6f322c292021766ab1ac8c3caf938e0e6ba2	57bc151d924c5a43b57b6433a58a93885f773b4631fdecb85c9fc3545529f274
20	2	CN=Entrust Extended Validation Code Signing CA - EVCS1 OU=(c) 2015 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	00d9d6b8f20000000051d373d8	RSA 2048-bits	RSA SHA-256	2015-06-10 13:39:51	2025-06-10 14:09:51		Code Signing	2a0a6f322c292021766ab1ac8c3caf938e0e6ba2	091c6319936f0cac4c7b5e027dcca2b2b2a2af4561ea2c71e650c1e3fb905fd0
20	3	CN=Entrust Extended Validation Code Signing CA - EVCS1 OU=(c) 2015 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	00878252600000000051d373d9	RSA 2048-bits	RSA SHA-256	2015-06-10 13:42:49	2030-11-10 14:12:49		Code Signing	2a0a6f322c292021766ab1ac8c3caf938e0e6ba2	d04db927c663aa8c853d54716dd6dc2a4b2fef9c3ae1bfb250447fc5d7771e57
21	1	CN=Entrust Class 1 Client CA OU=(c) 2010 Entrust, Inc. OU=www.entrust.net/CPS is incorporated by reference O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	4c0e646d	RSA 2048-bits	RSA SHA-1	2010-07-28 14:23:27	2020-07-28 14:53:27			4790a4a10a4320bfd07454b894fac47bb5b61c05	54732e7406a138fa48adaedcda3156197286d652e08b007730573d9ed4e03a64
21	2	CN=Entrust Class 1 Client CA OU=(c) 2010 Entrust, Inc. OU=www.entrust.net/CPS is incorporated by reference O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	4c0e8c1b	RSA 2048-bits	RSA SHA-256	2011-11-11 15:25:51	2021-11-11 23:27:50			4790a4a10a4320bfd07454b894fac47bb5b61c05	8cb3d21bbb255dbfeafa1a27d1d1f70320dc84564297bce82e29b8f2e461f270
21	3	CN=Entrust Class 1 Client CA OU=(c) 2010 Entrust, Inc. OU=www.entrust.net/CPS is incorporated by reference O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	4c0e8c37	RSA 2048-bits	RSA SHA-1	2011-11-11 15:34:41	2021-11-12 07:51:23			4790a4a10a4320bfd07454b894fac47bb5b61c05	c23a1f8315538a8651816e9932c044eb856c01fd99771690c863671d22c48564
21	4	CN=Entrust Class 1 Client CA OU=(c) 2010 Entrust, Inc. OU=www.entrust.net/CPS is incorporated by reference O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	0b67c935a1727c830000000051ce1708	RSA 2048-bits	RSA SHA-256	2017-06-20 20:30:55	2028-12-20 21:00:55		E-mail Protection, TLS Web Client Authentication	4790a4a10a4320bfd07454b894fac47bb5b61c05	357decc5622f89239ffd1c91c1366a0951ba4db5fd384f518cc4ae85d2dae3a5
22	1	CN=Entrust Class 1 Client CA - SHA256 OU=(c) 2015 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	6e61669872bc9c3000000000051d3931e	RSA 2048-bits	RSA SHA-256	2019-04-16 15:35:52	2030-11-16 16:05:52		TLS Web Client Authentication, E-mail Protection	e249b9ec25deb70cdee550185b48cc0c8e15f2a6	c6e9e993c258b72124aad3c9c068b6ef23576155f310b305733361e20b17c943
23	1	CN=Entrust Class 2 Client CA OU=(c) 2010 Entrust, Inc. OU=www.entrust.net/CPS is incorporated by reference O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	4c0e646e	RSA 2048-bits	RSA SHA-1	2010-07-28 14:28:23	2020-07-28 14:58:23			0991a5bae9f22e2a75dfcd7efe77caf2de6b9b24	661144d111172244080b24d7fe4a7bceb6a8c35da0c9918c8e9a58635dc4923c
23	2	CN=Entrust Class 2 Client CA OU=(c) 2010 Entrust, Inc. OU=www.entrust.net/CPS is incorporated by reference O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	4c0e8c1c	RSA 2048-bits	RSA SHA-256	2011-11-11 15:26:05	2021-11-12 00:18:35			0991a5bae9f22e2a75dfcd7efe77caf2de6b9b24	27524e32bb2177cbbf0a716f78a71242714fc92f0a447130d91666c716a78107
23	3	CN=Entrust Class 2 Client CA OU=(c) 2010 Entrust, Inc. OU=www.entrust.net/CPS is incorporated by reference O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	4c0e8c38	RSA 2048-bits	RSA SHA-1	2011-11-11 15:38:34	2021-11-12 00:17:34			0991a5bae9f22e2a75dfcd7efe77caf2de6b9b24	8504a0350036b18594b1f47b6a3bd3513e28b045bc7dbfe5b08d8f3049cd3cfe

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CA #	Cert #	Subject	Issuer	Serial Number	Key Type	Hash Type	Not Before	Not After	Revoked Date	Extended Key Usage	Subject Key Identifier	SHA256 Fingerprint
23	4	CN=Entrust Class 2 Client CA OU=(c) 2010 Entrust, Inc. OU=www.entrust.net/CPS is incorporated by reference O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	00bcb4d843035b759f0000000051ce1709	RSA 2048-bits	RSA SHA-256	2017-06-20 20:34:33	2028-12-20 21:04:33		E-mail Protection, TLS Web Client Authentication	0991a5bae9f22e2a75dfcd7efe77caf2de6b9b24	95ad94e88f5b8604e40e5fff36b0d34be46c1d5ba06c0e735b72aa396735c415
23	5	CN=Entrust Class 2 Client CA OU=(c) 2010 Entrust, Inc. OU=www.entrust.net/CPS is incorporated by reference O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	00e95cbad0c8701d240000000051ce18c4	RSA 2048-bits	RSA SHA-256	2020-07-29 15:26:42	2029-06-29 15:56:42	2020-07-29 16:27:29	E-mail Protection, TLS Web Client Authentication	0991a5bae9f22e2a75dfcd7efe77caf2de6b9b24	94f107c007f106a13edce36d1dce59e22d42af2834f57e5e6679262f7704b49b
23	6	CN=Entrust Class 2 Client CA OU=(c) 2010 Entrust, Inc. OU=www.entrust.net/CPS is incorporated by reference O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	00af1c04b2ac8cff9b0000000051ce18e3	RSA 2048-bits	RSA SHA-256	2020-07-29 15:48:30	2029-06-29 16:18:30		E-mail Protection, TLS Web Client Authentication	0991a5bae9f22e2a75dfcd7efe77caf2de6b9b24	1a20fef46482a98bac6f6c7397c017310ac7fb78495438bc7a7de9035c246679
24	1	CN=Entrust Class 3 Client CA - SHA256 OU=(c) 2015 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	551615150000000051ce160e	RSA 2048-bits	RSA SHA-256	2016-02-25 18:08:16	2029-06-25 18:38:16		TLS Web Client Authentication, E-mail Protection, 1.3.6.1.4.1.311.10.3.12, 2.16.840.1.114027.40.11	069f6f4ea2294e0f0cae17bfb69846efadb83b72	33857338361ecfc4858ddff6b9ef6273e3db856ab9cea1c0e2c65925d1c87978
25	1	C=ES O=Entrust Datacard Europe, S.L. organizationIdentifier=VATES-B81188047 CN=Entrust Certification Authority - ES QSig1	C=US O=Entrust, Inc. CN=Entrust Certification Authority - AATL1	4491ca5825be79842b29b0c37286215f	RSA 4096-bits	RSA SHA-512	2020-07-29 16:33:00	2037-12-19 23:59:00		E-mail Protection, 1.3.6.1.4.1.311.10.3.12, 1.2.840.113583.1.1.5	5a53088a6130a90dead54397d3983b951e2e6d02	b2874b588a94034798319d5d329db265f83a47f315ba5831a4970cb57166d594
26	1	C=ES O=Entrust Datacard Europe, S.L. organizationIdentifier=VATES-B81188047 CN=Entrust Certification Authority - ES QSeal1	C=US O=Entrust, Inc. CN=Entrust Certification Authority - AATL1	13ee348e492f8dd6b5c49cf073f714ab	RSA 4096-bits	RSA SHA-512	2020-07-27 14:39:07	2037-12-19 23:59:00		E-mail Protection, 1.3.6.1.4.1.311.10.3.12, 1.2.840.113583.1.1.5	5680152395717fe72d90d0cd063a4f67637d3d75	1701de38124c4458f32b88ae7e62ac15876c427a3ad3bbae8fd1479ff00030f3
27	1	C=DE O=Entrust Datacard Deutschland GmbH organizationIdentifier=VATDE-119264316 CN=Entrust Certification Authority - DE QSig1	C=US O=Entrust, Inc. CN=Entrust Certification Authority - AATL1	5bb8dd672998a2d5c6f3cdd446aac3a2	RSA 4096-bits	RSA SHA-512	2020-07-29 16:31:03	2037-12-19 23:59:00		E-mail Protection, 1.3.6.1.4.1.311.10.3.12, 1.2.840.113583.1.1.5	31ec071330c7e2d12d5e11f837a57da9635f5364	84c35fee7a06d0bc61294d411fb4bbef50104596f49688ccaad32cb3b99916d6
28	1	C=DE O=Entrust Datacard Deutschland GmbH organizationIdentifier=VATDE-119264316 CN=Entrust Certification Authority - DE QSeal1	C=US O=Entrust, Inc. CN=Entrust Certification Authority - AATL1	179cc56dc82dbded5573c7999997f646	RSA 4096-bits	RSA SHA-512	2020-07-27 14:42:58	2037-12-19 23:59:00		E-mail Protection, 1.3.6.1.4.1.311.10.3.12, 1.2.840.113583.1.1.5	6d8665848c526c862f8af7f02e5b9b4572668c7c	a0da9d5628ebcf3d13dd07c92bee9aa2041b4622be29810d517d9ef3ebf9a861
29	1	CN=Entrust Timestamping CA - TS1 OU=(c) 2015 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	51ce0dd8	RSA 2048-bits	RSA SHA-1	2015-07-15 17:42:06	2029-06-15 23:05:07		Time Stamping	c3c271d27bd76805ae3b399b34250c6203c75768	5f84398236b7e58fa365bf1ae5aa3e441c265fdcb50cf7471799060a27a2381a
29	2	CN=Entrust Timestamping CA - TS1 OU=(c) 2015 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust.net Certification Authority (2048) OU=(c) 1999 Entrust.net Limited OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.) O=Entrust.net	58da13ff0000000051ce0df7	RSA 2048-bits	RSA SHA-256	2015-07-22 19:02:54	2029-06-22 19:32:54		Time Stamping	c3c271d27bd76805ae3b399b34250c6203c75768	44dfcd2c573110e74bf4e85903595f660650ed925b7306542c54e87396671f03
30	1	CN=Entrust Certificate Authority - VMC1 OU=(c) 2018 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	CN=Entrust Root Certification Authority - G2 OU=(c) 2009 Entrust, Inc. - for authorized use only OU=See www.entrust.net/legal-terms O=Entrust, Inc. C=US	00b3d227db33085e170000000051d3931f	RSA 2048-bits	RSA SHA-256	2019-04-16 15:45:43	2030-11-16 16:15:43		1.3.6.1.5.5.7.3.31	8bb63976d03490a63f62e164ea3ebcf47c46a173	7dbdfc6bd4463d4e22479bda4e4a973f58ac94845db0bf86c0f69eb3d719691a

Deloitte.

ATTACHMENT B

LIST OF ENTRUST CERTIFICATION PRACTICE STATEMENTS

CPS Name	Version	Date
Entrust Certificate Services Certification Practice Statement	3.6	30 Sep 2019
Entrust Certificate Services Certification Practice Statement	3.7	30 Sep 2020
Entrust Certificate Services Certification Practice Statement	3.8	31 Dec 2020
ENTRUST DATACARD EUROPE S.L. Certification Practice Statement (CPS)	1.0	11 Dec 2019
ENTRUST DATACARD EUROPE S.L. Certification Practice Statement (CPS)	1.1	10 Jun 2020
ENTRUST DATACARD EUROPE S.L. Certification Practice Statement (CPS)	1.2	22 Jul 2020
ENTRUST DATACARD EUROPE S.L. Certification Practice Statement (CPS)	1.3	30 Oct 2020
ENTRUST DATACARD EUROPE S.L. Certification Practice Statement (CPS)	1.4	18 Dec 2020
ENTRUST DATACARD DEUTSCHLAND GMBH Certification Practice Statement (CPS)	1.0	10 Jul 2020
ENTRUST DATACARD DEUTSCHLAND GMBH Certification Practice Statement (CPS)	1.1	22 Jul 2020
ENTRUST DATACARD DEUTSCHLAND GMBH Certification Practice Statement (CPS)	1.2	30 Oct 2020
ENTRUST DATACARD DEUTSCHLAND GMBH Certification Practice Statement (CPS)	1.3	18 Dec 2020

ENTRUST MANAGEMENT'S STATEMENT

Entrust Corporation ("Entrust") operates the Certification Authority (CA) services as enumerated in Attachment A, and provides the following CA services:

- Subscriber registration
- Certificate renewal
- Certificate rekey
- Certificate issuance
- Certificate distribution
- Certificate revocation
- Certificate validation
- Subscriber key generation and management
- Subordinate CA cross-certification

The management of Entrust is responsible for establishing and maintaining effective controls over its CA operations, including its CA business practices disclosure on its website, CA business practices 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 Entrust's Certification Authority operations. Furthermore, because of changes in conditions, the effectiveness of controls may vary over time.

Entrust management has assessed its disclosures of its certificate practices and controls over its CA services. Based on that assessment, in Entrust management's opinion, in providing its Certification Authority (CA) services at Ottawa, Ontario, and Toronto, Ontario, throughout the period 1 March 2020 to 28 February 2021 Entrust has:

- disclosed its business, key lifecycle management, certificate lifecycle management, and CA environment control practices in its Certification Practice Statements as enumerated in Attachment B

- maintained effective controls to provide reasonable assurance that Entrust provides its services in accordance with its Certification Practice Statements

- 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 (for the registration activities performed by Entrust); 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

in accordance with the WebTrust Principles and Criteria for Certification Authorities v2.2, including the following:

CA Business Practices Disclosure

- Certification Practice Statement (CPS)

CA Business Practices Management

- Certification Practice Statement Management

CA Environmental Controls

- Security Management
- Asset Classification and Management
- Personnel Security
- Physical and Environmental Security
- Operations Management
- System Access Management
- System Development, Maintenance, and Change Management
- Disaster Recovery, Backups, and 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
- CA Key Destruction
- CA Key Compromise
- CA Cryptographic Hardware Lifecycle Management
- CA Key Transportation
- CA Key Migration

Subscriber Key Lifecycle Management Controls

- CA-Provided Subscriber Key Generation Services
- CA-Provided Subscriber Key Storage and Recovery Services
- Integrated Circuit Card (ICC) Lifecycle Management
- Requirements for Subscriber Key Management

Certificate Lifecycle Management Controls

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

Subordinate CA and Cross Certificate Lifecycle Management Controls

- Subordinate CA and Cross Certificate Lifecycle Management

Entrust does not escrow its CA keys and does not provide certificate suspension services. Accordingly, our statement does not extend to controls that would address those criteria.

Entrust management has also reported or responded to the following 'bugs' on Mozilla's Bugzilla reporting system:

Bug ID	Summary	Opened	Closed
1627346	Entrust: S/MIME Certificate Issued with Incorrect Policy OID	2020-04-03	2020-05-22
1635096	Entrust: Printable String Constraint Failure	2020-05-04	2020-10-05
1636339	Entrust: Failure to revoke a certificate	2020-05-07	2020-08-07
1648472	Entrust: SHA-256 hash algorithm used with ECC P-384 key	2020-06-25	2020-09-21
1651481	Entrust: Late Revocation due to SHA-256 hash algorithm	2020-07-08	2020-11-02
1658792	Entrust: Invalid data in State/Province Field	2020-08-12	*Pending May 2021 release*
1658794	Entrust: Late Revocation for Invalid State/Province Issue	2020-08-12	2020-10-09
1667448	Entrust: Incorrect keyUsage for ECC certificate	2020-09-25	2020-10-31

1667690	Entrust: Failure to provide a preliminary report within 24 hours.	2020-09-27	2021-01-27
1673119	Entrust: Subscriber provides private key with CSR	2020-10-23	2020-12-11
1675295	Entrust: Invalid data in commonName fields	2020-11-04	2020-11-04
1685370	Entrust: Incorrect Business Category Value Discovered in an EV SSL Certificate	2021-01-06	*Pending July 2021 release*

Bruce Morton
Director, Entrust Certificate Services
22 April 2021

ATTACHMENT A

LIST OF IN SCOPE CAs

Root CAs
1. Entrust.net Certification Authority (2048) 2. Entrust Root Certification Authority 3. Entrust Root Certification Authority – G2 4. Entrust Root Certification Authority – G4 5. Entrust Root Certification Authority – EC1 6. Entrust Root Certification Authority – EC2
Intermediate CAs
7. Entrust Certification Authority - AATL1
OV SSL Issuing CAs
8. Entrust Certification Authority – L1C 9. Entrust Certification Authority – L1F 10. Entrust Certification Authority – L1K 11. Siemens Issuing CA Internet Server 2020
EV SSL Issuing CAs
12. Entrust Certification Authority – L1E 13. Entrust Certification Authority – L1J 14. Entrust Certification Authority – L1M 15. Entrust Certification Authority – L1N
Qualified Certificate EV SSL Issuing CAs
16. Entrust Certification Authority - QTSP1 17. Entrust Certification Authority - DE QWAC1
Non-EV Code Signing Issuing CAs
18. Entrust Code Signing Certification Authority – L1D 19. Entrust Code Signing CA – OVCS1
EV Code Signing Issuing CAs
20. Entrust Extended Validation Code Signing CA – EVCS1
Secure Email (S/MIME) CAs
21. Entrust Class 1 Client CA 22. Entrust Class 1 Client CA - SHA256 23. Entrust Class 2 Client CA
Document Signing CAs
24. Entrust Class 3 Client CA - SHA256 25. Entrust Certification Authority - ES QSig1 26. Entrust Certification Authority - ES QSeal1 27. Entrust Certification Authority - DE QSig1 28. Entrust Certification Authority - DE QSeal1
Timestamp CAs
29. Entrust Timestamping CA – TS1
Visual Marks CAs
30. Entrust Certificate Authority - VMC1

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