

## Report of Independent Accountants

To the Management of QuoVadis Limited

We have examined the accompanying [assertion](#) made by the management of QuoVadis Limited (QuoVadis), titled **Management's Assertion Regarding the Effectiveness of Its Controls Over its Certification Authority Operations Based on the WebTrust Principles and Criteria for Certification Authorities v2.2** that provides its Certification Authority (CA) services at Bermuda; the Netherlands; Switzerland; the United Kingdom; Belgium and Germany, for the Root CAs and Subordinate CAs referenced in [Appendix A](#) during the period from 1 January 2020 through 31 December 2020, QuoVadis has:

- ▶ Disclosed its Business, Key Life Cycle Management, Certificate Life Cycle Management, and CA Environmental Control practices in its Certificate Practice Statement, and Certificate Policy:
  - ▶ for the QuoVadis Root CA, QuoVadis Root CA 1 G3, QuoVadis Root CA 3, and QuoVadis Root CA 3 G3, in the [QuoVadis Root Certification Authority Root CA 3 Certificate Policy/ Certification Practice Statement, version 4.31](#) dated 30 September 2020; and
  - ▶ for the QuoVadis Root CA 2, QuoVadis Root CA 2 G3, in the [QuoVadis Root CA 2 Certification Policy/ Certification Practice Statement, version 2.10](#)<sup>1</sup> dated 30 September 2020
- ▶ Maintained effective controls to provide reasonable assurance that:
  - ▶ QuoVadis' Certificate Practice Statement is consistent with its Certificate Policy; and
  - ▶ QuoVadis provides its services in accordance with its Certificate Policy and Certificate Practice Statement,
- ▶ Maintained effective controls to provide reasonable assurance that:
  - ▶ The integrity of keys and certificates it manages is established and protected throughout their life cycles;
  - ▶ The integrity of subscriber keys and certificates it manages is established and protected throughout their life cycles;
  - ▶ Subscriber information is properly authenticated (for the registration activities performed by QuoVadis); 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 was restricted to authorized individuals;
  - ▶ The continuity of key and certificate management operations was maintained; and
  - ▶ CA systems development, maintenance and operations were properly authorized and performed to maintain CA systems integrity,

based on the [WebTrust Services Principles and Criteria for Certification Authorities Version 2.2](#).

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<sup>1</sup> Effective 22 March 2021, QuoVadis implemented version 2.11 of QuoVadis Root CA 2 Certification Policy/Certification Practice Statement; refer to version 2.10 release information in the version 2.11 document



QuoVadis' management is responsible for its assertion and for specifying the aforementioned Criteria. Our responsibility is to express an opinion on management's assertion based on our examination.

Our examination was conducted in accordance with attestation standards established by the AICPA. Those standards require that we plan and perform our examination to obtain reasonable assurance about whether management's assertion is fairly stated, in all material respects. An examination involves performing procedures to obtain evidence about management's assertion, which includes: (1) obtaining an understanding of QuoVadis' key and certificate life cycle management business practices, policies, processes and controls, and its suitability of the design and implementation of the controls intended to achieve the Criteria and examining evidence supporting management's assertion and performing such other procedures over key and certificate integrity, over the authenticity and confidentiality of subscriber and relying party information, over the continuity of key and certificate life cycle management operations, and over the development, maintenance and operation of systems integrity as we considered necessary in the circumstances; (2) selectively testing transactions executed in accordance with disclosed key and certificate life cycle 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. The nature, timing, and extent of the procedures selected depend on our judgment, including an assessment of the risk of material misstatement, 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.

QuoVadis Management has disclosed to us the attached comments ([Appendix B](#)) that have been posted publicly in the online forums of the CA/Browser Forum, as well as the online forums of individual internet browsers that comprise the CA/Browser Forum. We have considered the nature of these comments in determining the nature, timing and extent of our procedures.

The relative effectiveness and significance of specific controls at QuoVadis 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.

Our examination was not conducted for the purpose of evaluating QuoVadis' cybersecurity risk management program. Accordingly, we do not express an opinion or any other form of assurance on its cybersecurity risk management program.

There are inherent limitations in the effectiveness of any system of internal control, including the possibility of human error and the circumvention of controls. Because of inherent limitations in its internal control, QuoVadis may achieve reasonable, but not absolute assurance that all security events are prevented and, for those controls may provide reasonable, but not absolute assurance that its commitments and system requirements are achieved. 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.

Examples of inherent limitations of internal controls related to security include (a) vulnerabilities in information technology components as a result of design by their manufacturer or developer; (b) breakdown of internal control at a vendor or business partner; and (c) persistent attackers with the resources to use advanced technical means and sophisticated social engineering techniques specifically targeting the entity. Furthermore, the projection of any evaluations of effectiveness to future periods is subject to the risk that controls may become inadequate because of changes in conditions, that the



degree of compliance with such controls may deteriorate, or that changes made to the system or controls, or the failure to make needed changes to the system or controls, may alter the validity of such evaluations.

In our opinion, QuoVadis management's assertion referred to above, is fairly stated, in all material respects, based on the aforementioned criteria.

The WebTrust seal of assurance for Certification Authority on QuoVadis' website 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.

This report does not include any representation as to the quality of QuoVadis' CA services beyond those covered by the [WebTrust Services Principles and Criteria for Certification Authorities Version 2.2](#) criteria, or the suitability of any of QuoVadis' services for any customer's intended purpose.

*Ernst & Young LLP*

Ernst & Young LLP

31 March 2021

**Management's Assertion Regarding the Effectiveness of Its Controls  
Over its Certification Authority Operations Based on the  
WebTrust Principles and Criteria for Certification Authorities v2.2**

31 March 2021

We, as management of QuoVadis Limited are responsible for operating a Certification Authority (CA) at Bermuda, the Netherlands, Switzerland, the United Kingdom, Belgium and Germany for the Root CAs and Subordinate CAs listed in the [Appendix A](#). QuoVadis, CA services provide the following certification authority services:

- Subscriber Key Management Services
- Subscriber Registration
- Certificate Renewal
- Certificate Rekey
- Certificate Issuance
- Certificate Distribution
- Certificate Revocation
- Certificate Status Information Processing

Management of QuoVadis is responsible for establishing and maintaining effective controls over its CA operations, including CA business practices disclosure in QuoVadis' Certificate Practice Statement, 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.

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

Management of QuoVadis has assessed the disclosure of its certificate practices and its controls over its CA operations. Based on that assessment, in QuoVadis management's opinion, in providing its CA services for the Root CA(s) and Subordinate CA(s) listed in [Appendix A](#) at Bermuda, the Netherlands, Switzerland, the United Kingdom, Belgium and Germany, during the period from 1 January 2020 through 31 December 2020, QuoVadis has:

- Disclosed its Business, Key Life Cycle Management, Certificate Life Cycle Management, and CA Environmental Control practices as below:
  - for the QuoVadis Root CA, QuoVadis Root CA 1 G3, QuoVadis Root CA 3, and QuoVadis Root CA 3 G3, in the [QuoVadis Root Certification Authority Root CA 3 Certificate Policy/ Certification Practice Statement, version 4.31](#) dated 30 September 2020; and
  - for the QuoVadis Root CA 2, QuoVadis Root CA 2 G3, in the [QuoVadis Root CA 2 Certification Policy/ Certification Practice Statement, version 2.10](#) dated 30 September 2020.
- Maintained effective controls to provide reasonable assurance that:
  - QuoVadis' Certificate Practice Statement is consistent with its Certificate Policy; and
  - QuoVadis provides its services in accordance with its Certificate Policy and Certificate Practice Statement,
- Maintained effective controls to provide reasonable assurance that:

- The integrity of keys and certificates it manages was established and protected throughout their life cycles;
- The integrity of subscriber keys and certificates it manages was established and protected throughout their life cycles;
- Subscriber information was properly authenticated (for the registration activities performed by QuoVadis); and
- Subordinate CA certificate requests were accurate, authenticated, and approved,
- Maintained effective controls to provide reasonable assurance that:
  - Logical and physical access to CA systems and data was restricted to authorized individuals;
  - The continuity of key and certificate management operations was maintained; and
  - CA systems development, maintenance and operations were properly authorized and performed to maintain CA systems integrity

for the QuoVadis Root CA, QuoVadis Root CA 1 G3, QuoVadis Root CA 2, QuoVadis Root CA 2 G3, QuoVadis Root CA 3, QuoVadis Root CA 3 G3, and the issuing CAs listed in [Appendix A](#) in accordance with the [WebTrust Services Principles and Criteria for Certification Authorities Version 2.2](#), including the following:

**CA Business Practices Disclosure**

CA Business Practices Management  
 Certification Practice Statement Management  
 Certificate Policy Management  
 CP and CPS Consistency

**Service Integrity**

CA Key Life Cycle 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 Life Cycle Management  
 CA Key Escrow

Subscriber Key Life Cycle Management Controls  
 CA- Provided Subscriber Key Generation Services  
 CA-Provided Subscriber Key Storage and Recovery Services  
 Integrated Circuit Card Life Cycle Management  
 Requirements for Subscriber Key Management

Certificate Life Cycle Management Controls  
 Subscriber Registration  
 Certificate Renewal  
 Certificate Rekey  
 Certificate Issuance  
 Certificate Distribution

Certificate Revocation  
Certificate Validation

Subordinate CA Certificate Life Cycle Management Controls  
Subordinate CA Certificate Life Cycle Management

**CA Environmental Controls**

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

Very truly yours,



Anthony Nagel  
Director  
QuoVadis Limited

Appendix A to Assertion of Management

Distinguished name	Certificate Serial Number	SHA256 fingerprint
CN = QuoVadis Root Certification Authority OU = Root Certification Authority O = QuoVadis Limited C = BM	3ab6508b	A45EDE3BBBF09C8AE15C72EFC07268D693A21C996FD51E67CA079460FD6D8873
CN = QuoVadis Root CA 1 G3 O = QuoVadis Limited C = BM	78585f2ead2c194be3370735341328b596d46593	8A866FD1B276B57E578E921C65828A2BED58E9F2F288054134B7F1F4BFC9CC74
CN = QuoVadis Root CA 2 O = QuoVadis Limited C = BM	509	85A0DD7DD720ADB7FF05F83D542B209DC7FF4528F7D677B18389FEA5E5C49E86
CN = QuoVadis Root CA 2 G3 O = QuoVadis Limited C = BM	445734245b81899b35f2ceb82b3b5ba726f07528	8FE4FB0AF93A4D0D67DB0BEBB23E37C71BF325DCBCDD240EA04DAF58B47E1840
CN = QuoVadis Root CA 3 O = QuoVadis Limited C = BM	05c6	18F1FC7F205DF8ADDDEB7FE007DD57E3AF375A9C4D8D73546BF4F1FED1E18D35
CN = QuoVadis Root CA 3 G3 O = QuoVadis Limited C = BM	2ef59b0228a7db7affd5a3a9eebd03a0cf126a1d	88EF81DE202EB018452E43F864725CEA5FBD1FC2D9D205730709C5D8B8690F46
CN = HydrantID EV SSL CA G2 O = HydrantID (Avalanche Cloud Corporation) C = US	3c1e96137ee42057973ce498cb50daae4c1e3c48	60388B773D33E9141648613F36B9149F015A114378BACF3E3694864FFDA426EC
CN = QuoVadis Qualified Web ICA G1 O = QuoVadis Trustlink B.V. 2.5.4.97 = NTRNL-30237459 C = NL	36af9b7895098d1894844480bb593b93a674453d	163CD2FCAD0D6A87C8DAFCE056F594F3B53B917C0F925D40D92258EA277FC4F4
CN = HydrantID SSL CA G3 O = HydrantID (Avalanche Cloud Corporation) C = US	723b6fe5c252754d2189b09155521a3187916db8	AA57F482CBC516B4D10CA4097DD90D99F5AA727D207090D07DA9C36998ABB9AD

Distinguished name	Certificate Serial Number	SHA256 fingerprint
CN = QuoVadis Europe Advanced CA G1 O = QuoVadis Trustlink Deutschland GmbH 2.5.4.97 = VATDE-DE296898382 C = DE	2332c55aee408 5189ac0b6e839 46ced64ba74e6a	8E5CEA1D1012521C27A4E11270702BC7C9A1156F135073D6CA4E42EEE826249E
CN = QuoVadis Grid ICA G2 O = QuoVadis Limited C = BM	2bafc5f0a8d213 409da42e761f61 9ac91984bcd4	278ECF211E2518E9DD9913AFC583EEB3127C8184BCBEEDAAD7BD64E89E8C4310
CN = itsme Sign Issuing CA G2x O = DigiCert Europe Belgium B.V. C = BE	4939956646c65 6b23b47d6e0b9 3cc1fcfd21e32e	B965A4354E7E1FFEDD1F947F13B065819B3A53C6889DC643E1D0D4C514AB68AE
CN = QuoVadis Swiss Advanced CA G3 O = QuoVadis Trustlink Schweiz AG 2.5.4.97 = NTRCH-CHE-112.210.349 C = CH	41e89ed356214 9c894bddb7bded d7ec569c72490	31A7C579F24D5562CDB203FA15A9F2C3FF5DC1F2E6BF7C0BD95FBCB0114C8D21
CN = QuoVadis Qualified Web ICA G2 O = QuoVadis Trustlink B.V. C = NL	53bd8dc20d4a46 bd962f5d685ada 0f0659207ffd	7FEB9374EAB08D392717C647436DAE06176A24C010607FDA1CCE5E5F0106B472
CN = QuoVadis Europe SSL CA G1 O = QuoVadis Trustlink BVBA C = BE	4db89836333b1 6bc441d5f4fc60 bc67dcff0bd28	DC8B2DEE50DD478AB135CAC269CEA68851557A9129ABCD98DF5213B23DBFB3CD
CN = QuoVadis Global SSL ICA G2 O = QuoVadis Limited C = BM	1a6ee893c3749 738e12acc77a8 c0acb167eaf14	F67C23EF7BF7412809DB6B1DD3D44A08D3754D99CABA6A13F7A05C7249089C89
CN = VR IDENT EV SSL CA 2020 O = Fiducia & GAD IT AG C = DE	754151cc11ec89 b64649b230ad8 09020bb1e66a5	D33A847F640377BE0AE1A429153A07E87C8827FA4840B5158BCDCB85E10A453A
CN = QuoVadis Swiss Regulated CA G2 2.5.4.97 = NTRCH-CHE-112.210.349 O = QuoVadis Trustlink Schweiz AG C = CH	6862c656a13d1 4486e53e50cc87 5eef5c18f4dd0	9390714B1D909FA3D70DDC7681B38F07ED4E6356CB5C71915D1BD48FE335F8

Distinguished name	Certificate Serial Number	SHA256 fingerprint
CN = QuoVadis Qualified Web ICA G1 O = QuoVadis Trustlink B.V. 2.5.4.97 = NTRNL-30237459 C = NL	18917d9ba1a23 9a92a20d96d7d 76d942dc4a106 5	04ECBA8F92BFF7458C4A5E7C69261FC7E2EF52D5AF54FBDD92B17141BBE0651F
CN = itsme Sign Issuing CA G1 O = QuoVadis Trustlink BVBA 2.5.4.97 = NTRBE-0537698318 C = BE	2160dee0a194f7 f9e61381e5fc10 e26a50126809	C679DA9F1C48C51C08FF1BA253EC6C99FA3203B539CE8B7153FD00B001370869
CN = itsme Sign Issuing CA G1 O = QuoVadis Trustlink BVBA 2.5.4.97 = NTRBE-0537698318 C = BE	3b30442898d3b e1cf55c5ea5ff04 d6fb74701cd5	F640E5643C40C1F329E100438E28C957691AFA8A53E405A326F7AFEB70C23BC1
CN = HydrantID EV SSL ICA G1 O = HydrantID (Avalanche Cloud Corporation) C = US	0662a00880049 8fe4d810b24bb8 22d0bd23b90dc	6B43B4C243AA2D99440C0F14BDEC5231EEC63E86AAF2376CA7002028458DC726
CN = QuoVadis Swiss Regulated CA G3 O = QuoVadis TrustLink Schweiz AG C = CH	60c1ee68db921d a2608daea13785 b3d248f2ac9f	726FB1F3D9FBFE0B4043004A27A43CF65CB214363B093034FC4185C86C9D8B0D
CN = QuoVadis Europe Advanced CA G2 O = QuoVadis Trustlink Deutschland GmbH C = DE	0abe129495981 229df22193740 1e92140ada9bdd	EBCD0C73FE44B60E25789419C07B0B234B3F586E092316FB2CBDA39C223224A3
CN = QuoVadis EU Issuing Certification Authority G3 O = QuoVadis Trustlink B.V. C = NL	375b8adb585dd2 6543ec430b870 0530c7e10fd9e	ADDFFA6FD0809A54A9F0B31FD25F74BF7F2D7AE11C80FD99DAA0FB603A65CD0E
CN = QuoVadis Swiss Regulated CA G2 2.5.4.97 = NTRCH-CHE-112.210.349 O = QuoVadis Trustlink Schweiz AG C = CH	212111bcd66cec 845470e246184 99f67f780228d	194EAE9A1D8CFEF159D5C5ACB8F8AE6631567793E4604B262DB879C1433897C7

Distinguished name	Certificate Serial Number	SHA256 fingerprint
CN = QuoVadis Europe EV SSL CA G1 O = QuoVadis Trustlink B.V. C = NL	38354514e8735d6bd19081a1a8d2f73f80704d10	D0A387522737BAED86BDE38294ACD1AE147DC8FA20E999948A420512C5F15439
CN = QuoVadis DC EU Issuing CA RSA G1 2.5.4.97 = NTRNL-30237459 O = QuoVadis Trustlink B.V. C = NL	765a70ee540807fd46e096afc27ee69da84d4c07	6745D87F4A374D8F02AE2DE9A353315275548CFFC6CE94C271B82BF7A63230FE
CN = QuoVadis Europe Advanced CA G1 O = QuoVadis Trustlink Deutschland GmbH 2.5.4.97 = VATDE-DE296898382 C = DE	77f7735c6234bd8a084975b376a371aecbe40c2a	3F6267382E09645DBCA74AFEE6CDF71EC432B56EE58078F8B8387D73B7BDB7EC
CN = QuoVadis RCA1G3 TLS CA O = QuoVadis Limited C = BM	72348f4fb5967e8409e6b0cced6fa299b1ccd491	18BB70EFDA3F91438115C9EB4F333EB4EC68354571E6949195A0A91C9E6FBCD8
CN = QuoVadis EV SSL ICA G1 O = QuoVadis Limited C = BM	61542967fadc0200984399a02c8591ae0985e586	DA209F83D706CC8D7DF6D763AABC476967909581F038B5FAD63906F76B97AED6
CN = DigiCert QV EV TLS ICA G1 O = DigiCert, Inc. C = US	65e9bcd53e791df22dffeb5ecc2bc7a5588d0883	6A7B2AA3414039A663D5D8BBAB8256A3979A84C332BF5E1EE8F6D0E0ADA84668
CN = QuoVadis Issuing CA G5 O = QuoVadis Limited C = BM	61be8292e7e8cb3adf98e2ca7af34154298dd068	08204C52ADDAA97A6FDEF702F6CEB4B94E578F8FC1C301C9D5136AB381CFA7D9
CN = QuoVadis RCA3G3 TLS CA O = QuoVadis Limited C = BM	18dae051a897715eb0899ddcfb33b1cf0810eec0	ECC0D17AC3263AC6A164DCDB08F82D07E93FCEA723F66B88B06EEBA9678DF2BB
CN = QuoVadis EU Issuing Certification Authority G5 2.5.4.97 = NTRNL-30237459 O = QuoVadis Trustlink B.V. C = NL	67224c028c4e40d9e3f09e078f770e6e494ec082	B3AEF3F022B14B5BE2E949E5FCAF1F4294FBFF06C18314BA25A737650FA02724

Distinguished name	Certificate Serial Number	SHA256 fingerprint
CN = QuoVadis Enterprise Trust CA 1 G4 O = QuoVadis Trustlink B.V. C = NL	6404c54fd9495c d38a5e72df0a70 5bddd9b5a2a3	597623E05FD1B591711194EB190590F903A2B73F74CD5E8F787EC528033DAB7F
CN = QuoVadis Qualified Web ICA G1 O = QuoVadis Trustlink B.V. 2.5.4.97 = NTRNL-30237459 C = NL	4984b32ba495d 0c61de34bcf14d 3a35aee508644	C02D8A30ED69B2F864ED8FB1A63A3E7255288920CA294BDCA30F63898FB9195C
CN = QuoVadis Enterprise Trust CA 2 G3 O = QuoVadis Limited C = BM	5eeeb44a70e18e 63c9898f202cba c164914edc05	174E1DE77C8D93C68ECD2BD2EA6E191B584DB850277A834AAC898B7C80A91C70
CN = QuoVadis Europe SSL CA G2 O = QuoVadis Trustlink B.V. C = NL	71aaaa6284841 14c591fd74b9fe 9ffde5b29fa7e	B1AAE1BCD555E8A3D1E3DDA8EC84E757C552655344CE3FEEBBAF98E895DBEDAC
CN = QuoVadis RCA3G1 TLS CA O = QuoVadis Limited C = BM	2b07c16415396 d53cd05f7a542c ca4867e05c68d	3A66E648212E6321F94D9EABCC92C052E679D992C99AD4596A4E7B85ADCEE5DE
CN = QuoVadis Qualified Web ICA G3 O = QuoVadis Trustlink B.V. C = NL	2ca8cdc5b8ed75 0780c72e3392c 9941c0ffb8826	3F225BDBCD788CE924870CAF92F814B7C6FF4EDABABAD93F1D3A9177252CF1D1
CN = Novartis Issuing CA by QuoVadis 2.5.4.97 = NTRCH-CHE-106.052.527 O = Novartis Pharma AG C = CH	3c6c7abce6742e 8c32716b2103b 976fdc4bd9791	2C0971F397BA8737B033584556906594936ACE1753A5A4BE5E2F11B42BA4B759
CN = QuoVadis DC Qualified Web ICA ECC G1 2.5.4.97 = NTRNL-30237459 O = QuoVadis Trustlink B.V. C = NL	56ec68f1ead371 bd2d3ef4a77bcb e6ee9a0019f8	BDE762813E825A2669D413F82CBA26DD8419B8A069939989FEED222FE67AE78C
CN = QuoVadis QVRCA1G3 SSL ICA O = QuoVadis Limited C = BM	749e30fc6c0fd3c 59e91b5085ef61 3b10acef9af	51587C867BF66F35ECE554A08E0A41C13B8BBD9B59D262D204A70309A672BEE6

Distinguished name	Certificate Serial Number	SHA256 fingerprint
CN = BT Class 2 DigiCert PKI Platform CA O = British Telecommunications plc C = GB	72c9874176472 31d21a5a1e132 34c80f33fc35a5	843782303040BFB33576766E1700696DE0FC14887BE293D7265EB59ECE4ED9CC
CN = QuoVadis Time-Stamping Authority CA G1 O = QuoVadis Trustlink B.V. 2.5.4.97 = NTRNL-30237459 C = NL	4335c24f721531 1c1098838d7a0 d5584cdbf517f	D2BA0BFEC43FA7803860CDE6B3377421B1F563EC124B51D908415B0E937323E6
CN = QuoVadis RCA1G1 TLS CA O = QuoVadis Limited C = BM	331dda8face8d4 b873dc8216f76a ffd0f5246e84	6BB964647B5EE6159A2A029EE5C7DCD1D9CF3B088451E0A68E90E6074C3F5CA3
CN = Allscripts Public Issuing CA 1 O = Allscripts Healthcare LLC. C = US	098eb7f54f6c9f4 b17d7c741e385 6495b29eb1d9	5BD0C0D579801567F3388FE644EF790AB31E2DB2246EAF4C881E5A57D9A0A582
CN = QuoVadis Global SSL ICA G2 O = QuoVadis Limited C = BM	48982de2a92cb3 39e1c8f9333582 75d3e4f88255	A4879EC0F36CF84B6F2ED87AE57EE3B94A0785C6862238CD45481084D152EB18
CN = QuoVadis EV SSL ICA G1 O = QuoVadis Limited C = BM	73da5afa23d93f ba842e0a20f401 c9d86e24fc5d	3FE8BE392A08684B99F497E618C7DDF5A02A4289BF9D08E595045931BFBA814F
CN = HydrantID Client ICA G2 O = HydrantID (Avalanche Cloud Corporation) C = US	330e34fc4ec99b c46d28edf7eea2f 2e1787b5800	5286AE1C558A81537CD9870F749D96EFABC2D2BA393DF818DFE95EA7CE6450A7
CN = QuoVadis Swiss Regulated CA G1 O = QuoVadis Trustlink Schweiz AG 2.5.4.97 = NTRCH-CHE-112.210.349 C = CH	3b0c1728097a6 4faa02d851b9aff b5705e60ec75	53570D05E40DC62F9DF91D15AFB015B56AAA680C20CC168E6D57D946C9CE2684
CN = QuoVadis EV SSL ICA G1 O = QuoVadis Limited C = BM	7669c040a5d25 d8a6d4ef75bcb1 44e52a390589d	9CE274FFDA0CC48762CB71B12C742049C728E61DFBC0708E3F9C871E9EBDEA22
CN = QuoVadis EV SSL ICA G3 O = QuoVadis Limited C = BM	3c71e6efc94621 baec6e693290da 08c61577421f	ABB3FF299AA1BAEFC1278818C424388AEF7B29651595C60194E78D943694680B

Distinguished name	Certificate Serial Number	SHA256 fingerprint
CN = DigiCert QV TLS ICA G1 O = DigiCert, Inc. C = US	71520e460e54a ef322e39fac16c0 e97a51bd9572	93E33AF7DA3030530D090C9C55762CADE7EAE943F834349D1057A90EB67F306B
CN = QuoVadis Enterprise Trust CA 3 G3 O = QuoVadis Limited C = BM	0c2163a44924ff b7fcd6b75acdcae e7208cca95a	DA5462526A0C2E9852A86186B025390158759CDCA6AE21F09F713CA6ACDD1F1
CN = QuoVadis EV SSL ICA G1 O = QuoVadis Limited C = BM	1f86036f4b8800 c7549cdc8f47fa5 b7b704f9525	9C8D374FD0774341D61B5E8DCBB65E5B1061097C16D2735B2499250052F14D7E
CN = QuoVadis Enterprise Trust CA 1 G3 O = QuoVadis Limited C = BM	0ad86fa335b93e f48c8e3bf77d4c 63143643adb9	0531C86F785958939FDC539924D395D1EFA409364E6827D3AB9876311FFB27B0
CN = QuoVadis Belgium Issuing CA G4 2.5.4.97 = NTRBE-0537698318 O = DigiCert Europe Belgium B.V. C = BE	5bf39ec6453360 e0297f4cc5d7d8 8828aca914c2	3516BDAB7F57115A7AEB2EBF9C521EF00F04AD891501979BE1EFBF4493409669
CN = QuoVadis Europe EV SSL CA G1 O = QuoVadis Trustlink B.V. C = NL	3a020322b6816 c18b72acbb592b ef74dd786a8b8	CB6666B32BFF2EFEDCC4187DF149A6D34A5D10B7165B9CFF2A67C0E311AEEED7
CN = VR IDENT SSL CA 2020 O = Fiducia & GAD IT AG C = DE	035fe137cd0551 e4c1f1b00beba5 aee53f952734	347D18DCCC2EFC51A920E7A7FB07BFBDA35613681F82DCA5C4C72BB0C83C035
CN = QuoVadis EV SSL ICA G3 O = QuoVadis Limited C = BM	524fc1f16e34d1 702b84a13fb042 bbcc7c3c9032	F18442BEDF70B4D15211356C72B659332BED03FFD3BBA7AFAAABE6DE9D723002
CN = FMH CA G1 O = FMH Verbindung der Schweizer Ärztinnen und Ärzte C = CH	463f93870b000 3c0eaa102d749a aaa125c8af4fe	A0AF1418CD14F6B2415EC6316C7D588BB25D430A3D6D026F57DE20F965EABDDC
CN = QuoVadis Belgium Issuing CA G1 O = QuoVadis Trustlink BVBA C = BE	6acaf5c985274c 5027ba2928300 6d6e4c4f15a9b	27EBACD86DD3BF86143DA4342861031A57CF3FA414D40A86E669C3F4F1D8CF24

Distinguished name	Certificate Serial Number	SHA256 fingerprint
CN = QuoVadis Enterprise Trust CA 2 G4 O = QuoVadis Trustlink B.V. C = NL	41d2651bf57dae ec594226cf5563 9c4c3285c24c	1E356823FE40C0EAAC29F9ED5463B7B2DB1C088B63EBB05876A2E631C1087798
CN = QuoVadis Swiss Advanced CA G2 O = QuoVadis Trustlink Switzerland Ltd. C = CH	6a280af3462328 31c95b42c29d2 4c4a82cc335e3	5044F65E1042CD380B0B9997E4283358F0DEEF7873DA72EFDB6F02474AE37EBE
CN = HydrantID Client ICA O = HydrantID (Avalanche Cloud Corporation) C = US	5654d76a669eee b418daf62cc119 6b39b480e899	2EEE91CC892A16CCB7320CDED2AE4948C052345D6B24E214C24EB93932D10DD9
CN = Novartis Issuing CA by QuoVadis 2.5.4.97 = NTRCH-CHE- 106.052.527 O = Novartis Pharma AG C = CH	6caa4e8dc75aad dbd7542b2310e 0aaa0fd7fcec1	8F4145BD48CC9BF722925923E7D2D09CCCBE9973A53838CA36F9561F74E8C271
CN = QuoVadis RCA1G1 TLS CA O = QuoVadis Limited C = BM	1b12f441bbc6db 36f167384919c9 5b0b16245c47	28FC2B90438956C5A24A9040475FFD6546E0C0F294FA790A04CF0C98C4D644EE
CN = QuoVadis Swiss Regulated CA G4 O = QuoVadis Trustlink Schweiz AG C = CH	2e97fd8c4f1a83 45236a0fc4ba60 0d619674202f	0B38442F7376BD19CC4D3415ACEE1A63753CF720C5FE949863EACECEBB82995E
CN = itsme Sign Issuing CA G2 O = DigiCert Europe Belgium B.V. C = BE	4da802bbf234c3 470746ac4e47fc de9aeb7cc3bf	0B7AF5EB38D90B83C893410EC6714601A4EF6EC5C32B9D1D9AD54FBD38E18AEA
CN = QuoVadis Enterprise Trust CA 3 G4 O = QuoVadis Trustlink B.V. C = NL	469b2e710c351 41f2615c726aee 92ee4b42b3420	31EFF7DF4DDEB71CBDFB08B5C7FC9604A93600251E8917D6960C32BF4C0B5A77

Distinguished name	Certificate Serial Number	SHA256 fingerprint
CN = QuoVadis Belgium Issuing CA G2 O = QuoVadis Trustlink BVBA 2.5.4.97 = NTRBE-0537698318 C = BE	40f6065343c04c b671e9c8250e9 0ebd58dd86e55	D90B40132306D1094608B1B9A2F6A9E23B45FE121FEF514A1C9DF70A815AD95C
CN = QuoVadis DC Qualified Web ICA RSA G1 2.5.4.97 = NTRNL-30237459 O = QuoVadis Trustlink B.V. C = NL	24dec42507fc86 eccbc448c7762b 2b0ce82bd2c3	C522F888E49F77C232C26B0D35E746B689C470645A4AF431A652D84448F7A071
CN = QuoVadis Grid ICA G2 O = QuoVadis Limited C = BM	10b62f345a61eb 6184a7b106c80 57e9453e207d5	74CE8C1631EF9F38E7A4197DA3F5474DBC34F001F2967C25B5999562BCC8C9D4
CN = QuoVadis Code Signing CA G1 O = QuoVadis Limited C = BM	1ce6507ec1d9c0 b16178feee058c ae7a0b142858	DA0AFAF15CD300E34B520FB78A4FA68EB42C4601E939B903E0B1D71DF5965BFF
CN = VR IDENT SSL CA 2018 OU = VR IDENT O = Fiducia & GAD IT AG C = DE	43a90e0f187530 1023583e27e8fb 80b9edc64b0e	502C7A870341D7BE67DB26DBFACF9647AFD89A854BF8812FA4EF70C356EC13E5
CN = QuoVadis Swiss Regulated CA G2x 2.5.4.97 = NTRCH-CHE-112.210.349 O = QuoVadis Trustlink Schweiz AG C = CH	51fd54ae8897ca 2e71bdf28655a6 d515afff15c3	941B8AEE4BCF1EFEB0475FB279FDDDCF37FC5B20F64E842CD9DA0770B157E84D
CN = QuoVadis Europe SSL CA G1 O = QuoVadis Trustlink BVBA C = BE	4de601099cb47 7f4cf70027a14d e8cdb4a8d24a7	89994B6D9D9DDFFF687FABD3E7342CDD8522D661F5EFCE8E6ABDEB25A04F1023
CN = QuoVadis QVRCA1G1 SSL ICA O = QuoVadis Limited C = BM	760bdb66c0c72c 1590385851c88 35f226dbc063	9058D5065F8F3E9A63AAFE5CE89A764470B0DEF9DCF3B9EC7D0587FAB88FEBA0
CN = QuoVadis RCA3G1 TLS CA O = QuoVadis Limited C = BM	0af85cfa8f8bea55 c3d00be8df4dd3 0e83ef28244	B8D9BAF805CEBC66C7D6ED2AEC9675D5C9387BA4931563C01DDCBEB1E5646E26

Distinguished name	Certificate Serial Number	SHA256 fingerprint
CN = VR IDENT EV SSL CA 2018 OU = VR IDENT O = Fiducia & GAD IT AG C = DE	6fa3cc76e393d6 2826d9be57ad2 6cdd5ac91603d	BF39A4241F42D522368944B3DC53ED9EAA5AC7735E242E0627C0DD5BBA714484
CN = VR IDENT EV SSL CA 2018 OU = VR IDENT O = Fiducia & GAD IT AG C = DE	77e7ab7fb05108 8619a08ed6c0cb 7feabce92416	8C97A008F7CE21F746EAFB2E3AE06095E557D289A310C82C6F3C02D9F721E5F8
CN = QuoVadis DC EU Issuing CA ECC G1 2.5.4.97 = NTRNL-30237459 O = QuoVadis Trustlink B.V. C = NL	46f8044efe241e 38c2d5dbc9062b 119e09e9bc38	0978125AC198DB396B613CE053A6CFA32D22169398F10A8BD879C52F3E51D575
CN = QuoVadis Enterprise Trust CA 2 G3 O = QuoVadis Limited C = BM	31a84f278bbe4a 696e4cb2f415a2 e4473bdcca38	B6F6559BBCE0A2CC91E507B5D7319E32487EDAE28A063BC73B6405E6C44665B6
CN = QuoVadis QVRCA3G3 SSL ICA O = QuoVadis Limited C = BM	454304f0e63f60 11f2a246e0c684 caa4f7288876	764A0D84D5552CD5872C73464F37F02175CDA70588102B13ADA2A0199FC403E9
CN = QuoVadis EU Issuing Certification Authority G4 O = QuoVadis Trustlink B.V. 2.5.4.97 = NTRNL-30237459 C = NL	127f8b3206262 8c0ca3f8d44bef9 f2fa5db1440c	1D24222B5EEC71FE99BE9D700FA5FF72312DB3EB0FCB4A4F3BCC135DA36C1355
CN = VR IDENT SSL CA 2018 OU = VR IDENT O = Fiducia & GAD IT AG C = DE	41de06035455e e98c82694a090 a946304f2eff87	E22160364E56F7C27234F5435D8477B1A5BBBA01103298F3954909180DF02778
CN = BEKB - BCBE Issuing CA G2 OU = Issuing Certification Authority O = Berner Kantonalbank AG C = CH	289fbf1348498b c26512ff3abf8af 52f2a0b7502	B399EFE42C01A05BDC38978447A78E950467793FB11C1B6B426C419A0FC73911
CN = QuoVadis Issuing CA G4 O = QuoVadis Limited C = BM	69b2d1ccf02e20 dcc95c62894f7f 9e5f5fc057bf	DA3BC81005FDBB853D681A7E942661AEBA23789211525EAF52221F28514C09CB

Distinguished name	Certificate Serial Number	SHA256 fingerprint
CN = QuoVadis EU Issuing Certification Authority G6 2.5.4.97 = NTRNL-30237459 O = QuoVadis Trustlink B.V. C = NL	32992e194ce22 eae94e96c8bb47 5379a11e2c4cf	19B74B7E41CA73465832838A14EB432C4826F1B15DEF42B90AAE9F8FAB8B79B3
CN = QuoVadis Global SSL ICA G3 O = QuoVadis Limited C = BM	2d2c802018b79 07c4d2d79df7fb 1bd872727cc93	30242443F6895A94560E48E4DFF720536EAF5163CB42F5E877402ABDE2F8627C
CN = QuoVadis Swiss Advanced CA G4 O = QuoVadis Trustlink Schweiz AG C = CH	7bdcbb6fcd4d02 19c87d4879f4f4 d715b6b834ae	085A74D4683D0FCCDE44677CFA579B732C9CE2DA6921AD3FE70F814EE7C0BF52
CN = HIN Health Info Net CA G2 O = Health Info Net AG 2.5.4.97 = NTRCH-CHE-103.489.218 C = CH	35bb9264f660c9 bd09f8c0b34617 dc2b1341e05c	3645E0F05E195BE8ECD456E518C8C23C1BB259CD6CF4691F29C744AEF0C11FDD
CN = QuoVadis Belgium Issuing CA G3 2.5.4.97 = NTRBE-0537698318 O = QuoVadis Trustlink BVBA C = BE	35574a3ac9b14 8679309f54f342 f798bb5d3c3fe	E9ECA289045F0F5F8FF9C02DEA65601BDCB1559DA85838414E6279452BE9FD18
CN = QuoVadis QVRCA3G1 SSL ICA O = QuoVadis Limited C = BM	1af6d97a8ff0b28 deeac01a524c87 a6f32e79df6	8D99217FF82D60E4DF59BE8A1121625CDFFC4F22F21E1263A1DF06D2DC0B540E
CN = QuoVadis Swiss Advanced CA G3 O = QuoVadis Trustlink Schweiz AG 2.5.4.97 = NTRCH-CHE-112.210.349 C = CH	650b9209c6b93 c0a3f15408449e 867e01f279f9b	872F9DBB2EFCB0DC7BEC5462FCACEDEB66BEC1BB7446847670128A24878BED29
CN = QuoVadis Global SSL ICA G3 O = QuoVadis Limited C = BM	7ed6e79cc9ad81 c4c8193ef95d44 28770e341317	CAB9C12DBDE3AD5D2BC0201B54B18BE209CD5E146AAA085ABBDF241B096DFF47

Distinguished name	Certificate Serial Number	SHA256 fingerprint
CN = HydrantID EV SSL ICA G1 O = HydrantID (Avalanche Cloud Corporation) C = US	5bfd1bb152d10 6baa6d6d17e73c 561f0dd9c8ca	80FDE428212AF0CA0AC531EEE6ED2DF3D3C2A4557DFCE857070FC947922E9B24
CN = QuoVadis Belgium Issuing CA G2 O = QuoVadis Trustlink BVBA 2.5.4.97 = NTRBE-0537698318 C = BE	1cdfd90b4f7271 9860e301c76c3 68c61d91f1278	AA0E83B4AE0036679703D1603BC7E63A080464A033AE4B9F465838ADC85C61ED
CN = QuoVadis Swiss Regulated CA G1 O = QuoVadis Trustlink Schweiz AG 2.5.4.97 = NTRCH-CHE-112.210.349 C = CH	2ac182f5e52925 0b3a0e0ad20ec8 c6f8f643094d	67B6E43E6D54DBBE11595FBA2A809DF98E6B280C0D047840FD93EA38C50E4F98
CN = HydrantID SSL ICA G2 O = HydrantID (Avalanche Cloud Corporation) C = US	7517167783d04 37eb556c35794 6e4563b8ebd3ac	9C6D08933201407FBF2B12540B67CC0E4C9666F132E1504762A717CBAE8F3FD6

Appendix B

	Disclosure	Description	Relevant WebTrust Criteria	Publicly Disclosed Link
1	QuoVadis: N/A in EV serialNumber field	QuoVadis issued 32 certificates to a single customer with "N/A" in the EV serialNumber field.	WebTrust Principles and Criteria for Certification Authorities Version 2.2, SSL Baseline with Network Security v2.4.1 and Extended Validation SSL, 1.6.8	<a href="#">1576283</a>
2	QuoVadis: Unconstrained CAs missing audits	18 ICA certificates capable of TLS issuance (due to lack of EKUs) were not disclosed in the WebTrust for BRs audit report. They were disclosed in the WebTrust for CAs audit.	WebTrust Principles and Criteria for Certification Authorities Version 2.2 and SSL Baseline with Network Security v2.4.1	<a href="#">1581597</a>
3	QuoVadis: Incorrect EV jurisdiction of incorporation information	Incorrect EV jurisdiction of incorporation information in one EV certificate.	WebTrust Principles and Criteria for Certification Authorities Version 2.2, SSL Baseline with Network Security v2.4.1 and Extended Validation SSL, 1.6.8	<a href="#">1589047</a>
4	QuoVadis: Unconstrained CAs revocation	Bug relating to the fact that the 18 unconstrained ICA certificates reported in bug 1581597 were not revoked in 7 days.	WebTrust Principles and Criteria for Certification Authorities Version 2.2 and SSL Baseline with Network Security v2.4.1	<a href="#">1599916</a>
5	QuoVadis: Failure to revoke certificates with compromised private keys	Discussion of procedures for revocation of certificates with compromised private keys.	WebTrust Principles and Criteria for Certification Authorities Version 2.2 and SSL Baseline with Network Security v2.4.1	<a href="#">1624504</a>
6	QuoVadis: EV serialNumber with "none"	A single EV certificate was identified with an inappropriate JOI serialNumber.	WebTrust Principles and Criteria for Certification Authorities Version 2.2, SSL Baseline with Network Security v2.4.1 and Extended Validation SSL, 1.6.8	<a href="#">1645708</a>

	Disclosure	Description	Relevant WebTrust Criteria	Publicly Disclosed Link
7	QuoVadis: Failure to provide a preliminary report within 24 hours.	A third party report complained that QuoVadis had not responded to a complaint. QuoVadis established that we were in dialogue with the reporter at the time. QuoVadis has now adopted ISO 3166-2 for state/province fields in certificates.	WebTrust Principles and Criteria for Certification Authorities Version 2.2 and SSL Baseline with Network Security v2.4.1	<a href="#">1649880</a>
8	QuoVadis: Incorrect OCSP Delegated Responder Certificate	Incorrect OCSP Delegated Responder Certificate. Part of a remediation affecting hundreds of issuing CAs across the industry.	WebTrust Principles and Criteria for Certification Authorities Version 2.2, SSL Baseline with Network Security v2.4.1 and Extended Validation SSL, 1.6.8	<a href="#">1649938</a>
9	QuoVadis: Failure to revoke within 7 days: OCSP EKU issue	Failure to revoke the ICAs identified in bug 1649938 (OCSP EKU issue) within 7 days.	WebTrust Principles and Criteria for Certification Authorities Version 2.2, SSL Baseline with Network Security v2.4.1 and Extended Validation SSL, 1.6.8	<a href="#">1651553</a>
10	QuoVadis: Incorrect keyUsage for ECC certificate	Incorrect keyUsage for ECC certificate. A single TLS certificate was identified with an inappropriate keyUsage. The use did not involve a security risk but was counter to standards. QuoVadis has since adopted DigiCert's certificate profile templates which reduce the risk of such errors.	WebTrust Principles and Criteria for Certification Authorities Version 2.2 and SSL Baseline with Network Security v2.4.1	<a href="#">1667518</a>