

Report of Independent Accountants

To the Management of Apple:

We have examined the accompanying [assertion](#) made by the management of Apple Inc. (Apple), titled "Management's Assertion Regarding the Effectiveness of Its Controls Over the Certification Authority Operations Based on the WebTrust Principles and Criteria for Certification Authorities Version 2.2.1" that provides its Certification Authority (CA) services at Cupertino, CA, and supporting facilities, at Maiden, NC, Newark, CA, Reno, NV, and Sunnyvale, CA, for the Root CA(s) and Subordinate CA(s) referenced in **Appendix A** during the period from April 16, 2020 through April 15, 2021. Apple has:

- disclosed its business, key lifecycle management, certificate lifecycle management, and CA environmental control practices in its Certification Practice Statements and Certificate Policy:

Apple Root CA

[Apple Inc. Certification Authority
Certificate Policy Version 3.1](#)

Apple Application Integration
Certification Authority (Sub-CA under
Apple Root CA)

[Apple Inc. Certification Authority
Certificate Policy Version 3.1](#)

[Apple Inc. Certification Authority
Certification Practice Statement
Application Integration Version 6.8](#)

Apple Application Integration 2
Certification Authority (Sub-CA under
Apple Root CA)

[Apple Inc. Certification Authority
Certificate Policy Version 3.1](#)

[Apple Inc. Certification Authority
Certification Practice Statement
Application Integration Version 6.8](#)

Apple Software Update Certification
Authority (Sub-CA under Apple Root CA)

[Apple Inc. Certification Authority
Certificate Policy Version 3.1](#)

[Apple Inc. Certification Practice
Statement Software Update Version
3.0](#)

Apple Software Update Certification
Authority - G4 (Sub-CA under Apple Root
CA)

[Apple Inc. Certification Authority
Certificate Policy Version 3.1](#)

[Apple Inc. Certification Practice
Statement Software Update Version
3.0](#)

Apple Worldwide Developer Relations
Certification Authority (Sub-CA under
Apple Root CA)

[Apple Inc. Certification Authority
Certificate Policy Version 3.1](#)

[Apple Inc. Certification Authority
Certification Practice Statement
Worldwide Developer Relations Version
1.23](#)

Apple Worldwide Developer Relations
Certification Authority G3 (Sub-CA under
Apple Root CA)

[Apple Inc. Certification Authority
Certificate Policy Version 3.1](#)

[Apple Inc. Certification Authority
Certification Practice Statement
Worldwide Developer Relations Version
1.23](#)

Developer Authentication Certification
Authority (Sub-CA under Apple Root CA)

[Apple Inc. Certification Authority
Certificate Policy Version 3.1](#)

[Apple Inc. Certification Authority
Certification Practice Statement
Worldwide Developer Relations Version
1.23](#)

Developer ID Certification Authority
(Sub-CA under Apple Root CA)

[Apple Inc. Certification Authority
Certificate Policy Version 3.1](#)

[Apple Inc. Certification Practice
Statement Developer ID Version 3.1](#)

Apple Root CA - G3

[Apple Inc. Certification Authority
Certificate Policy Version 3.1](#)

Apple Application Integration CA - G3
(Sub-CA under Apple Root CA - G3)

[Apple Inc. Certification Authority
Certificate Policy Version 3.1](#)

[Apple Inc. Certification Authority
Certification Practice Statement
Application Integration Version 6.8](#)

Apple Application Integration CA 5 - G1
(Sub-CA under Apple Root CA - G3)

[Apple Inc. Certification Authority
Certificate Policy Version 3.1](#)

[Apple Inc. Certification Authority
Certification Practice Statement
Application Integration Version 6.8](#)

Apple Application Integration CA 6 - G1
(Sub-CA under Apple Root CA - G3)

[Apple Inc. Certification Authority
Certificate Policy Version 3.1](#)

[Apple Inc. Certification Authority
Certification Practice Statement
Application Integration Version 6.8](#)

Apple Worldwide Developer Relations CA
- G2 (Sub-CA under Apple Root CA - G3)

[Apple Inc. Certification Authority
Certificate Policy Version 3.1](#)

[Apple Inc. Certification Authority
Certification Practice Statement
Worldwide Developer Relations Version
1.23](#)

- maintained effective controls to provide reasonable assurance that:
 - Apple's CA Certification Practice Statements are consistent with its Certificate Policy
 - Apple's CA provides its services in accordance with its Certificate Policy and 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 Apple); and
 - subordinate CA certificate requests are accurate, authenticated, and approved
- maintained effective controls to provide reasonable assurance that:
 - logical and physical access to CA systems and data is restricted to authorized individuals;
 - the continuity of key and certificate management operations is maintained; and
 - CA systems development, maintenance, and operations are properly authorized and performed to maintain CA systems integrity

Based on the Chartered Professional Accountants of Canada ("CPA Canada")'s *WebTrust Principles and Criteria for Certification Authorities Version 2.2.1*.

Apple's 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.

Apple does not escrow its CA keys and does not provide subscriber key generation services for TLS Certificates. Accordingly, our examination did not extend to controls that would address those criteria.

Apple management has disclosed to us the attached matters (**Appendix B**) that have been posted publicly in the online forums of the Bugzilla site, 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.

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 Apple's 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.

The relative effectiveness and significance of specific controls at Apple 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 Apple's 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, Apple 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.

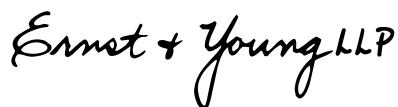
Examples of inherent limitations of internal controls related to security include (a) vulnerabilities in information technology components as a result of design by their manufacturer or developer; (b) breakdown

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, Apple's 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 Apple's 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 Apple's CA services beyond those covered by the *WebTrust Principles and Criteria for Certification Authorities Version 2.2.1* criteria, or the suitability of any of Apple's services for any customer's intended purpose.



Ernst & Young LLP
09 June 2021

Appendix A

Root/Subordinate Name	Subject Key Identifier	Certificate Serial Number	SHA-256 Fingerprint
Apple Root CA CN= Apple Root CA OU= Apple Certification Authority O= Apple Inc. C= US	2BD06947947609FEF4 6B8D2E40A6F7474D7 F085E	2	B0B1730ECBC7FF4505 142C49F1295E6EDA6B CAED7E2C68C5BE91B5 A11001F024
Apple Application Integration Certification Authority (Sub-CA under Apple Root CA) CN= Apple Application Integration Certification Authority OU= Apple Certification Authority O= Apple Inc. C= US	31EA76A92374A5DFD 4FDEEA0C1A69EC611 0E11EC	620396375747820 6451	E6A78796E0C7A3E543 7835CA16785B485AA9 DDC45CCD0A65AA8933 E3C3D08971
Apple Application Integration 2 Certification Authority (Sub-CA under Apple Root CA) CN= Apple Application Integration 2 Certification Authority OU= Apple Certification Authority O= Apple Inc. C= US	F7BE7C216091DB3D1 B7BD83A328169DF9E 6C7F9B	340579660491036 777	D3496F4B73CD67AAB9 F2FCB1D5AA41F8DC45 7769C455C792B70DDB 19E92023D6
Apple Software Update Certification Authority (Sub-CA under Apple Root CA) CN= Apple Software Update Certification Authority OU= Apple Certification Authority O= Apple Inc. C= US	5957FCBA39CFD3587 64313B3C8C406AD08 532B44	5AA247A11690DC2 82EFCF72C5F427D C2	1299E9BFE776A29FF4 52F8C4F5E55F3B4DFD 2934349DD1850B8274 F35C71745C

Root/Subordinate Name	Subject Key Identifier	Certificate Serial Number	SHA-256 Fingerprint
<p>Apple Software Update Certification Authority - G4 (Sub-CA under Apple Root CA)</p> <p>CN= Apple Software Update CA - G4 OU= Apple Certification Authority O= Apple Inc. C= US</p>	<p>E1F1F631F5783C89 0C392AE1C8FA4FE5 D20093B5</p>	<p>453042588642645 1257</p>	<p>534BD7BA1ACD655F 383851FF327D73F3CF 2A17917CFEC8DAF04D B82157819237</p>
<p>Apple Worldwide Developer Relations Certification Authority (Sub-CA under Apple Root CA)</p> <p>CN= Apple Worldwide Developer Relations Certification Authority OU= Apple Worldwide Developer Relations O= Apple Inc. C= US</p>	<p>88271709A9B618608 BECEBBAF64759C552 54A3B7</p>	<p>134752589830791 184</p>	<p>CE057691D730F89CA2 5E916F7335F4C8A157 13DCD273A658C02402 3F8EB809C2</p>
<p>Apple Worldwide Developer Relations Certification Authority G3 (Sub-CA under Apple Root CA)</p> <p>CN= Apple Worldwide Developer Relations Certification Authority OU= G3 O= Apple Inc. C= US</p>	<p>09FEC01590F9AF640A 9212B92628630C97E CA7B2</p>	<p>7CAF690A25B739F E7B9B447AC178C5 EE</p>	<p>DCF21878C77F4198E4 B4614F03D696D89C66 C66008D4244E1B9916 1AAC91601F</p>

Root/Subordinate Name	Subject Key Identifier	Certificate Serial Number	SHA-256 Fingerprint
Developer Authentication Certification Authority (Sub-CA under Apple Root CA) CN= Developer Authentication Certification Authority OU= Apple Worldwide Developer Relations O= Apple Inc. C= US	49F63609B81B23FA035BB6EA82A0D95D10186706	7433544943795348762	341FF0B1753889EB5F36921A7386129F302CE4FF603FABAEBF06E01FDB236860
Developer ID Certification Authority (Sub-CA under Apple Root CA) CN= Developer ID Certification Authority OU= Apple Certification Authority O= Apple Inc. C= US	5717EDA2CFDC7C98A110E0FCBE872D2CF2E31754	1763908746353189132	7AFC9D01A62F03A2DE9637936D4AFE68090D2DE18D03F29C88CFB0B1BA63587F
Apple Root CA - G3 CN= Apple Root CA - G3 OU= Apple Certification Authority O= Apple Inc. C= US	BBB0DEA15833889AA48A99DEBEBDEBAFDA CB24AB	3298319966700653461	63343ABFB89A6A03EBB57E9B3F5FA7BE7C4F5C756F3017B3A8C488C3653E9179
Apple Application Integration CA - G3 (Sub-CA under Apple Root CA - G3) CN= Apple Application Integration CA - G3 OU= Apple Certification Authority O= Apple Inc. C= US	23F249C44F93E4EF27E6C4F6286C3FA2BBFD2E4B	5290937635598555799	A64B099DBD73EBB036B4204E1675E8AA821637D09B84980899104AD59D664A3B

Root/Subordinate Name	Subject Key Identifier	Certificate Serial Number	SHA-256 Fingerprint
<p>Apple Application Integration CA 5 - G1 (Sub-CA under Apple Root CA - G3)</p> <p>CN= Apple Application Integration CA 5 - G1 OU= Apple Certification Authority O= Apple Inc. C= US</p>	<p>D917FE4B6790384B92F4DBCED55780140B8F3DC9</p>	<p>56FB83D42BFF8DC3379923B55AAE6EBD</p>	<p>C0D8EFBEA821079D1B8A98E1198BFCC669331FA7A9C14F09B969F0AF08CE4A43</p>
<p>Apple Application Integration (AAI) CA 6 - G1 (Sub-CA under Apple Root CA - G3)</p> <p>CN= Apple Application Integration CA 6 - G1 OU= Apple Certification Authority O= Apple Inc. C= US</p>	<p>B2A565A14108DA7F99E0516774484F20B8F72B02</p>	<p>1B00376FC8EBDCFDOCE0CE0CB9D1F209</p>	<p>DC223D6A19441B8C376C5C8093B94C07735D2C2B9CCEE85EB86A83DE4FC75337</p>
<p>Apple Worldwide Developer Relations - G2 (Sub-CA under Apple Root CA - G3)</p> <p>CN= Apple Worldwide Developer Relations CA - G2 OU= Apple Certification Authority O= Apple Inc. C= US</p>	<p>84B684CC3A866272165994E81AA3BD48DF3ADF0B</p>	<p>8065904008342251502</p>	<p>9ED4B3B88C6A339CF1387895BDA9CA6EA31A6B5CE9EDF7511845923B0C8AC94C</p>

Appendix B

	Observation	Relevant WebTrust Criteria	Publicly Disclosed Link
1	<p>Apple CA was running a version of EJBCA for OSCP Responders that was impacted by the Empty SingleExtension in OSCP responses bug. Following the upgrade to EJBCA version 7.4.3 this issue was resolved.</p> <p>This incident was closed during the current examination period.</p>	<p>Criterion number 6.8 The CA maintains controls to provide reasonable assurance that timely, complete and accurate certificate status information (including Certificate Revocation Lists and other certificate status mechanisms) is made available to relevant entities (Subscribers and Relying Parties or their agents) in accordance with the CA's disclosed business practices.</p>	Bugzilla Link
2	<p>Apple's OSCP services experienced a period of diminished availability due to the Apple managed CDN availability incident. Service was recovered within a two hour response time of the discovered incident.</p> <p>This incident was closed during the current examination period.</p>	<p>Criterion number 6.8 The CA maintains controls to provide reasonable assurance that timely, complete and accurate certificate status information (including Certificate Revocation Lists and other certificate status mechanisms) is made available to relevant entities (Subscribers and Relying Parties or their agents) in accordance with the CA's disclosed business practices.</p>	Bugzilla Link



Management's Assertion Regarding the Effectiveness of Its Controls
Over the Certification Authority Operations
Based on the WebTrust Principles and Criteria for Certification Authorities Version 2.2.1

09 June 2021

We, as management of Apple Inc. (Apple), are responsible for operating a Certification Authority (CA) at Cupertino, CA, and supporting facilities, at Maiden, NC, Newark, CA, Reno, NV, and Sunnyvale, CA, for the Root CAs and Subordinate CAs listed in Appendix A.

Apple's CA services provide the following certification authority services:

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

Apple Management 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.

Apple does not escrow its CA keys, and does not provide subscriber key generation services for TLS Certificates.

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 Apple's CA operations. Furthermore, because of changes in conditions, the effectiveness of controls may vary over time.

Apple Management has assessed the disclosure of its certificate practices and its controls over its CA operations. Based on that assessment, in Apple Management's opinion, in providing its CA services for the Root CAs and Subordinate CAs listed in Appendix A at Cupertino, CA, and supporting facilities, at Maiden, NC, Newark, CA, Reno, NV, and Sunnyvale, CA, during the period from April 16, 2020 through April 15, 2021, Apple has:

- disclosed its Business, Key Life Cycle Management, and Certificate Life Cycle Management, and CA Environmental Control practices as below:

Apple Root CA

[Apple Inc. Certification Authority
Certificate Policy Version 3.1](#)

Apple
One Apple Park Way
Cupertino, CA 95014
T 408 996-1010
F 408 996-0275
www.apple.com



Apple Application Integration Certification Authority (Sub-CA under Apple Root CA) [Apple Inc. Certification Authority Certificate Policy Version 3.1](#)

[Apple Inc. Certification Authority Certificate Practice Statement Application Integration Version 6.8](#)

Apple Application Integration 2 Certification Authority (Sub-CA under Apple Root CA) [Apple Inc. Certification Authority Certificate Policy Version 3.1](#)

[Apple Inc. Certification Authority Certificate Practice Statement Application Integration Version 6.8](#)

Apple Software Update Certification Authority (Sub-CA under Apple Root CA) [Apple Inc. Certification Authority Certificate Policy Version 3.1](#)

[Apple Inc. Certification Practice Statement Software Update Version 3.0](#)

Apple Software Update Certification Authority - G4 (Sub-CA under Apple Root CA) [Apple Inc. Certification Authority Certificate Policy Version 3.1](#)

[Apple Inc. Certification Practice Statement Software Update Version 3.0](#)

Apple Worldwide Developer Relations Certification Authority (Sub-CA under Apple Root CA) [Apple Inc. Certification Authority Certificate Policy Version 3.1](#)

[Apple Inc. Certification Authority Certificate Practice Statement Worldwide Developer Relations Version 1.23](#)

Apple Worldwide Developer Relations Certification Authority G3 (Sub-CA under Apple Root CA) [Apple Inc. Certification Authority Certificate Policy Version 3.1](#)

[Apple Inc. Certification Authority Certificate Practice Statement Worldwide Developer Relations Version 1.23](#)

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Developer Authentication Certification Authority (Sub-CA under Apple Root CA)	Apple Inc. Certification Authority Certificate Policy Version 3.1 Apple Inc. Certification Authority Certification Practice Statement Worldwide Developer Relations Version 1.23
Developer ID Certification Authority (Sub-CA under Apple Root CA)	Apple Inc. Certification Authority Certificate Policy Version 3.1 Apple Inc. Certification Practice Statement Developer ID Version 3.1
Apple Root CA - G3	Apple Inc. Certification Authority Certificate Policy Version 3.1
Apple Application Integration CA – G3 (Sub-CA under Apple Root CA – G3)	Apple Inc. Certification Authority Certificate Policy Version 3.1 Apple Inc. Certification Authority Certification Practice Statement Application Integration Version 6.8
Apple Application Integration CA 5 – G1 (Sub-CA under Apple Root CA – G3)	Apple Inc. Certification Authority Certificate Policy Version 3.1 Apple Inc. Certification Authority Certification Practice Statement Application Integration Version 6.8
Apple Application Integration CA 6 – G1 (Sub-CA under Apple Root CA – G3)	Apple Inc. Certification Authority Certificate Policy Version 3.1 Apple Inc. Certification Authority Certification Practice Statement Application Integration Version 6.8



Apple Worldwide Developer Relations CA [Apple Inc. Certification Authority](#)
– G2 (Sub-CA under Apple Root CA – G3) [Certificate Policy Version 3.1](#)

[Apple Inc. Certification Authority](#)
[Certification Practice Statement](#)
[Worldwide Developer Relations Version](#)
[1.23](#)

- maintained effective controls to provide reasonable assurance that:
 - Apple's Certification Practice Statements are consistent with its Certificate Policy
 - Apple provides its services in accordance with its Certificate Policy and Certification Practice Statements
- 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;
 - the Subscriber information was properly authenticated (for the registration activities performed by Apple); 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 Root CAs and Subordinate CAs listed in Appendix A, based on the [WebTrust Principles and Criteria for Certification Authorities Version 2.2.1](#), including the following:

CA Business Practices Disclosure

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

CA Business Practices Management

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

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CA Environmental Controls

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

CA Key Lifecycle Management Controls

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

Subscriber Key Lifecycle Management Controls

- 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 Certificate Lifecycle Management Controls

- Subordinate CA Certificate Lifecycle Management

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Appendix A

Root/Subordinate Name	Subject Key Identifier	Certificate Serial Number	SHA-256 Fingerprint
Apple Root CA CN= Apple Root CA OU= Apple Certification Authority O= Apple Inc. C= US	2BD06947947609FEF46B 8D2E40A6F7474D7F085E	2	B0B1730ECBC7FF4505142 C49F1295E6EDA6BCAED7 E2C68C5BE91B5A11001F0 24
Apple Application Integration Certification Authority (Sub-CA under Apple Root CA) CN= Apple Application Integration Certification Authority OU= Apple Certification Authority O= Apple Inc. C= US	31EA76A92374A5DFD4F DEEA0C1A69EC6110E11 EC	620396375747820645 1	E6A78796E0C7A3E543783 5CA16785B485AA9DDC4 5CCD0A65AA8933E3C3D 08971
Apple Application Integration 2 Certification Authority (Sub-CA under Apple Root CA) CN= Apple Application Integration 2 Certification Authority OU= Apple Certification Authority O= Apple Inc. C= US	F7BE7C216091DB3D1B7 BD83A328169DF9E6C7F 9B	340579660491036777	D3496F4B73CD67AAB9F2 FCB1D5AA41F8DC457769 C455C792B70DDB19E920 23D6

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Root/Subordinate Name	Subject Key Identifier	Certificate Serial Number	SHA-256 Fingerprint
Apple Software Update Certification Authority (Sub- CA under Apple Root CA) CN= Apple Software Update Certification Authority OU= Apple Certification Authority O= Apple Inc. C= US	5957FCBA39CFD358764 313B3C8C406AD08532B 44	5AA247A11690DC28 2EFCF72C5F427DC2	1299E9BFE776A29FF452F 8C4F5E55F3B4DFD29343 49DD1850B8274F35C717 45C
Apple Software Update Certification Authority - G4 (Sub-CA under Apple Root CA) CN= Apple Software Update CA - G4 OU= Apple Certification Authority O= Apple Inc. C= US	E1F1F631F5783C89 0C392AE1C8FA4FE5 D20093B5	453042588642645125 7	534BD7BA1ACD655F 383851FF327D73F3CF 2A17917CFEC8DAF04D B82157819237
Apple Worldwide Developer Relations Certification Authority (Sub- CA under Apple Root CA) CN= Apple Worldwide Developer Relations Certification Authority OU= Apple Worldwide Developer Relations O= Apple Inc. C= US	88271709A9B618608BEC EBBAF64759C55254A3B 7	134752589830791184	CE057691D730F89CA25E 916F7335F4C8A15713DC D273A658C024023F8EB8 09C2

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Root/Subordinate Name	Subject Key Identifier	Certificate Serial Number	SHA-256 Fingerprint
Apple Worldwide Developer Relations Certification Authority G3 (Sub-CA under Apple Root CA) CN= Apple Worldwide Developer Relations Certification Authority OU= G3 O= Apple Inc. C= US	09FEC01590F9AF640A9212B92628630C97ECA7B2	7CAF690A25B739FE7B9B447AC178C5EE	DCF21878C77F4198E4B4614F03D696D89C66C66008D4244E1B99161AAC91601F
Developer Authentication Certification Authority (Sub-CA under Apple Root CA) CN= Developer Authentication Certification Authority OU= Apple Worldwide Developer Relations O= Apple Inc. C= US	49F63609B81B23FA035BB6EA82A0D95D10186706	7433544943795348762	341FF0B1753889EB5F36921A7386129F302CE4FF603FABAEBF06E01FDB236860
Developer ID Certification Authority (Sub-CA under Apple Root CA) CN= Developer ID Certification Authority OU= Apple Certification Authority O= Apple Inc. C= US	5717EDA2CFDC7C98A110E0FCBE872D2CF2E31754	1763908746353189132	7AFC9D01A62F03A2DE9637936D4AFE68090D2DE18D03F29C88CFB0B1BA63587F

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Root/Subordinate Name	Subject Key Identifier	Certificate Serial Number	SHA-256 Fingerprint
Apple Root CA – G3 CN= Apple Root CA - G3 OU= Apple Certification Authority O= Apple Inc. C= US	BBB0DEA15833889AA48 A99DEBEBDEBAFDACB2 4AB	329831996670065346 1	63343ABFB89A6A03EBB5 7E9B3F5FA7BE7C4F5C756 F3017B3A8C488C3653E91 79
Apple Application Integration CA – G3 (Sub-CA under Apple Root CA – G3) CN= Apple Application Integration CA - G3 OU= Apple Certification Authority O= Apple Inc. C= US	23F249C44F93E4EF27E6 C4F6286C3FA2BBFD2E4 B	529093763559855579 9	A64B099DBD73EBB036B4 204E1675E8AA821637D0 9B84980899104AD59D66 4A3B
Apple Application Integration CA 5 - G1 (Sub-CA under Apple Root CA – G3) CN= Apple Application Integration CA 5 - G1 OU= Apple Certification Authority O= Apple Inc. C= US	D917FE4B6790384B92F4 DBCED55780140B8F3DC 9	56FB83D42BFF8DC33 79923B55AAE6EBD	C0D8EFBEA821079D1B8A 98E1198BFCC669331FA7 A9C14F09B969F0AF08CE4 A43
Apple Application Integration (AAI) CA 6 - G1 (Sub-CA under Apple Root CA – G3) CN= Apple Application Integration CA 6 - G1 OU= Apple Certification Authority O= Apple Inc. C= US	B2A565A14108DA7F99E 0516774484F20B8F72B0 2	1B00376FC8EBDCFD0 CE0CE0CB9D1F209	DC223D6A19441B8C376C 5C8093B94C07735D2C2B 9CCEE85EB86A83DE4FC7 5337

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Root/Subordinate Name	Subject Key Identifier	Certificate Serial Number	SHA-256 Fingerprint
Apple Worldwide Developer Relations – G2 (Sub-CA under Apple Root CA – G3) CN= Apple Worldwide Developer Relations CA - G2 OU= Apple Certification Authority O= Apple Inc. C= US	84B684CC3A866272165 994E81AA3BD48DF3ADF 0B	806590400834225150 2	9ED4B3B88C6A339CF138 7895BDA9CA6EA31A6B5 CE9EDF7511845923B0C8 AC94C

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