In this section of a CA's CPS, the CA shall provide a link to a web page or an email address for contacting the person or persons responsible for operation of the CA.

1.5.3. Person determining CPS suitability for the policy

No stipulation.

1.5.4. CPS approval procedures

No stipulation.

1.6. DEFINITIONS AND ACRONYMS

1.6.1. Definitions

Affiliate: A corporation, partnership, joint venture or other entity controlling, controlled by, or under common control with another entity, or an agency, department, political subdivision, or any entity operating under the direct control of a Government Entity.

Applicant: The natural person or Legal Entity that applies for (or seeks renewal of) a Certificate. Once the Certificate issues, the Applicant is referred to as the Subscriber. For Certificates issued to devices, the Applicant is the entity that controls or operates the device named in the Certificate, even if the device is sending the actual certificate request.

Applicant Representative: A natural person or human sponsor who is either the Applicant, employed by the Applicant, or an authorized agent who has express authority to represent the Applicant: (i) who signs and submits, or approves a certificate request on behalf of the Applicant, and/or (ii) who signs and submits a Subscriber Agreement on behalf of the Applicant, and/or (iii) who acknowledges the Terms of Use on behalf of the Applicant when the Applicant is an Affiliate of the CA or is the CA.

Application Software Supplier: A supplier of Internet browser software or other relying-party application software that displays or uses Certificates and incorporates Root Certificates.

Attestation Letter: A letter attesting that Subject Information is correct written by an accountant, lawyer, government official, or other reliable third party customarily relied upon for such information.

Audit Report: A report from a Qualified Auditor stating the Qualified Auditor's opinion on whether an entity's processes and controls comply with the mandatory provisions of these Requirements.

Authorization Domain Name: The Domain Name used to obtain authorization for certificate issuance for a given FQDN. The CA may use the FQDN returned from a DNS CNAME lookup as the FQDN for the purposes of domain validation. If the FQDN contains a wildcard character, then the CA MUST remove all wildcard labels from the left most portion of requested FQDN. The CA may prune zero or more labels from left to right until encountering a Base Domain Name and may use any one of the intermediate values for the purpose of domain validation.

Authorized Port: One of the following ports: 80 (http), 443 (http), 115 (sftp), 25 (smtp), 22 (ssh).

Base Domain Name: The portion of an applied-for FQDN that is the first domain name node left of a registry-controlled or public suffix plus the registry-controlled or public suffix (e.g. "example.co.uk" or "example.com"). For FQDNs where the right-most domain name node is a gTLD having ICANN Specification 13 in its registry agreement, the gTLD itself may be used as the Base Domain Name.

CAA: From RFC 6844 (http:tools.ietf.org/html/rfc6844): "The Certification Authority Authorization (CAA) DNS Resource Record allows a DNS domain name holder to specify the Certification Authorities (CAs) authorized to issue certificates for that domain. Publication of CAA Resource Records allows a public Certification Authority to implement additional controls to reduce the risk of unintended certificate mis-issue."

Certificate: An electronic document that uses a digital signature to bind a public key and an identity.

Certificate Data: Certificate requests and data related thereto (whether obtained from the Applicant or otherwise) in the CA's possession or control or to which the CA has access.

Certificate Management Process: Processes, practices, and procedures associated with the use of keys, software, and hardware, by which the CA verifies Certificate Data, issues Certificates, maintains a Repository, and revokes Certificates.

Certificate Policy: A set of rules that indicates the applicability of a named Certificate to a particular community and/or PKI implementation with common security requirements.

Certificate Problem Report: Complaint of suspected Key Compromise, Certificate misuse, or other types of fraud, compromise, misuse, or inappropriate conduct related to Certificates.

Certificate Revocation List: A regularly updated time-stamped list of revoked Certificates that is created and digitally signed by the CA that issued the Certificates.

Certification Authority: An organization that is responsible for the creation, issuance, revocation, and management of Certificates. The term applies equally to both Roots CAs and Subordinate CAs.

Certification Practice Statement: One of several documents forming the governance framework in which Certificates are created, issued, managed, and used.

Control: "Control" (and its correlative meanings, "controlled by" and "under common control with") means possession, directly or indirectly, of the power to: (1) direct the management, personnel, finances, or plans of such entity; (2) control the election of a majority of the directors ; or (3) vote that portion of voting shares required for "control" under the law of the entity's Jurisdiction of Incorporation or Registration but in no case less than 10%.

Country: Either a member of the United Nations OR a geographic region recognized as a Sovereign State by at least two UN member nations.

Cross Certificate: A certificate that is used to establish a trust relationship between two Root CAs.

CSPRNG: A random number generator intended for use in cryptographic system.

Delegated Third Party: A natural person or Legal Entity that is not the CA but is authorized by the CA to assist in the Certificate Management Process by performing or fulfilling one or more of the CA requirements found herein.

Domain Authorization Document: Documentation provided by, or a CA's documentation of a communication with, a Domain Name Registrar, the Domain Name Registrant, or the person or entity listed in WHOIS as the Domain Name Registrant (including any private, anonymous, or proxy registration service) attesting to the authority of an Applicant to request a Certificate for a specific Domain Namespace.

Domain Contact: The Domain Name Registrant, technical contact, or administrative contract (or the equivalent under a ccTLD) as listed in the WHOIS record of the Base Domain Name or in a DNS SOA record.

Object Identifier: A unique alphanumeric or numeric identifier registered under the International Organization for Standardization's applicable standard for a specific object or object class.

OCSP Responder: An online server operated under the authority of the CA and connected to its Repository for processing Certificate status requests. See also, Online Certificate Status Protocol.

Online Certificate Status Protocol: An online Certificate-checking protocol that enables relying-party application software to determine the status of an identified Certificate. See also OCSP Responder.

Parent Company: A company that Controls a Subsidiary Company.

Private Key: The key of a Key Pair that is kept secret by the holder of the Key Pair, and that is used to create Digital Signatures and/or to decrypt electronic records or files that were encrypted with the corresponding Public Key.

Public Key: The key of a Key Pair that may be publicly disclosed by the holder of the corresponding Private Key and that is used by a Relying Party to verify Digital Signatures created with the holder's corresponding Private Key and/or to encrypt messages so that they can be decrypted only with the holder's corresponding Private Key.

Public Key Infrastructure: A set of hardware, software, people, procedures, rules, policies, and obligations used to facilitate the trustworthy creation, issuance, management, and use of Certificates and keys based on Public Key Cryptography.

Publicly-Trusted Certificate: A Certificate that is trusted by virtue of the fact that its corresponding Root Certificate is distributed as a trust anchor in widely-available application software.

Qualified Auditor: A natural person or Legal Entity that meets the requirements of Section 8.3 (Auditor Qualifications).

Random Value: A value specified by a CA to the Applicant that exhibits at least 112 bits of entropy.

Registered Domain Name: A Domain Name that has been registered with a Domain Name Registrar.

Registration Authority (RA): Any Legal Entity that is responsible for identification and authentication of subjects of Certificates, but is not a CA, and hence does not sign or issue Certificates. An RA may assist in the certificate application process or revocation process or both. When "RA" is used as an adjective to describe a role or function, it does not necessarily imply a separate body, but can be part of the CA.

Reliable Data Source: An identification document or source of data used to verify Subject Identity Information that is generally recognized among commercial enterprises and governments as reliable, and which was created by a third party for a purpose other than the Applicant obtaining a Certificate.

Reliable Method of Communication: A method of communication, such as a postal/courier delivery address, telephone number, or email address, that was verified using a source other than the Applicant Representative.

Relying Party: Any natural person or Legal Entity that relies on a Valid Certificate. An Application Software Supplier is not considered a Relying Party when software distributed by such Supplier merely displays information relating to a Certificate.

Repository: An online database containing publicly-disclosed PKI governance documents (such as Certificate Policies and Certification Practice Statements) and Certificate status information, either in the form of a CRL or an OCSP response.

Request Token: A value derived in a method specified by the CA which binds this demonstration of control to the certificate request.

The Request Token SHALL incorporate the key used in the certificate request.

A Request Token MAY include a timestamp to indicate when it was created.

A Request Token MAY include other information to ensure its uniqueness.

A Request Token that includes a timestamp SHALL remain valid for no more than 30 days from the time of creation.

A Request Token that includes a timestamp SHALL be treated as invalid if its timestamp is in the future.

A Request Token that does not include a timestamp is valid for a single use and the CA SHALL NOT re-use it for a subsequent validation.

The binding SHALL use a digital signature algorithm or a cryptographic hash algorithm at least as strong as that to be used in signing the certificate request.

Required Website Content: Either a Random Value or a Request Token, together with additional information that uniquely identifies the Subscriber, as specified by the CA.

Requirements: The Baseline Requirements found in this document.

Reserved IP Address: An IPv4 or IPv6 address that the IANA has marked as reserved:
http://www.iana.org/assignments/ipv4-address-space/ipv4-address-space.xml
http://www.iana.org/assignments/ipv6-address-space/ipv6-address-space.xml

Root CA: The top level Certification Authority whose Root Certificate is distributed by Application Software Suppliers and that issues Subordinate CA Certificates.

Root Certificate: The self-signed Certificate issued by the Root CA to identify itself and to facilitate verification of Certificates issued to its Subordinate CAs.

Sovereign State: A state or country that administers its own government, and is not dependent upon, or subject to, another power.

Subject: The natural person, device, system, unit, or Legal Entity identified in a Certificate as the Subject. The Subject is either the Subscriber or a device under the control and operation of the Subscriber.

Subject Identity Information: Information that identifies the Certificate Subject. Subject Identity Information does not include a domain name listed in the subjectAltName extension or the Subject commonName field.

Subordinate CA: A Certification Authority whose Certificate is signed by the Root CA, or another Subordinate CA.

Subscriber: A natural person or Legal Entity to whom a Certificate is issued and who is legally bound by a Subscriber Agreement or Terms of Use.

Subscriber Agreement: An agreement between the CA and the Applicant/Subscriber that specifies the rights and responsibilities of the parties.

Subsidiary Company: A company that is controlled by a Parent Company.

Technically Constrained Subordinate CA Certificate: A Subordinate CA certificate which uses a combination of Extended Key Usage settings and Name Constraint settings to limit the scope within which the Subordinate CA Certificate may issue Subscriber or additional Subordinate CA Certificates.

Terms of Use: Provisions regarding the safekeeping and acceptable uses of a Certificate issued in accordance with these Requirements when the Applicant/Subscriber is an Affiliate of the CA or is the CA.

Test Certificate: A Certificate with a maximum validity period of 30 days and which: (i) includes a critical extension with the specified Test Certificate CABF OID, or (ii) is issued under a CA where there are no certificate paths/chains to a root certificate subject to these Requirements.

Trustworthy System: Computer hardware, software, and procedures that are: reasonably secure from intrusion and misuse; provide a reasonable level of availability, reliability, and correct operation; are reasonably suited to performing their intended functions; and enforce the applicable security policy.

Unregistered Domain Name: A Domain Name that is not a Registered Domain Name.

Valid Certificate: A Certificate that passes the validation procedure specified in RFC 5280.

Validation Specialists: Someone who performs the information verification duties specified by these Requirements.

Validity Period: The period of time measured from the date when the Certificate is issued until the Expiry Date.

Wildcard Certificate: A Certificate containing an asterisk (*) in the left-most position of any of the Subject Fully-Qualified Domain Names contained in the Certificate.

1.6.2. Acronyms

AICPA	American Institute of Certified Public Accountants
CA	Certification Authority
CAA	Certification Authority Authorization
ccTLD	Country Code Top-Level Domain
CICA	Canadian Institute of Chartered Accountants
CP	Certificate Policy
CPS	Certification Practice Statement
CRL	Certificate Revocation List
DBA	Doing Business As
DNS	Domain Name System
FIPS	(US Government) Federal Information Processing Standard
FQDN	Fully Qualified Domain Name
IM	Instant Messaging
IANA	Internet Assigned Numbers Authority
ICANN	Internet Corporation for Assigned Names and Numbers
ISO	International Organization for Standardization
NIST	(US Government) National Institute of Standards and Technology
OCSP	Online Certificate Status Protocol
OID	Object Identifier
PKI	Public Key Infrastructure
RA	Registration Authority
S/MIME	Secure MIME (Multipurpose Internet Mail Extensions)
SSL	Secure Sockets Layer

1. Documentation provided by, or communication with, a government agency in the jurisdiction of the Applicant's legal creation, existence, or recognition;
2. A Reliable Data Source;
3. Communication with a government agency responsible for the management of such DBAs or tradenames;
4. An Attestation Letter accompanied by documentary support; or
5. A utility bill, bank statement, credit card statement, government-issued tax document, or other form of identification that the CA determines to be reliable.

3.2.2.3. Verification of Country

If the subject:countryName field is present, then the CA SHALL verify the country associated with the Subject using one of the following: (a) the IP Address range assignment by country for either (i) the web site's IP address, as indicated by the DNS record for the web site or (ii) the Applicant's IP address; (b) the ccTLD of the requested Domain Name; (c) information provided by the Domain Name Registrar; or (d) a method identified in Section 3.2.2.1. The CA SHOULD implement a process to screen proxy servers in order to prevent reliance upon IP addresses assigned in countries other than where the Applicant is actually located.

3.2.2.4. Validation of Domain Authorization ~~by Domain Name Registrant~~ or Control

This section defines the permitted processes and procedures for validating the Applicant's ownership or control of the domain.

The CA SHALL confirm that, as of the date the Certificate issues, either the CA or a Delegated Third Party has validated each Fully-Qualified Domain Name (FQDN) listed in the Certificate using at least one of the methods listed below.

Completed confirmations of Applicant authority may be valid for the issuance of multiple certificates over time. In all cases, the confirmation must have been initiated within the time period specified in the relevant requirement (such as Section 3.3.1 of this document) prior to certificate issuance. For purposes of domain validation, the term Applicant includes the Applicant's Parent Company, Subsidiary Company, or Affiliate.

Note: FQDNs may be listed in Subscriber Certificates using dNSNames in the subjectAltName extension or in Subordinate CA Certificates via dNSNames in permittedSubtrees within the Name Constraints extension.

3.2.2.4.1 Validating the Applicant as a Domain Contact.

Confirming the Applicant's control over the FQDN by validating the Applicant is the Domain Contact directly with the Domain Name Registrar. This method may only be used if:

1. The CA authenticates the Applicant's identity under BR Section 3.2.2.1 and the authority of the Applicant Representative under BR Section 3.2.5, OR
2. The CA authenticates the Applicant's identity under EV Guidelines Section 11.2 and the agency of the Certificate Approver under EV Guidelines Section 11.8; OR
3. The CA is also the Domain Name Registrar, or an Affiliate of the Registrar, of the Base Domain Name.

3.2.2.4.2 Email, Fax, SMS, or Postal Mail to Domain Contact

Confirming the Applicant's control over the FQDN by sending a Random Value via email, fax, SMS, or postal mail and then receiving a confirming response utilizing the Random Value. The Random Value MUST be sent to an email address, fax/SMS number, or postal mail address identified as a Domain Contact.

Each email, fax, SMS, or postal mail MAY confirm control of multiple Authorization Domain Names.

The CA or Delegated Third Party MAY send the email, fax, SMS, or postal mail identified under this section to more than one recipient provided that every recipient is identified by the Domain Name Registrar as

representing the Domain Name Registrant for every FQDN being verified using the email, fax, SMS, or postal mail.

The Random Value SHALL be unique in each email, fax, SMS, or postal mail.

The CA or Delegated Third Party MAY resend the email, fax, SMS, or postal mail in its entirety, including re-use of the Random Value, provided that the communication's entire contents and recipient(s) remain unchanged.

The Random Value SHALL remain valid for use in a confirming response for no more than 30 days from its creation. The CPS MAY specify a shorter validity period for Random Values, in which case the CA MUST follow its CPS.

3.2.2.4.3 Phone Contact with Domain Contact

Confirming the Applicant's control over the requested FQDN by calling the Domain Name Registrant's phone number and obtaining a response confirming the Applicant's request for validation of the FQDN. The CA or Delegated Third Party MUST place the call to a phone number identified by the Domain Name Registrar as the Domain Contact.

Each phone call SHALL be made to a single number and MAY confirm control of multiple FQDNs, provided that the phone number is identified by the Domain Registrar as a valid contact method for every Base Domain Name being verified using the phone call.

3.2.2.4.4 Constructed Email to Domain Contact

Confirming the Applicant's control over the requested FQDN by (i) sending an email to one or more addresses created by using 'admin', 'administrator', 'webmaster', 'hostmaster', or 'postmaster' as the local part, followed by the at-sign ("@"), followed by an Authorization Domain Name, (ii) including a Random Value in the email, and (iii) receiving a confirming response utilizing the Random Value.

Each email MAY confirm control of multiple FQDNs, provided the Authorization Domain Name used in the email is an Authorization Domain Name for each FQDN being confirmed

The Random Value SHALL be unique in each email.

The email MAY be re-sent in its entirety, including the re-use of the Random Value, provided that its entire contents and recipient SHALL remain unchanged.

The Random Value SHALL remain valid for use in a confirming response for no more than 30 days from its creation. The CPS MAY specify a shorter validity period for Random Values, in which case the CA MUST follow its CPS.

3.2.2.4.5 Domain Authorization Document

Confirming the Applicant's control over the requested FQDN by relying upon the attestation to the authority of the Applicant to request a Certificate contained in a Domain Authorization Document. The Domain Authorization Document MUST substantiate that the communication came from the Domain Contact. The CA MUST verify that the Domain Authorization Document was either (i) dated on or after the date of the domain validation request or (ii) that the WHOIS data has not materially changed since a previously provided Domain Authorization Document for the Domain Name Space.

3.2.2.4.6 Agreed-Upon Change to Website

Confirming the Applicant's control over the requested FQDN by confirming one of the following under the "/.well-known/pki-validation" directory, or another path registered with IANA for the purpose of Domain Validation, on the Authorization Domain Name that is accessible by the CA via HTTP/HTTPS over an Authorized Port:

1. The presence of Required Website Content contained in the content of a file or on a web page in the form of a meta tag. The entire Required Website Content MUST NOT appear in the request used to retrieve the file or web page, or

2. The presence of the Request Token or Request Value contained in the content of a file or on a webpage in the form of a meta tag where the Request Token or Random Value MUST NOT appear in the request.

If a Random Value is used, the CA or Delegated Third Party SHALL provide a Random Value unique to the certificate request and SHALL not use the Random Value after the longer of (i) 30 days or (ii) if the Applicant submitted the certificate request, the timeframe permitted for reuse of validated information relevant to the certificate (such as in Section 3.3.1 of these Guidelines or Section 11.14.3 of the EV Guidelines).

Note: Examples of Request Tokens include, but are not limited to: (i) a hash of the public key; (ii) a hash of the Subject Public Key Info [X.509]; and (iii) a hash of a PKCS#10 CSR. A Request Token may also be concatenated with a timestamp or other data. If a CA wanted to always use a hash of a PKCS#10 CSR as a Request Token and did not want to incorporate a timestamp and did want to allow certificate key re-use then the applicant might use the challenge password in the creation of a CSR with OpenSSL to ensure uniqueness even if the subject and key are identical between subsequent requests. This simplistic shell command produces a Request Token which has a timestamp and a hash of a CSR. E.g. echo date -u +%Y%m%d%H%M sha256sum <r2.csr | sed "s/[-]//g" The script outputs: 201602251811c9c863405fe7675a3988b97664ea6baf442019e4e52fa335f406f7c5f26cf14f The CA should define in its CPS (or in a document referenced from the CPS) the format of Request Tokens it accepts.

3.2.2.4.7 DNS Change

Confirming the Applicant's control over the requested FQDN by confirming the presence of a Random Value or Request Token in a DNS TXT or CAA record for an Authorization Domain Name or an Authorization Domain Name that is prefixed with a label that begins with an underscore character.

If a Random Value is used, the CA or Delegated Third Party SHALL provide a Random Value unique to the certificate request and SHALL not use the Random Value after (i) 30 days or (ii) if the Applicant submitted the certificate request, the timeframe permitted for reuse of validated information relevant to the certificate (such as in Section 3.3.1 of these Guidelines or Section 11.14.3 of the EV Guidelines).

3.2.2.4.8 IP Address

Confirming the Applicant's control over the requested FQDN by confirming that the Applicant controls an IP address returned from a DNS lookup for A or AAAA records for the FQDN in accordance with section 3.2.2.5.

3.2.2.4.9 Test Certificate

Confirming the Applicant's control over the requested FQDN by confirming the presence of a non-expired Test Certificate issued by the CA on the Authorization Domain Name and which is accessible by the CA via TLS over an Authorized Port for the purpose of issuing a Certificate with the same Public Key as in the Test Certificate.

3.2.2.4.10. TLS Using a Random Number

Confirming the Applicant's control over the requested FQDN by confirming the presence of a Random Value within a Certificate on the Authorization Domain Name which is accessible by the CA via TLS over an Authorized Port.

~~For each Fully-Qualified Domain Name listed in a Certificate, the CA SHALL confirm that, as of the date the Certificate was issued, the Applicant (or the Applicant's Parent Company, Subsidiary Company, or Affiliate, collectively referred to as "Applicant" for the purposes of this section) either is the Domain Name Registrant or has control over the FQDN by:~~

~~1. Confirming the Applicant as the Domain Name Registrant directly with the Domain Name Registrar;~~

~~2. Communicating directly with the Domain Name Registrant using an address, email, or telephone number provided by the Domain Name Registrar;~~

~~3. Communicating directly with the Domain Name Registrant using the contact information listed in the WHOIS record's "registrant", "technical", or "administrative" field;~~

~~4. Communicating with the Domain's administrator using an email address created by pre-pending 'admin', 'administrator', 'webmaster', 'hostmaster', or 'postmaster' in the local part, followed by the at-sign ("@"), followed by the Domain Name, which may be formed by pruning zero or more components from the requested FQDN;~~

~~5. Relying upon a Domain Authorization Document;~~

~~6. Having the Applicant demonstrate practical control over the FQDN by making an agreed-upon change to information found on an online Web page identified by a uniform resource identifier containing the FQDN; or~~

~~7. Using any other method of confirmation, provided that the CA maintains documented evidence that the method of confirmation establishes that the Applicant is the Domain Name Registrant or has control over the FQDN to at least the same level of assurance as those methods previously described.~~

~~Note: For purposes of determining the appropriate domain name level or Domain Namespace, the registerable Domain Name is the second-level domain for generic top-level domains (gTLD) such as .com, .net, or .org, or, if the Fully Qualified Domain Name contains a 2-letter Country Code Top-Level Domain (ccTLD), then the domain level is whatever is allowed for registration according to the rules of that ccTLD.~~
~~If the CA relies upon a Domain Authorization Document to confirm the Applicant's control over a FQDN, then the Domain Authorization Document MUST substantiate that the communication came from either the Domain Name Registrant (including any private, anonymous, or proxy registration service) or the Domain Name Registrar listed in the WHOIS. The CA MUST verify that the Domain Authorization Document was either (i) dated on or after the certificate request date or (ii) used by the CA to verify a previously issued certificate and that the Domain Name's WHOIS record has not been modified since the previous certificate's issuance.~~

~~Note: FQDNs may be listed in Subscriber Certificates using dNSNames in the subjectAltName extension or in Subordinate CA Certificates via dNSNames in permittedSubtrees within the Name Constraints extension.~~

3.2.2.5. Authentication for an IP Address

For each IP Address listed in a Certificate, the CA SHALL confirm that, as of the date the Certificate was issued, the Applicant has control over the IP Address by:

1. Having the Applicant demonstrate practical control over the IP Address by making an agreed-upon change to information found on an online Web page identified by a uniform resource identifier containing the IP Address;
2. Obtaining documentation of IP address assignment from the Internet Assigned Numbers Authority (IANA) or a Regional Internet Registry (RIPE, APNIC, ARIN, AfriNIC, LACNIC);
3. Performing a reverse-IP address lookup and then verifying control over the resulting Domain Name under Section 3.2.2.4; or
4. Using any other method of confirmation, provided that the CA maintains documented evidence that the method of confirmation establishes that the Applicant has control over the IP Address to at least the same level of assurance as the methods previously described.

Note: IPAddresses may be listed in Subscriber Certificates using IPAddress in the subjectAltName extension or in Subordinate CA Certificates via IPAddress in permittedSubtrees within the Name Constraints extension.

3.2.2.6. Wildcard Domain Validation

Before issuing a certificate with a wildcard character (*) in a CN or subjectAltName of type DNS-ID, the CA MUST establish and follow a documented procedure† that determines if the wildcard character occurs in the first label position to the left of a "registry-controlled" label or "public suffix" (e.g. "*.com", "*.co.uk", see RFC 6454 Section 8.2 for further explanation).