Telia Root
Certificate Policy
and
Certification Practice Statement

TeliaSonera Root CA v1

Sonera Class 2 CA

OID 1.3.6.1.4.1.271.2.3.1.1.2

Date: 29th June 2018

Version: 2.3

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Revision History

Version	Version date	Change	Author
1.0	2007-10-18	The first version which was used only in Sweden	Telia Policy Management team
2.0	2012-06-11	The first multinational version related to the new Telia CA hierarchy	Telia CA Policy Management team
2.01	2012-09-11	Fixed minor errors in references	Telia CA Policy Management team
2.1	2013-05-03	Clarified cross-signing in chapter 1.1.3, New or updated extensions may be reason for renewal, OCSP supported	Telia CA Policy Management team
2.2	2017-03-23	TeliaSonera -> Telia	Telia CA Policy Management team
2.3	2018-06-29	No changes, just date and version	Telia CA Security Board

1 INTRODUCTION

1.1 Overview

A Certification Practice Statement (CPS) is a Certification Authority's (CA) description of the practices it follows when issuing certificates. The purpose of this CPS is to describe the procedures that the TeliaSonera Root CA v1 and Sonera Class 2 CA uses when issuing certificates, and that all registration authorities, Subscribers and relying parties shall follow in connection with these certificates.

Certificate issued by these CAs may only be subordinate CA. The only exception is a certificate for infrastructure purposes (e.g. CRL signing or some other internal operational CA purpose). This CPS does not stipulate any restraints for issuing end-entity certificate under those subordinate CAs. Sonera Class2 has issued end-entity certificates before TELIA-ROOT-CPS-2 became valid and the old CA hierarchy was completely replaced by the new one. The change was finished 2013-01-29.

Separate Certification Practice Statements exists for subordinate CAs describing procedures and routines which apply when completing a certificate for individuals, organizations, functions and devices and for revoking and revocation checking of such certificates.

This CPS describes the procedures and routines which apply to CA certificate life cycle. This CPS will refer to separate Telia Production CPS, which describes the premises, procedures and routines which apply for the Production of Telia CA Services including CA key management life cycle.

This CPS generally conforms to the IETF PKIX Internet X.509 Public Key Infrastructure Certificate Policy and Certification Practice Statement Framework (also known as RFC 3647). This document is divided into nine sections:

- Section 1 - provides an overview of the policy and set of provisions, as well as the types of entities and the appropriate applications for certificates.
- Section 2 - contains any applicable provisions regarding identification of the entity or entities that operate repositories; responsibility of a PKI participant to publish information regarding its practices, certificates, and the current status; frequency of publication; and access control on published information.
- Section 3 - covers the identification and authentication requirements for certificate related activity.

- Section 4 - deals with certificate life-cycle management and operational requirements including application for a certificate, revocation, suspension, audit, archival and compromise.
- Section 5 - covers facility, management and operational controls (physical and procedural security requirements).
- Section 6 - provides the technical controls with regard to cryptographic key requirements.
- Section 7 - defines requirements for certificate, Certificate Revocation List (CRL) and Online Certificate Status Protocol (OCSP) formats. This includes information on profiles, versions, and extensions used.
- Section 8 - addresses topics covered and methodology used for assessments/audits; frequency of compliance audits or assessments; identity and/or qualifications of the personnel performing the audit or assessment; actions taken as a result of deficiencies found during the assessment; and who is entitled to see results of an assessment.
- Section 9 - covers general business and legal matters: the business issues of fees, liabilities, obligations, legal requirements, governing laws, processes, and confidentiality.

1.2 Document name and identification

This CPS is titled Telia Root CPS and the CPS name of this CPS is {TELIA-ROOT- CPS-2}.

This CPS is also a Certificate Policy for Telia root CAs. The routines and roles resulting from this CPS apply only in connection with subordinate CA certificates referring to the following Certificate policy object identifier: 1.3.6.1.4.1.271.2.3.1.1.2.

This CPS also refers to the Telia Production CPS with the name {TELIA- PRODUCTION-CPS-2}.

1.3 PKI participants

Telia Root CA will issue subordinate CA certificates to Telia and Customers of Telia that are hosting their CA at Telia.

A Customer that has agreed to and executed an Agreement with Telia, and meets the requirements of this and other relevant Certification Practice Statements and Certificate Policies can have a hosted CA at the Telia site.

All of the participating organizations shall undertake what's stated in this Certification Practice Statement and in the relevant intermediate CA Certification Practice Statements.

1.3.1 Certification authorities

The Certification Authority operating the root CA in compliance with this Certification Practice Statement is Telia. The name of the Certification Authority in the "Issuer" field of the subordinate CA certificates is "Telia Root CA v1".

Telia Root CA v1 is cross-signed by Sonera Class 2 CA. It is planned that after the transition period, the self-signed Telia Root CA v1 will be made the ultimate root CA by replacing the subordinate Telia Root CA v1 certificate signed by Sonera Class 2 CA. Both versions of Telia Root CA v1 certificates have the same keys and exist simultaneously. Clients can use either one when doing PKI path validation.

The Certification Authorities are responsible for managing the certificate life cycle of certificates signed by the CAs. This will include:

- creating and signing of certificates binding Subjects with their public key
- providing revocation service and promulgating certificate status through CRLs and/or OCSP responders

1.3.2 Registration authorities

This CA is only issuing subordinate CA's which may only be installed in the same CA system as this CA. This means that only specially assigned CA personnel may issue certificates under this CA.

1.3.3 Subscribers

The Subscriber in this CPS is either Telia issuing its own subordinate CAs or the Subscriber is a Customer that has made an agreement with Telia to host their CA at Telia.

The Subject of a certificate can only be a subordinate CA which has exclusive use of the private key corresponding to the public key in the certificate is intended.

The Subscriber shall ensure that the Subject fulfills the obligations defined in this CPS and the conditions of the certification services.

1.3.4 Relying parties

A Relying Party may be either a Subscriber of any Telia CA or any other organization, person, application or device that is relying on a certificate issued by a CA that is chained to the Telia Root CA.

1.3.5 Other participants

No stipulation.

1.4 Certificate usage

1.4.1 Appropriate certificate uses

Certificates under this CPS are issued to subordinate Certification Authorities to be used for the following applications:

- Validation of the signature of the CA in Subject certificates

- Validation of the signature in the CRLs issued by the CA

1.4.2 Prohibited certificate uses

Applications using certificates issued under this CPS shall take into account the key usage purpose stated in the “Key Usage” extension field of the certificate. Only Key Usage values “keyCertSign” and “cRLSign” as defined in RFC5280 can be used in certificates under this CPS,

1.5 Policy administration

1.5.1 Organization administering the document

Telia CA Policy Management Team is the responsible authority for reviewing and approving changes to the Telia Root CP and CPS. Written and signed comments on proposed changes shall be directed to the Telia contact as described in Section 1.5.2. Decisions with respect to the proposed changes are at the sole discretion of the Telia CA Policy Management Team.

Contact information:

TELIA AB
SE-106 63 Stockholm
Phone: +46 (0)8 504 550 00
Internet: https://repository.trust.teliasonera.com/

1.5.2 Contact person

Contact details in matters related to this CPS:

Telia CA Product Manager Email:
cainfo@sonera.com
Phone: +358 (0) 20401
Internet: https://repository.trust.teliasonera.com/

1.5.3 Person determining CPS suitability for the policy

Telia CA Policy Management Team is the administrative entity for determining this Certification Practice Statement (CPS) suitability to the applicable policies.

1.5.4 CPS approval procedures

Telia CA Policy Management Team will review any modifications, additions or deletions from this CPS and determine if modifications, additions or deletions are acceptable and do not jeopardize operations or the security of the production environment.

1.6 Definitions and acronyms

A list of definitions and acronyms can be found at the end of this document.

2 PUBLICATION AND REPOSITORY RESPONSIBILITIES

2.1 Repositories

2.1.1 CPS Repository

A full text version of this CPS is published at https://repository.trust.teliasonera.com/.

2.1.2 Revocation Information Repository

Certificate Revocation Lists (CRLs) are published in the Telia LDAP directory and on the Telia website:

Issuing CA	**CRL addresses**
Telia Root CA	*ldap://crl-1.trust.teliasonera.com/cn=teliasonera%20Root%20CA %20v1,o=teliasonera?certificaterevocationlist;binary* *http://crl-2.trust.teliasonera.com/teliasonerarootcav1.crl* *http://crl-3.trust.teliasonera.com/teliasonerarootcav1.crl*
Sonera Class 2 CA	*ldap://crl-1.trust.teliasonera.com/cn=Sonera%20Class2%20CA ,o=Sonera,c=FI?certificaterevocationlist;binary* http://crl- 2.trust.teliasonera.com/soneraclass2ca.crl

2.1.3 Certificate Repository

CA certificates are published in the Telia LDAP directory and on the Telia websitehttps://repository.trust.teliasonera.com/. The website also includes the CA certificate fingerprints that can be used to verify the authenticity and integrity of the certificate.

2.2 Publication of certification information

It is Telia's duty to make the following information available:

a) This CPS.

b) Certificate revocation lists of revoked certificates.

c) Issued CA certificates and cross certificates for cross-certified CAs.

Telia may publish and supply certificate information in accordance with applicable legislation. Each

published certificate revocation list (CRL) provides all processed revocation information at the time of publication for all revoked certificates of which the revocation list is intended to give notification.

Telia supplies CA certificates for all public CA keys provided these can be used for verifying valid certificates.

Subscribers will be notified that a CA may publish information submitted by them to publicly accessible directories in association with certificate information. The publication of this information will be within the limits of sections 9.3 and 9.4.

2.3 Time or frequency of publication

Updates to this CPS are published in accordance with the provisions specified in section 9.12
.

Revocation information publication provisions are specified in section 4.9.

Issued CA certificates are published in the Telia LDAP directory and on the Telia website promptly on issuing.

2.4 Access controls on repositories

This CPS, CRLs and CA certificates are publicly available.

3 IDENTIFICATION AND AUTHENTICATION

3.1 Naming

3.1.1 Types of names

3.1.1.1 Root CA

An X.501 Distinguished Name (DN) is used as an unambiguous name of the root CA in the ”Subject” field of the root CA certificate and in the “Issuer” field of the subordinate CA certificates. Distinguished Names of the root CA have the following attributes and values:

Attribute	**Description of value (Sonera Class2 CA)**	**Description of value (Telia Root CA)**
commonName (CN, OID 2.5.4.3.)	Sonera Class2 CA	TeliaSonera Root CA v1
OrganizationName, (O, OID 2.5.4.10)	Sonera	Telia
Country (C, OID 2.5.4.6)	FI	

3.1.1.2 Subordinate CAs

An X.501 Distinguished Name (DN) is used as an unambiguous name of the Subject in the”Subject” field of the certificate. The name always includes the following attributes:

Attribute	**Description of value**
commonName (CN, OID 2.5.4.3)	Name of the subordinate CA.
OrganizationName (O, OID 2.5.4.10)	The name of the CA organization. The name is either “Telia” or the legal name of Customer hosting CA at Telia.

Additionally, the “Subject” field may include following attributes depending on the usage purpose of the certificate:

Attribute	**Description of value**
Country (C, OID 2.5.4.6)	Qualifier for describing the country where the CA organization is incorporated.
OrganizationalUnitName (OU, OID 2.5.4.11)	Qualifier for describing additional information about the organization specified in the certificate.

3.1.2 Need for names to be meaningful

Names will be meaningful as stated in the section 3.1.1.

3.1.3 Anonymity or pseudonymity of Subscribers

No stipulation.

3.1.4 Rules for interpreting various name forms

No stipulation.

3.1.5 Uniqueness of names

The Subject name stated in a certificate will be unique for all certificates issued within the domain of the CA, and conform to X.500 standards for name uniqueness. Subject name uniqueness means that the CA will not issue certificates with identical names to different entities.

3.1.6 Recognition, authentication, and role of trademarks

The priority to entity names are given to registered trademark holders.
The use of a Domain Name is restricted to the authenticated legal owner of that Domain Name.

3.2 Initial identity validation

3.2.1 Method to prove possession of private key

All CA private keys are generated by Telia within the system and stored in a hardware security module.

3.2.2 Authentication of organization identity

Telia verifies the organization name of a new Customer by checking the existence of the company, its legal name, business identity code and other relevant organization information are confirmed from an official business register maintained by an applicable government agency or from certified true copy of the organization's incorporation papers.

3.2.3 Authentication of individual identity

Not applicable for CA certificates.

3.2.4 Non-verified Subscriber information

All information for CA certificates is verified.

3.2.5 Validation of authority

Telia verifies that the Customer application for a hosted CA has been authorized.

Physical and logical access controls are used to restrict access to CA management operations for the authorized CA personnel only. Multiple trusted CA personnel are required to gain access to create a new CA or CA certificate in the CA system.

3.2.6 Criteria for interoperation

No stipulation.

3.3 Identification and authentication for re-key requests

3.3.1 Identification and authentication for routine re-key

Not applicable.

3.3.2 Identification and authentication for re-key after revocation

Not applicable.

3.4 Identification and authentication for revocation request

The authorized CA personnel can request revocation of a CA certificate. Authorized Customer contact person can request revocation of that Customer's CA certificate.

Customer contact person requesting revocation is authenticated by digital signature, call-back to the Customer or by other means that the CA determines necessary to reliably authenticate the person requesting the revocation. The method and information that has been used for verification of the

identity of the person requesting revocation, and the revocation request reception time, will be recorded.

Two-factor authentication mechanisms are used to authenticate users to CA system. Multiple trusted persons of CA are required to gain access to revoke a CA certificate in the CA system.

4 CERTIFICATE LIFE-CYCLE OPERATIONAL REQUIREMENTS

4.1 Certificate Application

4.1.1 Who can submit a certificate application

A CA certificate application can be submitted by an authorized Telia CA employee or an authorized representative of the Customer that has made an agreement to host their CA at Telia.

4.1.2 Enrollment process and responsibilities

A Customer that has agreed to and executed an Agreement with Telia can have a hosted CA at the Telia site. In the Agreement, the Customer is bound to this CPS, the CPS of the subordinate CA being enrolled and other terms and conditions.

During the enrollment process a new CPS is prepared for the subordinate CA unless the new CA can use an existing CPS, in which case the existing CPS is reviewed and required changes are made.

The certificate application is included in the CA hosting agreement In all cases the final application is made and signed by an authorized Telia CA employee. An internal Telia CA Installation Form document is used for the final application.

Multiple trusted persons of CA are required to enroll a new CA certificate based on the data in the final application. Actual enrollment process is documented in Telia CA Operational Documentation.

4.2 Certificate application processing

4.2.1 Performing identification and authentication functions

Telia performs identification and authentication of Subject and Subscriber information in accordance with the section 3.2. Identification and authentication of final application supplier is based on digital signatures.

4.2.2 Approval or rejection of certificate applications

Telia CA Security Board approves or rejects CA applications.

4.2.3 Time to process certificate applications

No stipulation.

4.3 Certificate issuance

4.3.1 CA actions during certificate issuance

If the certificate application is approved, the CA generates the subordinate CA key pair and issues the certificate. Two trusted Certification Authority Administrators together are required to execute the CA key generation and certificate issuance in the CA system.

The certificate is created by the CA according to the information contained in the final certificate application.

4.3.2 Notification to Subscriber by the CA of issuance of certificate

The Subscriber is informed of the CA certificate issuance and the certificate is delivered to the Subscriber.

4.4 Certificate acceptance

4.4.1 Conduct constituting certificate acceptance

The Subscriber is considered to have accepted the certificate when the Subscriber has started to use the private key associated with it to issue end-entity certificates.

4.4.2 Publication of the certificate by the CA

CA certificates are published in the CA repository in accordance with the section 2.1.3.

4.4.3 Notification of certificate issuance by the CA to other entities

No stipulation.

4.5 Key pair and certificate usage

4.5.1 Subscriber private key and certificate usage

The Subscriber shall only use certificates and their associated key pairs for the purposes identified in this CPS and in applicable agreements with Telia. Issued certificates contain information which defines suitable areas of application for the certificate and its associated keys. Area of application labelling takes place in accordance with X.509 and chapter 7 of this CPS. For more information regarding appropriate CA key usage see sections 1.4.1 and 6.1.7.

4.5.2 Relying party public key and certificate usage

Prior to accepting a CA certificate, a relying party is responsible to:

a) Verify that the certificate is appropriate for the intended use;

b) Check the validity of the certificate, i.e. verify the validity dates and the validity of the certificate and issuance signatures; and

c) Verify from a valid Certificate Revocation List (CRL) or other certificate status service provided by the CA that the certificate has not been revoked. If certificate status cannot be verified due to system failure or similar, the certificates shall not be accepted.

4.6 Certificate renewal

Certificate renewal is the re-issuance of a certificate with a new validity date using the same public key corresponding to the same private key. Subordinate CA certificates may be renewed as long as the validity time of the subordinate CA certificate does not exceed the expiration date of the root CA.

4.6.1 Circumstance for certificate renewal

When the validity time of a certificate is about to end, the certificate can be renewed. The other reason to resign a subordinate CA certificate is to create new or updated extensions.

4.6.2 Who may request renewal

Renewal shall be requested by the same Customer as the initial certificate application as described in section 4.1.1.

4.6.3 Processing certificate renewal requests

Certificate renewal requests are processed like the initial certificate requests as described in section 4.2.

4.6.4 Notification of new certificate issuance to Subscriber

Subscriber is notified in the same way as when the certificate is issued first time as described in section 4.3.2

4.6.5 Conduct constituting acceptance of a renewal certificate

Conduct constituting acceptance of a renewal certificate is described in section 4.4.1.

4.6.6 Publication of the renewal certificate by the CA

Renewed certificates are published like initial certificates as described in section 4.4.2.

4.6.7 Notification of certificate issuance by the CA to other entities

No stipulation.

4.7 Certificate re-key

Certificate re-key is the re-issuance of a certificate using new public and private keys.

CA certificate re-key requests are processed as described in Telia Production CPS section 5.6.

4.8 Certificate modification

Certificate modification is the re-issuance of the certificate due to changes in the certificate information other than the validity time (certificate renewal) or public key (certificate re-key). Certificate subject modification is not supported for CA certificates. Certificate extension modification is possible within certificate renewal process which is covered in section 4.6.1.

4.9 Certificate revocation and suspension

4.9.1 Circumstances for revocation

A certificate shall be revoked under the following conditions:

1. The Customer asks for revocation of its CA certificate (for any given reason).
2. Upon suspected or known compromise of the private key;
3. Upon suspected or known compromise of the media holding the private key;
4. When there is an significant error in the certificate or the certificate information; or
5. When the certificate is no longer needed or it is redundant (for example, a duplicate certificate has been issued).

Telia in its discretion may revoke a certificate under any circumstances, for example when an entity fails to comply with obligations set out in the applicable CP or CPS, any applicable agreement or applicable law. Telia will revoke a certificate at any time if Telia suspects that conditions may lead to a compromise of private keys or certificates.

4.9.2 Who can request revocation

The revocation of a certificate can be requested by:

1. Personnel of Telia CA; or
2. An authorized representative of the Customer hosting their CA at Telia.

4.9.3 Procedure for revocation request

Telia CA identifies and authenticates the originator of a revocation request according to section 3.4. Telia CA Security Board approves revocation requests. The certificate is permanently revoked after the approval.

When making a revocation request as above, Telia's CA system checks that the digital signature on the revocation request is valid and that the person signing the revocation request is authorized to do so. If both these criteria are met, the certificate in question is revoked.

4.9.4 Revocation request grace period

When a reason for the revocation of a certificate appears, the Subscriber shall immediately inform the Telia CA.

4.9.5 Time within which CA must process the revocation request

Telia process revocation requests within reasonable time frame. There are no specific requirements for the processing time unless otherwise agreed with the Customer.

4.9.6 Revocation checking requirement for relying parties

Prior to using a certificate, it is the Relying Party's responsibility to check the status of all certificates in the certificate validation chain. A certificate cannot be reasonably relied on if the Relying Party does not diligently follow the certificate status checking procedures denoted below:

- A Relying Party shall ensure the authenticity and integrity of the CRLs or OCSP responses by checking the digital signature and the certification path related to it.
- The Relying Party shall also check the validity period of the CRL or OCSP response in order to make sure that the information is up-to-date.
- Certificates may be stored locally in the Relying Party's system, but the prevailing revocation status of each of those certificates shall be checked before use.
- If valid certificate status information cannot be obtained because of a system or service failure, not a single certificate must be trusted. The acceptance of a certificate in violation of this condition befalls at the Relying Party's own risk.

The Relying Party may acquire the checking of the CRLs as a service that shall follow the certificate status checking procedures denoted above.

4.9.7 CRL issuance frequency

The CRL Revocation Status Service is implemented by publishing Certificate Revocation Lists (CRL containing only certificates issued to CAs is also called Authority Revocation List or ARL), electronically signed by the CA, in a public directory. The rules below are followed:

- A new CRL is published in the directory at intervals of not more than one year.
- A new CRL is published within 24 hours after revoking a Subordinate CA Certificate
- The validity time of every CRL is one year.

There may be several valid CRLs available at the same time. The one of those, which has been published as the latest, contains the most real time information.

4.9.8 Maximum latency for CRL's

CRL's are published to the Telia LDAP directory and updated automatically. Normally latency will be a matter of seconds.

4.9.9 On-line revocation/status checking availability

Telia is providing on-line revocation status checking via the OCSP protocol. The OCSP service address is added to certificate extension as defined by RFC2560.

4.9.10 On-line revocation checking requirements

In general all OCSP requests will be signed.

All responses will be signed by a private key corresponding to a public key certified by the CA on which the OCSP request is made.

The OCSP service is updated through the use of CRLs that are published on regular basis. The actual time intervals for the updates of the CRLs are described in the section 4.9.7. Alternatively the OCSP service may use the original CA database information. In that case the OSCP response has always the latest status information. Effective 1 August 2013, OCSP responder will not respond with a "good" status for certificates that do not exist in the CA database.

4.9.11 Other forms of revocation advertisements available

No stipulation.

4.9.12 Special requirements regarding key compromise

In case of CA private key compromise the procedures defined in Telia Production CPS section 5.7.3 are followed.

4.9.13 Circumstances for suspension

Suspension of certificates is not supported for CA certificates.

4.9.14 Who can request suspension

Not applicable.

4.9.15 Procedure for suspension request

Not applicable.

4.9.16 Limits on suspension period

Not applicable.

4.10 Certificate status services

4.10.1 Operational characteristics

The CRLs are published in the Telia's LDAP directory and website as disclosed in the section 2.1.2.

4.10.2 Service availability

The certificate status services are available 24 hours per day, 7 days per week excluding scheduled maintenance or other planned breaks.

4.10.3 Optional features

Not applicable.

4.11 End of subscription

The end of a subscription as a result of no longer requiring the service, compromise or breach of contract result in the termination of the CA as described in section 5.8 of Telia Production CPS.

4.12 Key escrow and recovery

4.12.1 Key escrow and recovery policy and practices

CA private keys will not be escrowed.

4.12.2 Session key encapsulation and recovery policy and practices

No stipulation.

5 FACILITY, MANAGEMENT, AND OPERATIONAL CONTROLS

All stipulations regarding chapter 5 Facility Management, and Operational Control are specified in “Telia Production CPS”.

6 TECHNICAL SECURITY CONTROLS

All stipulations regarding chapter 6 Technical Security Controls are specified in “Telia Production CPS”.

7 CERTIFICATE, CRL, AND OCSP PROFILES

7.1 Certificate profile

The contents definition of a certificate, in other words the certificate profile, defines the fields in a certificate. The certificate profile of the certificates follows the version 3 profile defined in the ITU X.509 standard. The profile of the certificates also follows the document RFC 5280 “Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile”.

The basic fields used in certificates are listed in the table below:

Field name	**Field description and contents**
Version	This field states which of the certificate versions defined in the X.509 standard the certificate conforms to. The issued certificates conform to the version 3.
Serial number	The CA generates an individual serial number for every certificate. The number that has been given in this field is unique for every certificate created by the CA system. The software manages the uniqueness of the serial number automatically.
Signature algorithm	The signature algorithm is the set of mathematical rules according to which the CA software executes the signing of the certificate. Identifiers have been allocated for the algorithms that are generally used. The identifier of the algorithm used for the signing of the certificate is given in this field. The signature cannot be verified if the algorithm used is not known. The algorithm that is used for the signing of the certificates is sha1RSA or sha256RSA.
Issuer	This field states the name of the Issuer of the certificate. The Issuer name in the certificates of each CA has been described in section 1.3.1.
Validity	The validity of the certificate is that period of time during which the CA guarantees that it maintains status information of the certificate, in other words about the possible revocation of the certificate. This field states the date and time when the certificate comes into force, and the date and time after which the certificate is no more valid. The certificate can be trusted during its validity period if the certificate has not been published on the CRL.
Subject	This field identifies the CA name under whose possession the private key is, that corresponds to the public key contained in the certificate. The field includes the unambiguous name of the Subject. The contents of the field have been described in section 3.1.
Subject public key	This field gives the algorithm under which the public key of the Subject shall be used. The Subject’s public key itself is also given in this field. The algorithms and key lengths of the Subject keys are described in section 6.1.5 in Telia production CPS.

7.1.1 Version number(s)

All issued certificates are X.509 Version 3 certificates, in accordance with the PKIX Certificate and CRL Profile.

7.1.2 Certificate extensions

Certificate extensions will be supported in accordance with RFC 5280 “Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile”. In general, following extension may be used in a CA certificate:

Extension	Criticality	Extension description and contents
Authority key identifier	non-critical	The identifier of the issuing CA public key is given in this extension. The identifier can be used to identify the public key that corresponds to the private key used for the signing of the certificate. SHA-1 hash algorithm is used to calculate the identifier.
Subject key Identifier	non-critical	The identifier of the Subject public key that is contained in the certificate is given in this extension. The identifier can be used to pick up those certificates that contain a given public key. SHA-1 hash algorithm is used to calculate the identifier.
Certificate policies	non-critical	This extension states the policies according to which the certificate has been issued. The relevant policy is identified based on an individual identifier (object identifier, OID) assigned to the policy document or certain certificate type. The identifiers covered by this CPS have been given in section 1.2.
CRL distribution points	non-critical	This extension gives the location where the CRL is available. The exact addresses of the CRLs corresponding to the different certificate classes are given in section 2.1.2.
Key usage	critical	The key usage purposes of the public key contained in the certificate are given in this extension. Within Telia PKI the key usage purposes of the public key of the CA are: - Certificate signing (KeyCertSign) - CRL signing (CRLSign)
Basic constraints	critical	This extension expresses if the certificate is a CA certificate, i.e. the Subject is the CA. In CA certificates the CA field is set to “True”. “pathLenConstraint” field of the extension defines the maximum number of CA certificates that may follow this certificate in a certification path. Root CA certificates have a “pathLenConstraint” field set to a value of “none” i.e. there is no restrictions for length subordinate CA path length. Subordinate CAs that may only issue end-user certificates have a “pathLenConstraint” set to a value of “0”.
Authority information access	non-critical	This extension may contain two values: a) The url to CA-certificate b) OCSP service address as defined by RFC2560 Typically all subordinate CA certificates include both listed values.

7.1.3 Algorithm object identifiers

At least the following algorithms are supported for signing and verification:

sha1withRSAEncryption OBJECT IDENTIFIER ::== iso(1) member-body(2) us(840) rsadsi(113549) pkcs(1) pkcs-1(1) 5; {1.2.840.113549.1.1.5}.

sha256withRSAEncryption OBJECT IDENTIFIER ::== iso(1) member-body(2) us(840) rsadsi(113549) pkcs(1) pkcs-1(1) 11; {1.2.840.113549.1.1.11}

7.1.4 Name forms

Every DN will be in the form of an X.501 DirectoryString in accordance with section 3.1.1.

7.1.5 Name constraints

Subject and Issuer DNs comply with PKIX standards and are present in all certificates.

7.1.6 Certificate policy object identifier

The certificate policy object identifier will be present in issued certificates and will contain the OID of the policy according to which the certificate has been issued. The identifiers covered by this CPS have been given in section 1.2.

7.1.7 Usage of Policy Constraints extension

No stipulation.

7.1.8 Policy qualifiers syntax and semantics

The policy qualifier CPSuri may be used in the CA certificates. The value of the CPSuri points to Telia CA Services repository website where this CPS is published.

7.1.9 Processing semantics for the critical Certificate Policies extension

No stipulation.

7.2 CRL profile

The information contained in a Certificate Revocation List has been described below. The CRL is used to state which of the certificates, whose validity period has not yet expired have been revoked.

CRL basic fields are listed in the table below:

Field name	Field description and contents
Version	This field states which of the CRL versions defined in the X.509 standard the CRL conforms to. The CRLs conform to the version 2.
Signature algorithm	The CRLs are signed by using the same algorithm as is used for signing of the certificates. The algorithm used is sha1RSA or sha256RSA.
Issuer	This field states the name of the Issuer of the CRL. The CRL issuer name is always the same as the Issuer name (the CA's name) in the certificates listed on the CRL.
This update	Date and time of the CRL issuance.
Next update	Date and time by which the next CRL shall be issued. The next CRL may be issued at any time after the issuing of the previous CRL, however, it shall be issued before the time stated in the "Next update" field. The time difference between "This update" and "Next update" is defined in section 4.9.7.
Revoked certificates	This field states the serial numbers of revoked certificates, and for each revoked certificate the date and time of revocation and the reason for revocation.

In general, following CRL extension may be used:

Extension	Extension description and contents
Authority key identifier	The identifier of the public key of the CRL Issuer is given in this field. The identifier can be used to identify the public key that corresponds to the private key used for the signing of the CRL. Within Telia PKI the SHA-1 hash

	algorithm is used to calculate the identifier.
CRL number	The CRL number is a number that indicates the position of the CRL in the sequence of issued CRLs. The numbering starts with 1, and it increases monotonically by one for each issued CRL. Based on the CRL number the user is able to determine if a certain CRL replaces another CRL.

7.2.1 Version number(s)

All issued CRL's are X.509 version 2 CRL's in accordance with the RFC 5280 "Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile.

7.2.2 CRL and CRL entry extensions

CRL extensions will be supported in accordance with RFC 5280 "Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile.

In general, the following entry extensions may be included in a CRL:

Extension	**Extension description and contents**
Reason Code of the CRL Entry	The reason for revocation can be one of the following: unspecified, KeyCompromise, CACompromise, AffiliationChanged, Superseded, CessationOfOperation.
Invalidy date	The invalidity date provides the date, on which it is known or suspected that the private key was compromised or that the certificate otherwise became invalid. This date may be earlier than the revocation date in the CRL entry, which is the date at which the CA processed the revocation.

7.3 OCSP profile

7.3.1 Version number(s)

Telia OCSP responders conform to version 1 of RFC 2560

7.3.2 OCSP extensions

No stipulation.

8 COMPLIANCE AUDIT AND OTHER ASSESSMENTS

8.1 Frequency or circumstances of assessment

An annual Compliance Audit will be performed by an independent, qualified third party.

8.2 Identity/qualifications of assessor

The Compliance Auditor must demonstrate competence in the field of compliance audits, and must be thoroughly familiar with the requirements which a CA service imposes on the issuance and management of certificates.

8.3 Assessor's relationship to assessed entity

The Compliance Auditor should not have any financial, legal or organizational relationship with the audited party.

8.4 Topics covered by assessment

The purpose of the Compliance Audit is to verify that Telia and all engaged subcontractors are complying with the requirements of this CPS and Telia Production CPS. The Compliance Audit will cover all requirements that define the operation of a CA under these CPSes including:

a. The CA production integrity (key and certificate life cycle management); and
b. CA environmental controls.

8.5 Actions taken as a result of deficiency

Depending on the severity of the deficiency, the following actions may be taken:

a) The Compliance Auditor may note the deficiency as part of the report;
b) The Compliance Auditor may meet with Telia and determine if the deficiency can be remedied and an action plan should be developed and steps taken to remedy the deficiency. Such steps could be to change applied procedures and/or updating the CPS;
c) The Compliance Auditor may report the deficiency and if the Telia CA Service deems the deficiency to have risk to the operation of the Telia or Customers CAs, the Telia CA Service operator may revoke the CA's certificate.

Should the CPS be updated in such a way that the new CPS is deemed to involve an amended degree of security; a new CPS with a new identity shall be drawn up (see section 1.2).

8.6 Communication of results

The Compliance Auditor shall provide the Telia CA Service management with a copy of the results of the Compliance Audit. The results will not be made public unless required by law.

9 OTHER BUSINESS AND LEGAL MATTERS

9.1 Fees

Fees are defined in applicable Customer agreement.

9.1.1 Certificate issuance or renewal fees

See section 9.1.

9.1.2 Certificate access fees

See section 9.1.

9.1.3 Revocation or status information access fees

See section 9.1.

9.1.4 Fees for other services

See section 9.1.

9.1.5 Refund policy

See section 9.1.

9.2 Financial responsibility

All stipulations regarding the section 9.2 Financial responsibility are specified in Telia Production CPS.

9.3 Confidentiality of business information

All stipulations regarding the section 9.3 Confidentiality of business information are specified in Telia Production CPS.

9.4 Privacy of personal information

All stipulations regarding the section 9.4 Privacy of personal information are specified in Telia Production CPS.

9.5 Intellectual property rights

No part of this CPS (other than in accordance with the exceptions detailed below) may be reproduced, published in a database system or transmitted in any form (electronic, mechanical, photocopied, recorded or similar) without written permission from Telia.

However, permission generally applies for reproducing and disseminating this CPS in its entirety provided that this is at no charge and that no information in the document is added to, removed or changed.

Applications to reproduce and disseminate parts of this document in any other way may be made to Telia in accordance with section 1.5.2.

9.6 Representations and warranties

All stipulations regarding the section 9.6 Representations and warranties are specified in Telia Production CPS.

9.7 Disclaimers of warranties

All stipulations regarding the section 9.7 Disclaimers of warranties are specified in Telia Production CPS.

9.8 Limitations of liability

All stipulations regarding the section 9.8 Limitations of liability are specified in Telia Production CPS.

9.9 Indemnities

All stipulations regarding the section 9.9 Indemnities are specified in Telia Production CPS.

9.10 Term and termination

9.10.1 Term

This CPS remains in force until notice of the opposite is communicated by Telia on its web site in the Telia CA Service Repository (https://repository.trust.teliasonera.com).

9.10.2 Termination

Termination of this document will be upon publication of a newer version or replacement document, or upon termination of CA operations.

9.10.3 Effect of termination and survival

The conditions and effect resulting from termination of this document will be communicated, on Telia's web site in the Telia CA Service Repository (https://repository.trust.teliasonera.com), upon termination outlining the provisions that may survive termination of the document and remain in force.

9.11 Individual notices and communications with participants

Telia will define in any applicable agreement the appropriate provisions governing notices.

9.12 Amendments

Telia CA Policy Management Team is the responsible authority for reviewing and approving changes to this CPS. Written and signed comments on proposed changes shall be directed to the Telia CA Service contact as described in Section 1.5. Decisions with respect to the proposed changes are at the sole discretion of the Telia CA Policy Management Team.

9.12.1 Procedure for amendment

The only changes which can be carried out to this CPS without notification are linguistic amendments and rearrangements which do not affect the security level of the described procedures and regulations.

Changes which shall take place with notification can be made to this CPS 15 days after notification.

The Telia CA Policy Management Team will post the notification at the CPS publishing point at (https://repository.trust.teliasonera.com). Changes affecting the terms of an agreement shall be notified in writing to the address given in the contact information of the signatory of the agreement.

Telia CA Policy Management Team decides which measures are taken in relation to the comments received. If comments received necessitate changes to the original change proposal which were not covered by the original notification, these changes may come into force no earlier than 15 days after publication of a new modified notification.

9.12.2 Notification mechanism and period

See 9.12.1.

9.12.3 Circumstances under which OID must be changed

If Telia CA Policy Management Team determines that a new Object Identifier (OID) is required, Telia CA Policy Management Team will assign a new OID and required amendments will be made.

9.13 Dispute resolution provisions

All stipulations regarding the section 9.13 “Dispute resolution provisions” are specified in Telia Production CPS.

9.14 Governing law

All stipulations regarding the section 9.14 “Governing law” are specified in Telia Production CPS.

9.15 Compliance with applicable law

All stipulations regarding the section 9.15 “Compliance with applicable law” are specified in Telia Production CPS.

9.16 Miscellaneous provisions

All stipulations regarding the section 9.16 “Miscellaneous provisions” are specified in Telia Production CPS.

9.17 Other provisions

All stipulations regarding the section 9.17 “Other provisions” are specified in Telia Production CPS.

ACRONYMS

CA	Certification Authority
CP	Certificate Policy
CPS	Certification Practice Statement
CRL	Certificate Revocation List
DER	Distinguished Encoding Rules
DN	Distinguished Name
DSA	Digital Signature Algorithm
EAL	Evaluation Assurance Level
EID	Electronic Identification
FIPS	Federal Information Processing Standard
HSM	Hardware Security Module
IETF	Internet Engineering Task Force
ISO	International Organization for Standardization
LDAP	Lightweight Directory Access Protocol
MD5	Message Digest 5
OCSP	On-line Certificate Status Protocol
OID	Object Identifier
PIN	Personal Identification Number
PKCS	Public Key Cryptography Standards
PKI	Public Key Infrastructure
PKIX	Public Key Infrastructure X.509 (IETF Working Group)
RA	Registration Authority
RFC	Request For Comments
RSA	Rivest-Shamir-Adleman asymmetric encryption algorithm
SEIS	Secure Electronic Information in Society
SHA –1	Secure Hash Algorithm
S/MIME	Secure Multipurpose Internet Mail Extension
SSL	Secure Sockets Layer
TTP	Trusted Third Party
UPS	Uninterruptible Power Supply
URI	Uniform Resource Identifier
URL	Uniform Resource Locator

DEFINITIONS

Access control:

The granting or denial of use or entry.

Activation Data:

Activation data, in the context of certificate enrollment, consists of a one-time secret communicated to the enrolling user (Subscriber) out of band. This shared secret permits the user to complete of the enrollment process.

Administrator:

A Trusted Person within the organization of a Processing Center, Service Center, Managed PKI Customer, or Gateway Customer that performs validation and other CA or RA functions.

Administrator Certificate:

A Certificate issued to an Administrator that may only be used to perform CA or RA functions.

Agent:

A person, contractor, service provider, etc. that is providing a service to an organization under contract and are Subject to the same corporate policies as if they were an employee of the organization.

Application Server:

An application service that is provided to an organizational or one of its partners and may own a certificate issued under the organizational PKI. Examples are Web SSL servers, VPN servers (IPSec), object signer services, Domain Controllers, etc.

Authentication:

Checking the identity provided, e.g. when logging in, in the event of communication between two systems or when exchanging messages between users. General: strengthening of authenticity.

Authorization:

The granting of permissions of use.

Authorised representative:

An employee of the commissioner who has the authority to order and revoke certificates at the CA.

Asymmetric encryption algorithm:

An encryption technique which uses two related transformation algorithms: a public transformation, with the use of a public key, and a private transformation with the use of a private key. The two transformations are such that if the public transformation is known, it is mathematically impossible to derive the private transformation from this.

Base certificate:

See primary certificate.

Business process:

A set of one or more linked procedures or activities which collectively realize a business objective or policy goal, normally within the context of an organizational structure defining functional roles and relationships.

CA certificate:

Certificate which certifies that a particular public key is the public key for a specific CA.

CA key:

Key pair where the private key is used by the CA in order to sign certificates and where the public key is used to verify the same certificate.

Certificate:

The public key of a user, together with related information, digitally signed with the private key of the Certification Authority that issued it. The certificate format is in accordance with ITU-T Recommendation X.509.

Certificate extensions:

Sections of certificate content defined by standard X.509 version 3.

Certificate level:

Certificates exist at two levels: primary certificates and secondary certificates.

Certification Authority (CA):

An authority trusted by one or more users to manage X.509 certificates and CRLs.

Certification Chain:

An ordered list of Certificates containing an end-user Subscriber Certificate and CA Certificates, which terminates in a root Certificate.

Certificate Policy:

Named set of rules that indicates the applicability of a certificate to a particular community and/or class of applications with common security requirements. It is the principal statement of certificate policy governing the organizational PKI. The CP is a high-level document that describes the requirements, terms and conditions, and policy for issuing, utilizing and managing certificates issued by a CA.

Certification Practice Statement (CPS):

A statement of the practices, which a Certification Authority employs in issuing certificates. It is a comprehensive description of such details as the precise implementation of service offerings and detailed procedures of certificate life-cycle management and will be more detailed than the certificate policies supported by the CA.

Certificate Revocation List (CRL):

A periodically issued list, digitally signed by a CA, of identified Certificates that have been revoked prior to their expiration dates. The list generally indicates the CRL issuer's name, the date of issue, the date of the next scheduled CRL issue, the revoked Certificates' serial numbers, and the specific times and reasons for revocation. CRL can be used to check the status of certificates.

Confidential:

A security classification used to describe information which if disclosed could result in personal loss or minor financial loss. Personal information and tactical information would be deemed confidential.

Confidentiality:

Information that has an identifiable value associated with it such that if disclosed might cause damage to an entity.

Cross Certification:

The process describing the establishing of trust between two or more CAs. Usually involves the exchange and signing of CA certificates and involves the verification of assurance levels.

Cryptographic Module:

A unit in which encryption keys are stored together with a processor which can carry out critical cryptographic algorithms. Examples of cryptographic modules include EID cards.

Decryption:

The process of changing encrypted (coded) information into decrypted (legible) information. See also encryption.

Distinguished Encoding Rules (DER):

The Distinguished Encoding Rules for ASN.1, abbreviated DER, gives exactly one way to represent any ASN.1 value as an octet string. DER is intended for applications in which a unique octet string encoding is needed, as is the case when a digital signature is computed on an ASN.1 value.

Digital Signature:

The result of the transformation of a message by means of a cryptographic system using keys such that a person who has the initial message can determine that the key that corresponds to the signer's key created the transformation and the message was not altered.

Directory Service:

Database service which in this document relates to a database structure in accordance with standard X.500 or LDAP.

Distinguished Name (DN):

Every entry in a X.500 or LDAP directory has a Distinguished Name, or DN. It is a unique entry identifier through out the complete directory. No two Entries can have the same DN within the same directory. A DN is used in certificates to uniquely identify a certificate-owner.

Dual Control:

A process utilizing two or more separate entities (usually persons), operating in concert, to protect sensitive functions or information, whereby no single entity is able to access or utilize the materials, e.g., cryptographic key.

EID card:

Electronic ID card in the form of an active card containing certificates and keys while the front of the card can be used as a visual ID document.

Electronic identity check:

Identity check which can be carried out without the persons whose identity is being checked being present in person.

Electronic signature:

General signature designation created using IT. Digital equivalent to traditional signature. See also digital signature.

Encryption:

The process of changing information which can be interpreted (clear text) into encrypted information. The aim of the encrypted information is that it shall not be interpretable by anyone who does not hold exactly the right key (in symmetrical encryption) or exactly the right private key (in asymmetrical encryption) required to correctly decrypting the information.

E-mail Certificates:

Certificates utilized for encrypting and verifying digital signatures. Normally two separate certificate: one for encryption, the other for signature verification.

Entity:

Any autonomous element or component within the Public Key Infrastructure that participate is one form or another, such managing certificates or utilizing certificates. An Entity can be a CA, RA, Subscriber, Relying Party, etc.

FIPS 140-2:

Federal Information Processing Standard 140-2(FIPS 140-2) is a standard that describes US Federal government requirements that IT products shall meet for Sensitive, but Unclassified (SBU) use. The standard was published by the National Institute of Standards and Technology (NIST), has been adopted by the Canadian government's Communication Security Establishment (CSE), and is likely to be adopted by the financial community through the American National Standards Institute (ANSI). The different levels (1 to 4) within the standard provide different levels of security and in the higher levels, have different documentation requirements.

FIPS 180-1:

Standard specifying a Secure Hash Algorithm, SHA-1, for computing a condensed representation of a message or a data files.

Integrity:

Ensuring consistency of an object or information. Within security systems, integrity is the principle of ensuring that a piece of data has not been modified maliciously or accidentally.

ISO 11568-5:

Basic principles and requirements for Key lifecycle for public key cryptosystems, provides instructions to financial institutions in the development, implementation and/or the operation of systems and procedures throughout Key's lifecycle

Key:

When used in the context of cryptography, it is a secret value, a sequence of characters that is used to encrypt and decrypt data. A key is a unique, generated electronic string of bits used for encrypting, decrypting, e-signing or validating digital signatures.

Key holder:

In this context, a person, an organisation, an organisational unit or a function which has exclusive control of the private key, the public equivalent of which is certified in a certificate. See also Subscriber.

Key Pair:

Often referred to as public/private key pair. One key is used for encrypting and the other key used for decrypting. Although related, the keys are sufficiently different that knowing one does not allow derivation or computation of the other. This means that one key can be made publicly available without reducing security, provided the other key remains private.

Log:

A sequential and unbroken list of events in a system or a process. A typical log contains log entries for individual events, each containing information on the event, who initiated it, when it occurred, what it resulted in, etc.

MD5:

A Message Digest Algorithm.

Non-repudiation:

Protection against the denial of the transaction or service or activity occurrence.

Non-repudiation services:

Service which aim to hold a key holder responsible for signed messages in such a way that they can be verified by a third party at a later point in time.

Object Identifier:

The unique alpha-numeric identifier registered under the ISO registration standard to reference a standard object or class.

Operator:

Employee of a CA.

Out of band process:

Communications which occur outside of a previously established communication method or channel.

PKCS #1:

Standard that provides recommendations for the implementation of public-key cryptography based on the RSA algorithm, covering the following aspects: cryptographic primitives; encryption schemes; signature schemes, etc.

PKCS #7:

A cryptographic message format or syntax managed and edited by RSA Laboratories. A standard describing general syntax for data that may have cryptography applied to it, such as digital signatures and digital envelopes.

PKCS #10:

A certificate request format or syntax managed and edited by RSA Laboratories. It is a standard describing syntax for a request for certification of a public key, a name, and possibly a set of attributes.

PKIX:

The Public Key Infrastructure (X.509) or PKIX is an IETF Working Group established with the intent of developing Internet standards needed to support an X.509-based PKI. The scope of PKIX extends to also develop new standards for use of X.509-based PKIs in the Internet.

PKI personnel:

Persons, generally employees, associated with the operation, administration and management of a CA or RA.

Policy:

The set of laws, rules and practices that regulates how an organization manages its business. Specifically, security policy would be the set of laws, rules and practices that regulates how an organization manages, protects and distributes sensitive information.

Primary certificate:

A certificate which is issued on the basis of identifying key holders other than by the key holder producing another certificate. Identification then normally takes place through the key holder instead producing an identity document.

PrintableString:

String format for representing names, such as Common Name (CN), in X.509 certificates. The encoding of a value in this syntax is the string value itself.

Private Key:

The private key is one of the keys in a public/private key pair. This is the key that is kept secret as opposed to the other key that is publicly available. Private keys a utilized for digitally signing documents, uniquely authenticating an individual, or decrypting data that was encrypted with the corresponding public key.

Public Key Infrastructure:

A set of policies, procedures, technology, audit and control mechanisms used for the purpose of managing certificates and keys.

Public:

A security classification for information that if disclosed would not result in any personal damage or financial loss.

Public Key:

The community verification key for digital signature and the community encryption key for encrypting information to a specific Subscriber.

RA policy:

A named set of rules for the RA's role in producing, issuing and revoking certificates and which regulates the applicability of certificates within a specific area of application.

Registration Authority (RA):

An entity that performs registration services on behalf of a CA. RAs work with a particular CA to vet requests for certificates that will then be issued by the CA.

Re-key:

The process of replacing or updating the key(s). The expiration of the crypto period involves the replacement of the public key in the certificate and therefore the generation of a new certificate.

Relative Distinguished Name (RDN):

A Distinguished Name is made up of a sequence of Relative Distinguished Names, or RDNs. The sequences of RDNs are separated by commas (,) or semi-colons (;). There can be more than one identical RDN in a directory, but they must be in different bases, or branches, of the directory.

Relying Party:

A person or entity that uses a certificate signed by the CA to authenticate a digital signature or encrypt communications to a certificate Subject. The relying party relies on the certificate as a result of the certificate being sign by a CA, which is trusted. A relying party normally is but does not have to be a Subscriber of the PKI.

Repository:

A place or container where objects are stored. A data repository is technology where data is stored logically. In PKI terms, a repository accepts certificates and CRLs form one or more CAs and makes them available to entities that need them for implementing security services.

Revocation:

In PKI, revocation is the action associated with revoking a certificate. Revoking a certificate is to make the certificate invalid before its normal expiration. The Certification Authority that issued the certificate is the entity that revokes a certificate. The revoked status is normally published on a certificate revocation list (CRL).

RSA:

A public key cryptographic algorithm invented by Rivest, Shamir, and Adelman.

Secondary certificate:

A certificate issued on the basis of another certificate, the primary certificate. This means that the issuing CA relies on the CA which issued the primary certificate, i.e. accepts the public key's certification of the key holder, which is turn requires reliance on the identification of the key holder when issuing the primary certificate being correct.

Sensitive:

Used to describe the security classification of information where the information if disclosed would result in serious financial loss, serious loss in confidence or could result in personal harm or death.

Signature Verification Certificate:

Often referred to as simply a Signature Certificate. It is the certificate containing the public key used to verify a digital signature that was signed by the corresponding private key.

Split Knowledge

A condition under which two or more parties separately and confidentially have custody of components of a single key that, individually, convey no knowledge of the resultant cryptographic key. The resultant key exists only within secure cryptographic devices.

SSL Client Certificate:

Certificate utilized to verify the authentication of an end user to a server when a connection is being established via a SSL session (secure channel).

SSL Server Certificate:

Certificate utilized to verify the authentication of a web or application server to the end user (client) when a connection is being established via a SSL session (secure channel).

Storage module:

In this document relates to cryptographic module.

Subject:

Entity identified in a certificate as the holder of the private key associated with the public key given in the certificate. [ETSI TS 101 456 v1.2.1] Subject can also be a device (a data network component or software, hereafter referred to as “Device”).

Subscriber:

Entity subscribing with a Certification Authority on behalf of one or more Subjects. The Subject may be a Subscriber acting on its own behalf. [ETSI TS 101 456 v1.2.1]

Surveillance Camera:

A surveillance camera is a video recording device used for detection and identification of unauthorized physical entry to a secured area. A camera used for recording a signing ceremony for auditing purposes is not considered a surveillance camera.

Symmetric encryption:

Encryption system characterised by both the sender and the recipient of encrypted information using the same secret key for both encryption and decryption.

Threat:

A danger to an asset in terms of that asset's confidentiality, integrity, availability or legitimate use.

Token:

Hardware devices, normally associated with a reader, used to store and/or generate encryption keys, such as smartcards and USB tokens.

Trusted Third Party (TTP):

A party on which two or more collaborative parties rely. A TTP carries out services for the collaborative parties, such as time-stamping, certificate issuing, etc.

Trusting party:

A recipient of a certificate which trusts this certificate on authentication,

verification of digital signatures and/or encryption of information. See also Relying Party.

Unambiguous identity:

An identity comprising a set of attributes which relate unambiguously to a specific person. The unambiguous connection between the identity and the person may be dependant on the context within which the identity term is used. Certain contexts may require assistance from the current registrar of various attributes.

URI

Universal Resource Indicator - an address on the Internet.

UTF8String

UTF-8 is a type of Unicode, which is a character set supported across many commonly used software applications and operating systems. UTF-8 is a multibyte encoding in which each character can be encoded in as little as one byte and as many as four bytes. Most Western European languages require less than two bytes per character. Greek, Arabic, Hebrew, and Russian require an average of 1.7 bytes. Japanese, Korean, and Chinese typically require three bytes per character. Such Unicode is important to ensure that universal /foreign characters are supported.

Verification:

The process of ensuring that an assumption is correct. This term relates primarily to the process of ensuring that a digital signature represents the party which the signed information details as its issuer.

Vettor:

A person who verifies information provided by a person applying for a certificate.

Vulnerability:

Weaknesses in a safeguard or the absence of a safeguard.

Written:

Where this CPS specifies that information shall be written, this requirement is generally also met by digital data provided that the information it contains is accessible in such a way that it is useable by the parties involved.

X.500

Specification of the directory service required to support X.400 e-mail initially but common used by other applications as well.

X501 PrintableString:

String format for representing names, such as Common Name (CN), in X.509 certificates. The encoding of a value in this syntax is the string value itself; an arbitrary string of printable characters.

X.509:

ITU standard that describes the basic format for digital certificates.