

D-TRUST-Root PKI Certification Practice Statement

Version 1.3_EN

Disclosure:

Only the version in German language is the legally binding document.

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1.1_EN	17.11.2008	English version
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Table of contents

1.	Introduction	5
1.1	Overview	5
1.2	Document name and identification	8
1.3	PKI-participants	8
1.4	Certificate Usage	9
1.5	CP/CPS maintenance	10
1.6	Definition of terms, Abbreviations and Acronyms	10
2.	Responsibility for Directories and Publications	14
2.1	Directories	14
2.2	Publication of Certificate Information	14
2.3	Publication Frequency	14
2.4	Directory Access Control	15
3.	Identification and Authentication	16
3.1	Naming Conventions	16
3.2	Initial Identity Inspection	18
3.3	Identification and Authentication of Re-Keying Applications	21
3.4	Identification and Authentication of Revocation Applications	21
4.	Operating requirements	22
4.1	Certificate Application and Registration	22
4.2	Processing the Certificate Application	22
4.3	Certificate Issuing	25
4.4	Certificate Transfer	25
4.5	Certificate and Key-Pair Usage	26
4.6	Certificate Renewal	26
4.7	Certificate Renewal with Key-Renewal	27
4.8	Certificate Changes	29
4.9	Revocation and Suspension of Certificates	29
4.10	Status Monitoring Service for Certificates	32
4.11	Withdrawal from the Certification Service	33
4.12	Key-Escrow and Key-Recovery	33
5.	Non-Technical Security Provisions	34
5.1	Structural Security Provisions	34
5.2	Practice Regulations	34
5.3	Employees	35
5.4	Monitoring	36
5.5	Archiving of Records	36
5.6	CSP Key-Change	37
5.7	Compromise and CSP Business Takeover	38
5.8	CSP Discontinuation	38
6.	Technical Security Provision	40
6.1	Creation and Installation of Key-Pairs	40
6.2	Securing the Private-Key and Cryptographic-Module Requirements	41
6.3	Other Aspects of Key-Pair Management	43
6.4	Activation-Data	44
6.5	IT- Infrastructure Security-Provisions	44
6.6	Technical Provisions throughout the Life Cycle	45
6.7	Network Security Provisions	45
6.8	Time-Stamps	46
7.	Profiles of Certificates, CRLs and OCSP	47
7.1	Certificate Profiles	47
7.2	CRL Profiles	50
7.3	Status Monitoring Service (OCSP) Profile	50



8.	Verifications and other Appraisals.....	51
9.	Other Financial and Legal Regulations.....	52
	Annex A Reasons for Revoking a Class 3 EV-certificate	53

1. Introduction

1.1 Overview

This document is the Certification Practice Statement (CPS) to the D-TRUST Root PKI, which is operated and maintained by the D-Trust GmbH.

1.1.1 Certification Service Provider

The Certification Service Provider (CSP) is the

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The CSP may entrust contractual partners or external contractors with parts of the production process, as long as all agreements are meticulously documented and a contractual relationship has been established prior to the provision of supplied services.

1.1.2 About this document

This CPS defines the possible activities and procedures within the framework of the Certification Services throughout the validity of the CA-certificates and End-User-certificates (EU-certificates), as well as the minimum requirements that need to be met by all PKI-participants.

CA- as well as EU-certificates may reference Certificate Policies (CPs) that define more detailed requirements and limitations.

The structure of this document is based on the internet-standard RFC 3647 „*Internet X.509 Public Key Infrastructure: Certificate Policy and Certification Practices Framework*“, to facilitate understanding and comparisons with other Certificate Practice Statements.

1.1.3 PKI traits

The D-TRUST-Root-PKI's hierarchical structure is multi-tiered. An example constellation of the D-TRUST-Root-PKI is shown in Figure 1.

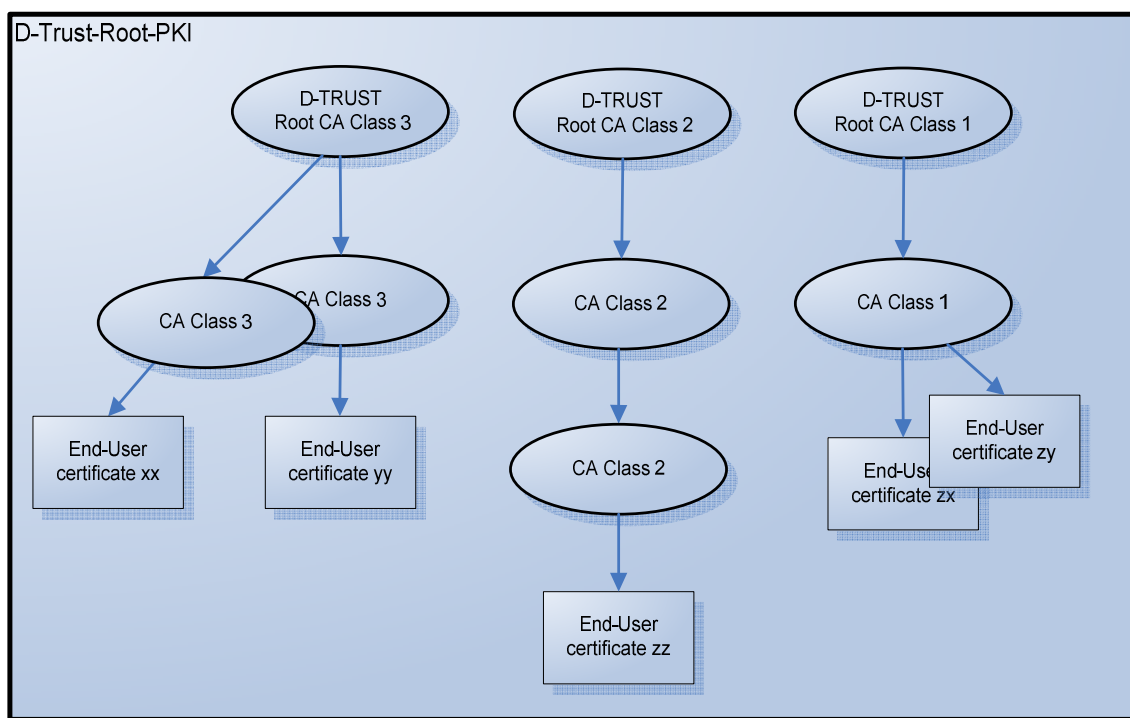


Figure 1 D-TRUST-Root-PKI example constellation

The CA- and EU-certificates can be categorized into three classes (Class 3, Class 2, Class 1). The higher the class (class 3 being the highest, class 1 the lowest), the higher the quality of the certificates. Class 3 certificates are nearly as high in quality as qualified certificates produced in full accordance with the German Signature Law [SigG]. Insofar as this document does not explicitly distinguish between the separate classes or exclude a class from a description, all requirements and stipulations of a paragraph apply to all three classes.

Class 3

Class-3-certificates are especially high-grade advanced certificates, that comply with most of the requirements for qualified certificates adhering to the stipulations of the German Signature Law [SigG] and fulfill all the requirements of [ETSI-F] „NCP“ and „NCP+“. SSL-certificates are only issued to legal entities.

Class 3 EV-certificates

A special case of class-3 category certificates is represented by the class 3 SSL-EV-certificates, which follow the Guidelines for Extended Validation Certificates [GL-BRO] and fulfill the specifications of [ETSI-F] “EVCP”. EU SSL-EV certificates are distinguishable by the inclusion of an EV-Policy-OID (compare chapter 1.2). Class 3 EV-certificates do not comprise a separate class. Any explanations aimed at the compartment “Class 3” therefore also pertains to Class 3 EV-certificates. Differences are explicitly mentioned

Class 2

Class-2-certificates are high-grade, advanced certificates adhering to the requirements of [ETSI-F] „LCP“.

Class 1

Class-1-certificates are simple certificates that do not follow the requirements of [ETSI-F]; only some of the data that make up their content is proofed by the CSP.

1.2 Document name and identification

Document name: D-TRUST-Root-PKI Certification Practice Statement
Version 1.3_EN

1.3 PKI-participants

1.3.1 Certification Authority (CA)

CAs issue Certificate Revocation Lists (CRLs) and certificates. Possible certificates are:

- personalized certificates for natural and legal entities (EU-certificates),
- group-certificates for groups of individuals, functions and IT-processes (EU-certificates),
- certification authority certificates (CSP sub-CA-certificates).

Root-CAs (D-TRUST Root Class 3/2/1 CA) only issue certificates with the extension *basicConstraints: cA=TRUE* (CA-certificate). Sub-CAs issue EU-certificates and/or further CA-certificates. The Certification Service Provider is named in the field *issuer*, which is part of the issued certificates and CRLs.

1.3.2 Registration Authorities (RA)

An RA identifies and authenticates applicants and processes. It also verifies the applications for different Certification Services. The CSP provides the RA with suitable hard- and software as well as work-flow processes that must be incorporated by the RA. The work-flow processes include detailed requirements for a step-by-step fulfillment of the RAs objectives as well as contingency procedures in case of errors (erroneous data, invalid documents etc.).

1.3.3 Subscriber

Applicants are individuals that apply for a certificate either for themselves or for another person.

Subscribers are individuals or legal entities that own a certificate. The subscriber can differ from the entry in the certificate's *subject*-field.

End-Users (EU, *subject*) use the private End-User-Key (EU-key). The End-User may differ from the subscriber. Possible End-Users are:

- Individuals,
- Organizations (legal entities – under private law, public corporations or government owned),
- Groups of individuals,
- corporate functions which are administered by an organization’s employees and
- IT-Processes (SSL-Server, for example).

Class 3

Class-3-certificates may only be issued, if applicant, subscriber and end-user are identical. SSL-certificates are issued to legal entities.

Class 3 EV

EV-Certificates are not issued to sole proprietors.

Class 2

Class-2-certificates may be issued, even if applicant, subscriber and end-user differ.

Class 3-2 (Class 3 and Class 2)

The subscriber is responsible for the certificate and its keys. The applicant must acknowledge and guarantee the implementation of the subscriber’s obligation in the application process. He may do this for himself (i.e. the applicant will be the certificate’s subscriber) or in lieu of the subscriber (i.e. an individual that is not the applicant will be the certificate’s subscriber).

Class 1

Class 1 does not differentiate between an applicant, a subscriber and an end-user. An applicant will automatically be Certificate Holder and End-User and has full responsibility for the certificate and its keys.

1.3.4 Relying parties (RP)

Relying parties are individuals or legal entities that use the certificates of the D-TRUST-Root-PKI and have access to the services of the CSP.

1.3.5 Other PKI-participants

Not applicable.

1.4 Certificate Usage

1.4.1 Valid usage of certificates

These provisions are specified in the Certificate Policy [CP].

1.4.2 Invalid usage of certificates

These provisions are specified in the Certificate Policy [CP].

1.5 CP/CPS maintenance

1.5.1 Document Administrator

This CPS is maintained by the D-TRUST GMBH. The head of the CSP is responsible for approving this CPS and any following versions hereof.

1.5.2 Contact Address

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1.5.3 Compatibility of CPs from other CAs with this CP

Not applicable; this document is a CPS, not a CP.

1.6 Definition of terms, Abbreviations and Acronyms

1.6.1 Terms and names

Applicant	<i>Subscriber</i> , individual that applies for a certificate. Either for themselves or for others.
CA-certificate	A certificate for a Certification Authority's public key
Certificate Policy (CP)	Compare section 1.1
Certification Authority (CA)	Root PKI Authority, compare chapter 1.3.1.
Certification Service Provider	Provider of Certification Services
Cross-certificate	Certificate used to affirm a trusted relationship between two CAs
D-TRUST Root CA	Root Certification Authority, existing in the categories class 3, class 2 and class 1; compare chapter 1.3.1.
D-TRUST-Root-PKI	D-TRUST GMBH implemented Public Key Infrastructure
Directory Service	PKI-service for online access of information pertaining to certificates and CRLs; commonly realized through the Light Weight Directory Access Protocol (LDAP)
Distinguished Name (DN)	A sequence of data-fields describing the CA <i>issuer</i> and/or the <i>subject</i> uniquely. The format of a Distinguished Name is defined in the [X.501] standard.
End-User (EU)	<i>Subject</i> , End-Users make use of the private End-User-key and may differ from the subscriber
End-User-certificate	Certificate, that may not be used to certify and issue other certificates or CRLs

EU-certificate	See “End-User-certificate”
Postident Basic	Process of authentication offered by the Deutschen Post AG. Also compare Registration Authority (RA).
Registration Authority (RA)	PKI-incorporated facility for participant-authentication; compare chapter 1.3.2.
SmartCard	Integrated circuit card including a micro-processor that can be used for the generation of digital signatures and for other PKI-applications
Soft-PSE	Software Personal Security Environment, aka Software-Token; contains the EU-key-pair, the EU-certificate and the certificate of the issuing CA
Relying parties	Individuals or legal entity that uses certificates; compare chapter 1.3.4.
(third party) Revocation authority	Individual or legal entity that is entitled to revoke a certificate
Status monitoring service	PKI-service for on-line inquiries concerning the status of a certificate (valid, revoked, unknown) through the Online Certificate Status Protocol-Responder (OCSP-R)
Subscriber	Individuals or legal entities that own End-User certificates; compare chapter 1.3.3.
Token	Transport-medium for certificates and keys
TrustCenter	The High-security area on the premises of the D-TRUST GMBH.

1.6.2 Abbreviations

CA	Certification Authority
CN	Common Name
CP	Certificate Policy
CPS	Certification Practice Statement
CRL	Certificate Revocation List
CSP	Certification Service Provider
DN	Distinguished Name
FIPS	Federal Information Processing Standard
FQDN	Fully Qualified Domain Name
HSM	Hardware Security Module
ISO	International Organization for Standardization
LDAP	Lightweight Directory Access Protocol
OCSP	Online Certificate Status Protocol

OID	Object Identifier
PIN	Personal Identification Number
PKI	Public Key Infrastructure
PUK	Personal Unblocking Key
RA	Registration Authority
RFC	Request for Comment
SSCD	Secure Signature Creation Device
SUD	Secure User Device
URL	Uniform Resource Locator
UTF8	Unicode Transformation Format-8

1.6.3 References

[ALG-KAT]	The most recent version of the Regulation Agency's (Bundesnetzagentur für Elektrizität, Gas, Telekommunikation, Post und Eisenbahn) announcement concerning digital signatures in accordance with the German Signature Law, specifying suitable cryptographic algorithms. The announcement is published annually in the federal bulletin (Bundesanzeiger).
[CP]	Certificate Policy of the D-TRUST-Root-PKI, D-TRUST GMBH, in its most recent version
[CPS]	Certification Practice Statement of the D-TRUST-Root-PKI, D-TRUST GMBH, in its most recent version
[Co-PKI]	Common PKI Specification, Version 2.0, 20 th of January 2009
[ETSI-ALG]	ETSI, Algorithms and Parameters for Secure Electronic Signatures, ETSI TS 102 176-1 V2.0.0, Nov. 2007
[ETSI-F]	ETSI, Technical Specification Electronic Signatures and Infrastructures (ESI); Policy requirements for certification authorities issuing public key certificates, ETSI TS 102 042 V2.1.1, May 2009
[GL-BRO]	Guidelines for Extended Validation Certificates, CA/Browser Forum, Version 1.1 April 2008
[ISO 3166]	ISO 3166-1:1997: Codes for the representation country names and their subdivisions - Part 1: Country codes
[RFC 2247]	Using Domains in LDAP/X.500 Distinguished Names, January 1998
[RFC 2560]	X.509 Internet Public Key Infrastructure – Online Certificate Status Protocol – OCSP, June 1999
[RFC 3647]	Internet X.509 Public Key Infrastructure – Certificate Policy and Certification Practices Framework, November 2003
[RFC 5280]	Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile, Mai 2008

- [SigÄndG] First amendment to the German Signature Law, 4th of January 2005 (BGBl. I S. 2)
- [SigG] German Signature Law (Gesetz über Rahmenbedingungen für elektronische Signaturen (Signaturgesetz – SigG), 16th of May 2001 (BGBl. I S. 876), revised last by this law’s article 4 on the 26th of February 2007 (BGBl. I S. 179)
- [SigV] Signature edict, 16th of November 2001 (BGBl. I., S. 3074), revised last by this edict’s article 9, paragraph 18, on the 23rd of November 2007 (BGBl. I., S. 2631)
- [SiKo-DTR] Security concept of the SigG-compliant Certification Service Provider D-TRUST GMBH – Infrastructure security
- [WebTrustEV] WEBTRUST^{SM/TM} for Certification Authorities – Extended Validation Audit Criteria, Canadian Institute of Chartered Accountants (Version 1.1, 2008)
- [WebTrustCA] WebTrust CA - WebTrust Program for Certification Authorities (Version 1.0; August 25, 2000)
- [X.501] ITU-T RECOMMENDATION X.501, Information technology – Open Systems Interconnection – The Directory: Models, Version August 2005
- [X.509] ITU-T Recommendation X.509 (1997 E): Information Technology – Open Systems Interconnection – The Directory: Authentication Framework, June 1997

2. Responsibility for Directories and Publications

2.1 Directories

The CSP publishes CRLs and certificates into the LDAP-directory. The LDAP-directory is accessible under the address: ldap://directory.d-trust.net.

The specific address for each certificate is part of the certificate information.

The CSP provides an online certificate status-monitoring-service (OCSP) through which the revocation status of every certificate in the D-TRUST-Root-PKI may be checked. The address for the OCSP-service is part of the certificate information. Any certificate's status may be checked up to a year after their expiration, after which time the entry will be removed from the service.

The [CP], this CPS and the Subscriber's Obligation can be downloaded as PDF-documents from the CSP's web-site: <https://www.d-trust.net/repository>.

2.2 Publication of Certificate Information

The CSP publishes the following information about the D-TRUST-Root-PKI:

- EU-certificates, if so requested by the applicant,
- CA-certificates (Trust-Anchor),
- Certificate Revocation Lists and Certificate Status information,
- this CPS,
- the [CP],
- Cross-certificates.

2.3 Publication Frequency

EU-certificates are published if the applicant wishes them to be published and remain listed for a year and additionally for the remainder of the year in which the listing-period of one year expires.

CA-certificates are published in the course of their creation and remain listed for either:

- at least five years (Class 3) or for
- at least one year (Class 1 and 2),

after the expiration date of the CA-certificate.

CRLs are published periodically and until the issuing CA-certificate expires. A new CRL is issued instantly with each new revocation of a certificate under the CA-tree. Even if no revocation has occurred in the meantime, the CSP publishes a new CRL every day. The CRLs are listed for at least a year after the CA has expired.

The [CP] and this CPS are published and remain listed and downloadable as long as they remain in effect (compare chapter 2.1). A hosting service availability of 99.5% is guaranteed.

2.4 Directory Access Control

Certificates, CRLs, CPs and the CPS are listed publically and can be downloaded free of charge. A read-only access is permitted for the general public. Changes and additions to public directory entries as well as web-site information are undertaken solely by the CSP

The relevant parts of other, non-public documents may be made available on request, if a vested interest is in evidence.

3. Identification and Authentication

3.1 Naming Conventions

3.1.1 Types of Names

CA- and EU-certificates principally contain information on the *issuer* as well as on the Subscriber or End-User (*subject*). The names are listed in the fields *issuer* and *subject* and are formatted along the X.501 standard for *DistinguishedNames*.

Alternative names may be registered and would subsequently be displayed in the *subjectAltName*-extension of a certificate.

3.1.2 Necessity for Unambiguous Names

Class 3-2

DistinguishedNames are always unambiguous and are always ascribed to the same subscriber.

If the extension *subjectAltName* is filled in a certificate, there is no need for an unambiguous name. SSL-certificates, including Class 3 EV-certificates, are excluded from this assertion.

The unique names may neither refer to the certificate in which they are used nor make use of an IP-address.

3.1.3 Subscriber Anonymity or Subscriber Pseudonyms

These provisions are specified in the Certificate Policy [CP].

3.1.4 Rules for the Interpretation of Different Naming Combinations

EU-certificate's *DistinguishedNames* (DN-components) are interpreted as follows:

DN-component	Interpretation
G	<i>First name(s)</i> of the individual named <ul style="list-style-type: none"> - in the identifying document (Class 2-3) - by the applicant (Class 1)
SN	<i>surname</i> of the individual named <ul style="list-style-type: none"> - in the identifying document (Class 2-3) - by the applicant (Class 1) If pseudonyms are assigned, SN equals CN.

DN-component	Interpretation
CN	<p><i>Common name:</i> The following combinations are used:</p> <ul style="list-style-type: none"> - Individual without a pseudonym: „Surname, first name“. - Individual with a pseudonym: „Pseudonym:PN” - Legal entities: official name of the organization (company, agency, association etc.), or, where necessary, a sensible abbreviation in case of an exceedance of the 64-character limitation. <p>Special case: One or multiple domain names may be included in the CN. Wildcards are not permitted for EV-certificates.</p> <ul style="list-style-type: none"> - Function or a group of individuals: name of the function or group of individuals, prefixed with the abbreviation „GRP:“, indicating a group-certificate. - Technical components: Server name or name of the application or service utilizing the certificate.
PN	<i>Pseudonym:</i> identical to CN.
serialNumber	<p><i>Serial number:</i> name appendage to ensure a name’s uniqueness (usually the application number).</p> <p>Special case: Class 3 EV-certificates according to [GL-BRO]: company registration number if such has been assigned, founding- or registry date or a description depicting the nature of the organization as a public corporation.</p>
O	<i>Organization:</i> official name of the organization (company, agency, association etc.), that employs the subscriber or with which the subscriber is otherwise connected (sufficient proof of the affiliation is required), or, where necessary, a sensible abbreviation in case of an exceedance of the 64-character limitation.
OU	<i>Organizational unit:</i> (department, section or other subdivision) of the organization.
C	<i>Country:</i> according to the notations specified in [ISO 3166]. The correct country to note is determined as follows: if an organization O is listed in the DistinguishedName, the country of the organization’s seat shall be listed. If there is no organization listed in the certificate, then the issuing country of the identification-document presented by the Subscriber shall be listed.
Title	A <i>Title</i> or degree may be included.
Street	<i>Street:</i> part of the postal address
Locality	<i>Locality:</i> part of the postal address
State	<i>State:</i> part of the postal address
PostalCode	<i>PostalCode:</i> part of the postal address
BusinessCategory	Business Category (2.5.4.15) according to [GL-BRO]
Jurisdiction Of Incorporation Locality	Jurisdiction of the organization according to [GL-BRO]: <i>Locality</i> (1.3.6.1.4.1.311.60.2.1.1)
Jurisdiction Of Incorporation State Or Province Name	Jurisdiction of the organization: <i>State</i> (1.3.6.1.4.1.311.60.2.1.2)

DN-component	Interpretation
Jurisdiction Of Incorporation CountryName	Jurisdiction of the organization according to [GL-BRO]: <i>Country</i> (1.3.6.1.4.1.311.60.2.1.3)

3.1.5 Uniqueness of Names

These provisions are specified in the Certificate Policy [CP].

3.1.6 Acceptance, Authentication and Brand-Names

These provisions are specified in the Certificate Policy [CP].

3.2 Initial Identity Inspection

3.2.1 Verifying Ownership of the Private Key

These provisions are specified in the Certificate Policy [CP].

3.2.2 Authentication of Organizations

Organizations that are named in certificates or in whose name certificates are issued must authenticate themselves comprehensibly.

The different validation procedures, which are described in chapter 4.2.1, are variably applied towards the DN-components as listed in chapter 3.1.4 – and possibly towards DN-components not explicitly listed in chapter 3.1.4 –, depending on the certificate's class category.

	Class 3	Class 2	Class 1
CN	Register/	Register/	Register/
O	Non-Register/	Non-Register/	Domain
C	Domain	Domain	
OU	S-affirmation/	A-affirmation/	without verification
STREET	Register/	Register/	
L	Non-Register	Non-Register/	
State		out-of-band-	
PostalCode		mechanisms/	
		Domain	
E-Mail-Address	without verification (applicant affirmation)	without verification (applicant affirmation)	without verification (applicant affirmation)

	Class 3	Class 2	Class 1
All further attributes ¹	S-affirmation/ A-affirmation/ Dok-Ident/ out-of-band-mechanisms	A-affirmation/ Dok-Ident/ out-of-band-mechanisms	without verification

If an application is submitted in the name of a legal entity, the representative must prove his identity and entitlement (analogous to the class-specific practices described in chapter 3.2.3).

Proofs that are not provided in the Latin alphabet are not accepted.

3.2.3 Authentication of Individuals

Individuals applying for a certificate must prove their identity beyond a doubt and, if applicable, prove their entitlement for applying through an organization.

Class 2

Applicants applying for a certificate meant for another individual must provide proof for their authority to do so. The data-verification is aimed at the subscriber.

The different validation procedures, which are described in chapter 4.2.1, are variably applied towards the DN-components as listed in chapter 3.1.4 – and possibly towards DN-components not explicitly listed in chapter 3.1.4 –, depending on the class category, in which the certificate falls.

	Class 3	Class 2	Class 1
G	Pers-Ident	HR-DB/	without verification
SN		Dok-Ident/	
CN		S-affirmation/	
C		A-affirmation/	
STREET		Statutory	
L		corporations/ out-of-	
S		band-mechanisms	
PostalCode	Pers-Ident/ Dok-Ident		
Title			
O (Organizational affiliation)	S-affirmation	A-affirmation/ S-affirmation/	
OU (Organizational affiliation)		Statutory corporations/ out-of-band-mechanisms/ HR-DB	

¹ The [GL-BRO] guidelines apply for Class 3 EV-certificates.

	Class 3	Class 2	Class 1
E-Mail-Address	without verification (applicant affirmation)	Without verification (applicant affirmation)	E-Mail
All further attributes ²	S-affirmation/A-affirmation/ Dok-Ident/ out-of-band-mechanisms	A-affirmation / Dok-Ident/ out-of-band-mechanisms/ HR-DB	without verification

In applications for groups of individuals, functions or IT-processes, all applicant attributes that are listed in the above table, excepting the attributes OU, e-mail-address and those not relevant to the certificate, are verified according to the class-category of the certificate. The inclusion of group-names, function-names or IT-process names in the CN is treated along the specifications set out in the table-row “All further attributes”.

Proofs that are not provided in the Latin alphabet are not accepted.

3.2.4 Unexamined Statements concerning the Subscriber

The information given by the applicant is class-dependently validated or taken on trust as described in the chapters 3.2.2, 3.2.3 and 4.2.1. If an *Alternative Name* is given, a validation is only carried out in the case of an e-mail-address. Other *Alternative Names*, such as addresses of LDAP-directories etc. as well as possible additional certificate-extensions (*AdditionalInformation*, *monetaryLimit*, etc.) are not verified (compare chapter 4.9.1). A special case is the *Alternative Name* in Class 3-2-SSL-certificates, which is used for the inclusion of further URLs, in which case dNSNames are verified.

3.2.5 Examination of Application Entitlement

Class 3 – 2

The identity and, if applicable, the organizational affiliation of individuals is ascertained and verified or confirmed along the class-specific processes indicated in chapter 3.2.3.

In the case of organizations, their existence as well as the applicant’s representational authority are verified or confirmed using the class-specific process indicated in chapter 3.2.2.

Class 1

Except for a financial inspection, the entitlement for application is not verified.

3.2.6 Criteria for Interoperability

These provisions are specified in the Certificate Policy [CP].

² The [GL-BRO] guidelines apply for Class 3 EV-certificates.

3.3 Identification and Authentication of Re-Keying Applications

Re-keying is the process of recreating certificates and, if applicable, tokens and keys for a known applicant. Re-keying is offered for Class 3-2 certificates only. It is not offered for Class 1 and Class 3 EV-certificates. In the case of Class 3 EV-certificates, the entire process of identification and registration must be observed in the same form as for an initial application. Documents that have been submitted in a prior application-process may be reused, if they are still deemed valid according to section D 8 (b) [GL-BRO] (validity: one year).

3.3.1 Routine Re-Keying Applications

These provisions are specified in the Certificate Policy [CP].

3.3.2 Re-keying after Revocation

The re-keying of revoked EU-certificates is based on the process described in chapter 3.3.1, as long as the identifying data is still trusted and a previously asserted organizational affiliation has not been rescinded.

3.4 Identification and Authentication of Revocation Applications

An applicant's revocation authority is verified as follows:

- Class 3-1 (Class 3, Class 2 and Class 1)
If a revocation application is submitted via a *digitally signed e-mail*, the applicant must either be the certificate subscriber or the preassigned third party revocation authority for the certificate in question. The third party revocation authority's digital certificate must be on record with the CSP.
- Class 3-2
If a revocation application is submitted via traditional mail and a hand-signed document, then a signature comparison must show that the revocation applicant is either the certificate subscriber or the preassigned third party revocation authority for the certificate in question.
- Class 3-2
If a revocation application is submitted via the telephone or a *digitally unsigned E-Mail*, the applicant must use the correct revocation password.
- Class 1
If a revocation application is submitted via traditional mail and a hand-signed document, the revocation applicant must be the certificate subscriber.

Diverging procedures concerning the validation of revocation applications may be agreed upon with the applicant.

Revocation procedures are described in chapter 4.9.

4. Operating requirements

4.1 Certificate Application and Registration

4.1.1 Application Eligibility

These provisions are specified in the Certificate Policy [CP].

4.1.2 Registration-process and Administrative Responsibility

Class 3-2

During the registration-process the applicants are made aware of the CP, the CPS and a subscriber agreement, which they must commit to observe. The documents will be published. The formal obligation follows the [ETSI-F] regulations. The application also contains the applicant's declaration of consent stating his decision on publishing the resulting certificates. The documents are stored on paper or electronically.

Class 3 EV-Certificates

The declaration of consent is consistent with "Subscriber Agreement", section E 12 [GL-BRO].

4.2 Processing the Certificate Application

4.2.1 Identification and Authentication

The described procedures for identification and registration must be fully implemented in accordance with the provisions for the different class-categories; the necessary documents of proof must be impeccable.

The CSP defines the following methods of identification and authentication:

Pers-Ident

An individual must personally identify himself to an RA, an official partner or an external provider that fulfills the requirements of the [CP] with his official ID (ID-card, passport or documents with equal standing) and be authenticated in turn. A valid ID-card or passport is deemed an acceptable identification document for individuals from the European Union or from states belonging to the Schengen-Agreement. Other documents with comparable status may be submitted instead. No copies of the identification documents are made or stored at the RA or CSP.

Dok-Ident

The pertinent contents are compared through copies (paper copies or digitalized, i.e. scanned documents or faxes) with the application data. Random samples are verified through telephone calls (compare out-of-band-mechanisms). Acceptable documents are those listed in the section Pers-Ident as well as commercial register (or comparable) excerpts no older than six months, PhD documents, documents of a postdoctoral lecture qualification, certificates of appointment, or comparable documents. Copies of the identification documents are kept either as hard-copies or in digital form.

Register

A manual or automatic comparison is made between the application data and excerpts of the commercial register. Admissible are state registers (such as registration courts, public revenue offices, professional statutory corporations or comparable) or private registers (DUNS, comparable financial databases and others). A registry excerpt can only be accepted as valid, if it does not have an attribute such as “invalid” or “inactive” attached to it. Copies of the documents are kept either as hard-copies or in digital form.

Non-Register

Government institutions/public corporations affirm certificate related information with an official seal and a signature. Copies of the documents are kept either as hard-copies or in digital form.

HR-DB

The CSP stipulates an agreement with an organization, so that data complying with the [CP] is transferred. An organization’s authorized employee or other responsible party transfers either an excerpt from the human-resource database, or the applications that have been filled out on the basis of the data from the human-resource database to the CSP. The applicable privacy laws need to be recognized by the transferring organization. The CSP relies upon the correctness and unambiguity of the transferred data. The same takes effect for certificate-requests transferred to the CSP. The applicant or subscriber must declare a formal recognition of the obligations as detailed in chapter 9.6.3 prior to the token hand-over. Digital or hard-copy evidence is kept concerning:

- the transferred data,
- evidence of the fact that the transferring individual is an authorized employee or the designated party for this action,
- evidence, that the data was presented by an authorized employee or a designated responsible party and
- evidence that the applicant or subscriber has acknowledged his duties as detailed in chapter 9.6.3 [CP].

S-affirmation

The organization’s signatory affirms certificate-related information in writing. In isolated cases a digitally signed affirmation may be accepted by the CSP. The signatory power must be evident either from the publicly available organizational documentation or the supplied proof of existence. Otherwise it needs to be proved separately. Copies of the documents are kept either as hard-copies or in digital form.

A-affirmation

The organization’s authorized employee/responsible party or a trusted third party, such as one of the CSP’s contractual partners or a state institution like the chamber of industry and commerce affirm certain certificate-related information that is in their sphere of competence in writing. In isolated cases a digitally signed affirmation may be accepted by the CSP. Copies of the documents are kept either as hard-copies or in digital form.

out-of-band-mechanisms

The CSP uses out-of-band-mechanisms to verify application data. Communication paths and verification methods are chosen in such a way, that the applicant can not influence

the process. The evidence is documented and copies are kept either as hard-copies or in digital form.

A possible proof of existence for an organization or an individual could be a credit card deduction, the transfer from a bank account or a directly debited bank account. The CSP trusts the bank whose customer the organization or individual is. A telephoned inquiry based on the data taken from a public telephone directory is also a permissible.

An individual may also be identified through a registered letter with a returned advice of receipt sent by the CSP. The signature on the returned advice of receipt is compared with the signature on the passport copy or the application documents.

The organizational affiliation of the applicant may also be proved through a registered letter with a return advice of receipt sent to the organization to the attention of the applicant. The signature on the returned advice of receipt is compared with the signature on the passport copy or the application documents. Organizational affiliation, e-mail-address, contents of extensions as well as any other certificate-relevant data may also be verified through a telephoned inquiry based on the data taken from a public telephone directory.

Statutory corporations

The CSP stipulates an agreement with a statutory corporation, so that the data complying with the [CP] is transferred. An organization's authorized employee or other responsible party transfers either an excerpt from the human-resource database, or the applications that have been filled out on the basis of the data from the human-resource database to the CSP. The applicable privacy laws need to be recognized by the transferring statutory corporation. In addition, the processes further detailed in the section HR-DB apply.

Domain

An organization's domain and possibly further attributes such as e-mail addresses are verified by a domain-enquiry in the official registers. Class 3-2: The findings are documented. Domains that are not subject to registration (non Top-Level Domains) are not validated. The subscriber may only use such domains internally.

E-Mail

The CSP sends an e-mail to the e-mail address that needs verification. The receipt must be acknowledged (exchange of secrets). The findings are documented.

Identification and authentication are achieved by following the guidelines found in sections 3.2.2 and 3.2.3 of the [CP].

4.2.2 Approval or Declination of a Certificate Application

An authorized "second, impartial" CSP employee of the appropriate security concept defined role checks if the application is in keeping with the following criteria:

- does the documentation show if the applicant has been authenticated following the correct procedures,
- have all necessary documents of proof been presented,
- are there reasons suggesting an application should be turned down.

Possible reasons for an application declination are recorded in the [CP].

The application will be declined should doubts remain in either the identity- or the data verification that cannot be alleviated fully and in a timely manner by the applicant.

Class 3-2

The content of received PKCS#10- or other certificate-requests is verified by the CSP. This verification will not be undertaken in the case that the CSP has entered into a contractual agreement with partners that employ impartial employees to present the production requests to the CSP.

After an in-depth verification according to the procedural instructions, the controller decides if the application will be declined or accepted for further processing.

4.2.3 Time Limit for Application Processing

Not applicable.

4.3 Certificate Issuing

4.3.1 CSP Approach in Issuing Certificates

After a satisfactory validation of the application or request, the certificates are produced in the high-security TrustCenter. A trusted and authorized employee, who holds the appropriate role according to the CSP's security concept, manufactures the certificates.

The application documents are either archived in their entirety by the CSP as detailed in chapter 5.5 or by contractual partners (like statutory corporations, compare chapter 4.2.1) that will archive the application documents and/or requests securely and in their entirety for the period of time mentioned in section 5.5.2.

4.3.2 Subscriber Notification Concerning Certificate Issue

There is no separate notification upon certificate production.

4.4 Certificate Transfer

4.4.1 Certificate Transaction Procedures

Class 3-2

SmartCards will (analogous to the procedures for qualified SmartCards) either be sent to the applicant's address on record by courier or equivalent means, or handed out personally by the RA, an authorized employee or other responsible party of the organization. Soft-PSEs, saved to a data carrier, can be sent by mail to the address on record in the application documents, be made available for download over a secured line or be included with an e-mail (the PKCS#12 file is secured by a PIN of at least 8 figures). If a certificate is created for an existing key-pair, the certificate will either be made available for download (through publication in the directory service for example) or sent by e-mail.

Class 1

SmartCards will either be sent to the applicant's address on record by courier or equivalent means, or handed out personally by the RA. Soft-PSEs, saved to a data carrier, can be sent by mail to the address on record in the application documents, be made available for download over a secured line or be included with an e-mail (the PKCS#12 file is secured by a PIN of at least 8 figures). If a certificate is created for an existing key-pair, the certificate will either be made available for download (through the publication in the directory service for example) or sent by e-mail.

Reclamations concerning the performance of keys and tokens will be investigated by the CSP. Returned SmartCards will be checked. If the subscriber's suspicion is validated, or the suspicion cannot be dispelled, the certificate will be revoked.

4.4.2 Certificate Publication by the CSP

If the applicant agreed to the publication of the certificate during the application process, it will be made publicly available via the light-weight directory access protocol after production³. If the applicant did not agree to publication, the certificate will not be made publicly available.

4.4.3 Notification of other PKI-participants about the Creation of the Certificate

These provisions are specified in the Certificate Policy [CP].

4.5 Certificate and Key-Pair Usage

4.5.1 Subscriber Certificate and Private-Key Usage

These provisions are specified in the Certificate Policy [CP].

4.5.2 Relying parties' Certificate and Public-Key Usage

These provisions are specified in the Certificate Policy [CP].

4.6 Certificate Renewal

Certificate renewal depicts the renewed creation of a certificate. The new certificate is based on the information and keys of the original certificate, albeit with an altered validity period. When applying for a certificate renewal, any fields of the original certificate may be changed if according evidence is submitted. The CP that is valid at the time of the certificate renewal applies to the renewed certificate. A certificate renewal will only be issued for valid EU-keys on SmartCards. No certificate renewal is offered for Class 3 SSL and Class 3 EV certificates.

There is no certificate renewal for CA-keys.

³ If the token should contain qualified EU-certificates or qualified EU-certificates from an accredited provider in addition to the advanced certificates of the Root-PKI, then the publication will follow the procedure for the certificates of the highest class.

4.6.1 Criteria for Certificate Renewal

The applicant will be informed if there are any major changes in the terms of use. The applicant needs to acknowledge the changed terms of use.

These provisions are specified in the Certificate Policy [CP].

4.6.2 Eligibility for Certificate Renewal

These provisions are specified in the Certificate Policy [CP].

4.6.3 Processing an Application for Certificate Renewal

Class 3-2

The CSP's appointed responsible party in the appropriate security-role verifies the eligibility for application as well as the signature according to the procedural instructions. After close examination, the verifier decides if the application is processed or rejected. If an application is further processed, the appropriate security-role produces the certificates.

Class 1

Parts of the applications are checked automatically, while other parts are manually verified. Applications are then either further processed or rejected.

4.6.4 Informing the Applicants about the Issue of a new Certificate

The regulations of chapter 4.3.2 apply.

4.6.5 Renewed-Certificate Transaction Procedures

The subscriber is already in possession of the key-pair in the case of certificate renewal. The produced certificate is either written onto a SmartCard via a secure data-connection, which is similar to the procedure employed in the case of a qualified certificate, or it will be made available through the LDAP-directory service. Apart from these provisions, chapter 4.4.1 applies.

4.6.6 Publication of the Certificate-Renewal by the CSP

The requirements in chapter 4.4.2 apply according to the information given in the initial application. The applicant may change his decision about the publication of his certificate.

4.6.7 Notification of other PKI-participants about the Renewal of the Certificate

The requirements in chapter 4.4.3 apply.

4.7 Certificate Renewal with Key-Renewal

Key-renewal is the term for the renewed issue of a certificate based on the content of the original certificate with the generation of a new key-pair and a change of the validity-period. When applying for a key-renewal, any data employed in the certificate, except for the CN-field of the distinguished name in EU-certificates without a pseudonym (compare

chapter 3.1.1.), may be altered if sufficient evidence is provided. The CP that is valid at the time of the certificate renewal applies to the renewed certificate. Key-renewals are only offered for class 3-2. CA-keys of all classes may be renewed as long as they have not been revoked.

Class 3 EV-Certificates

Certificate renewal in conjunction with key renewal is not offered for EV-Certificates. The guidelines in [GL-BRO], sections D8 and F25 apply to Class 3 EV-certificates.

4.7.1 Criteria for Key-Renewal Certificates

The applicant will be informed, if there are any major changes in the terms of use. The applicant needs to acknowledge the changed terms of use.

These provisions are specified in the Certificate Policy [CP].

4.7.2 Eligibility for Key Renewal

These provisions are specified in the Certificate Policy [CP].

4.7.3 Processing an Application for Key-Renewal

Class 3-2

The CSP's appointed responsible party in the appropriate security-role verifies the eligibility for application as well as the signature according to the procedural instructions. After close examination, the verifier decides if the application is processed or rejected. If an application is further processed, the appropriate security-role produces the certificates.

Class 1

Parts of the applications are checked automatically, while other parts are manually verified. Applications are then either further processed or rejected.

4.7.4 Informing the Subscriber about the Issue of a Follow-up Certificate

The regulations of chapter 4.3.2 apply.

4.7.5 Key-Renewed-Certificates Transaction Procedures

The regulations of chapter 4.4.1 apply.

4.7.6 Publication of Certificates after Key-Renewal by the CSP

The regulations of chapter 4.4.2 apply. The applicant may change his decision about the publication of his certificate.

4.7.7 Notifying other PKI-participants about Follow-Up Certificates

The regulations of chapter 4.4.3 apply.

4.8 Certificate Changes

Certificate changes are not offered.

4.8.1 Criteria for Certificate Change

Not applicable.

4.8.2 Eligibility for Certificate Changes

Not applicable.

4.8.3 Processing an Application for Certificate Change

Not applicable.

4.8.4 Informing the Subscriber about the Issue of a new Certificate

Not applicable.

4.8.5 Certificate Change Transaction Procedures

Not applicable.

4.8.6 Publication of the Certificate Change by the CSP

Not applicable.

4.8.7 Notifying other PKI-participants about the Issue of new Certificates

Not applicable.

4.9 Revocation and Suspension of Certificates

4.9.1 Criteria for Revocation

A certificate is revoked in the following circumstances:

- upon request of the subscriber or possibly affected third parties (for example an organization that is named in the certificate),
- invalidity of data included in the certificate,
- if the CSP ceases its operations and no other CSP continues the duties.
- only code-signing certificates:
 - if the CSP becomes aware of the fact, that the certificate has been issued to a publisher of malware or
 - if the CSP becomes aware of the fact, that the certificate would damage the CSP's reputation if it remained valid

Apart from that, the CSP can arrange a revocation if:

- the private key of the issuing CA or of a higher CA is compromised,
- the key-pair is stored on a SmartCard which also holds the key-pair of a revoked qualified certificate,
- weaknesses of the used cryptographic algorithms become known that endanger the allowed applications during the validity-period of the certificate,
- the deployed hard- or software exhibits defects that endanger the allowed applications during the validity-period of the certificate,
- the unambiguous assignment of the key-pair to the subscriber is no longer possible,
- a certificate was obtained through the declaration of false data,
- the customer is in arrear after two requests for payment,
- the contractual relationship is cancelled or ends.

Class 3 EV-certificates

[GL-BRO] describes mandatory revocation reasons for EV-certificates (Annex A).

The CSP hosts the EV-reporting office according to section 28 [GL-BRO], where PKI-participants or software producers may report complaints 24/7, remark their suspicions about the compromise of EV-certificate private keys, report the abuse of EV-certificates, fraud or the improper behavior of EV-certificates.

The CSP will process any reported incidents in a timely manner (in the first 24 hours after the report has been issued), according to section 28 (b) [GL-BRO], which may result in the revocation of the EV-certificates.

Abuse of D-Trust-EV-certificates can be reported under the e-mail address:
ev-support@d-trust.net.

Revocations are fitted with a date and are not issued retroactively.

Revocation authorities must authenticate themselves according to chapter 3.4.

4.9.2 Eligibility for Revocation

These provisions are specified in the Certificate Policy [CP].

4.9.3 Processing a Revocation Application

A revocation application may be mailed by standard mail. If a revocation password was arranged, revocation authorities may e-mail the application or apply for a revocation by telephone during the hours of 09:00h -17:00h on a standard work-day.

Revocation telephone number: +49 (0)30 / 25 93 91 - 602

E-Mail-Address: sperren@d-trust.net

Postal address: D-TRUST GMBH
Kommandantenstr. 15
10969 Berlin

Class 3 EV-Certificates

If a revocation password was arranged, a revocation authority may revoke a certificate telephonically 24/7.

Revocation hotline: 030 / 25 93 91 – 601

Diverging revocation procedures may be agreed upon.

A revocation application must contain the following information:

- applicant name,
- subscriber name,
- subject-/applicant-serial-number (in the case of EV certificates the registration number),
- certificate serial-number (if possible as a decimal number), so the certificate may be indentified correctly.

Revocations are performed in the CSP's sphere of responsibility. Notwithstanding, the CSP may assign partial tasks to contractually bound third parties. The revocation may be undertaken by a third party that acts according to the standards of the CSP. The CSP provides appropriate soft- and hardware as well as work-flow processes. The work-flow processes include detailed requirements for a step-by-step fulfillment of the revocation service as well as contingency procedures in case of errors.

The revocation justification given by the revocation authority will be documented. After successful revocation, the certificate subscriber or possibly the applicant will be informed of the revocation.

The authentication of the revocation authority follows the guidelines as laid out in chapter 3.4.

4.9.4 Deadlines for a Revocation Application

These provisions are specified in the Certificate Policy [CP].

4.9.5 CSP Revocation-Application Processing Time

On standard work days, revocation-applications are processed by the CSP from 09:00h to 17:00h. Revocation-applications that are phoned in are processed immediately, while written revocation-applications that are received via mail or e-mail are processed the following work day by the latest.

Class 3 EV-certificates

The revocation is processed immediately after the successful telephonic authorization of the revocation-applicant.

4.9.6 Methods of Validating Revocation-Information

Topical revocation information is stored in certificate revocation lists that may be accessed through the light-weight directory-access protocol or downloaded via the link given in section 2.1. Additionally the OCSP-service is provided. These services'

reachability is noted in the form of URLs in the certificates themselves. Revocation-information can also be obtained from the websites of the CSP (compare chapter 2.1). Delta-CRLs are not used.

Integrity and authenticity of the revocation-information is ensured.

4.9.7 Revocation List Publication Frequency

Compare chapter 2.3.

4.9.8 Maximum Latency Period for Certificate Revocation Lists

Revocation lists are published with their production.

4.9.9 Online Accessibility of Revocation Information

An OCSP-service is provided for the online status check of certificates. This service's reachability is noted in the form of a URL in the certificates themselves.

4.9.10 Necessity of Checking Revocation Information online

These provisions are specified in the Certificate Policy [CP].

4.9.11 Other Forms of Publishing Revocation-Information

None.

4.9.12 Special Requirements for Compromised Private-Keys

None.

4.9.13 Conditions for a Suspension

Certificate suspensions are not offered.

4.10 Status Monitoring Service for Certificates

4.10.1 Mechanics of the Status Monitoring Service

The status monitoring service is implemented through the Online Certificate Status Protocol. The service's reachability is noted in the form of a URL in the certificates themselves.

The formats and protocols of the services retaining revocation information are described in the sections 7.2 and 7.3.

4.10.2 Availability of the Status Monitoring Service

The status monitoring service is permanently (24/7) available.

4.10.3 Optional Services

None.

4.11 Withdrawal from the Certification Service

These provisions are specified in the Certificate Policy [CP].

4.12 Key-Escrow and Key-Recovery

Key-escrow of private EU-keys may be applied for.

Class 3-2

EU-certificate signature-keys are not escrowed.

Class 3 EV-certificates

Keys of Class 3 EV-certificates are not escrowed

4.12.1 Conditions and Procedures for Private-Key-Escrow and -Recovery

These provisions are specified in the Certificate Policy [CP].

4.12.2 Conditions and Procedures for Session-Key-Escrow and -Recovery

Session keys are not offered.

5. Non-Technical Security Provisions

The descriptions in this chapter refer to the class 3-2 CAs operated by the D-TRUST GMBH.

5.1 Structural Security Provisions

The D-TRUST GMBH is a Certification Service Provider that is accredited for being in strict accordance with the provisions of the German signature law. The structural security provisions are documented in detail in the infrastructural security concept for signature-law-conforming Certification Service Providers [SiKo-DTR]). This may be made available on request, if a vested interest is in evidence. The security concept has been verified by the Regulation Authority's approved technical control board (TÜV Informationstechnik GmbH). The inspection and approval are reiterated periodically and following any security-relevant infrastructural changes.

Part of the security concept is a detailed documentation of the structural security- and monitoring provisions that may be made available on request, if a vested interest is in evidence.

Apart from the above, the technical control board TÜV-IT has certified (TUVIT-TSI6651.07 on June, 15th 2007) the D-TRUST GMBH high-security TrustCenter for applying and implementing the "Infrastructural measures for high protection requirements – Level 3" (according to the inspection criteria catalogue for „Trusted Site Infrastructure“). All infrastructurally relevant aspects are tested and assessed in the course of this TÜV-IT-certificate "Trusted Site Infrastructure".

These certificates attest the D-TRUST GMBH a high non-technical standard for security provisions.

The CSP operates the Root-PKI's CAs under the same conditions as the D-TRUST GMBH CAs for the issue of qualified certificates with provider accreditation according to the German signature law.

5.2 Practice Regulations

5.2.1 Role-Concept

The security concept encompasses a role-concept [SiKo-DTR], in which employees are assigned one or several roles with the appropriate permissions. The role-permissions are limited to those that need them for the completion of their duties.

Employees that work in the area of certification- and revocation services operate independently and are free of commercial/financial attachments that could influence their decisions and actions. The CSP's organizational structure encourages the employees in their independence and decisions.

Employees' identities, trustworthiness and knowledge are validated before a sensitive function is assigned. Periodic training as well as training aimed at newly arisen topics ensure the employees' competence in their functions and the companies overall

informational security. The CSP thereby complies with the requirements of section H 29 [GL-BRO].

5.2.2 Principle of Multiple Administrators

Highly critical procedures can only be performed with the help of at least two attending administrators. This necessity is implemented through technical and organizational provisions, such as restricted access rights and strict knowledge division.

5.2.3 Role Identification and Authentication

The role concept is enforced by technical and organizational provisions, such as limited access privileges, the targeted inquiry of partial passwords etc. The realizing administrator has to authenticate himself successfully before gaining access to critical applications. Any action can be retraced through event-logs and tied to the administering employee. Employees are accountable for their actions.

5.2.4 Role-Exclusion

The role-concept arranges for certain role-exclusions that keep a single person from creating and publishing a certificate himself. No single person has the authority to undertake all necessary steps to create a certificate.

5.3 Employees

The CSP complies with the personnel requirements set out by [SigG] and [SigV] which it details in the security concept [SiKo-DTR].

5.3.1 Requirements of Qualification, Expertise and Reliability

The CSP ensures that the personnel employed in the Certification Service possess the necessary qualification, expertise and skill required by their functions.

5.3.2 Security Validation

The CSP complies with the requirements of § 5 (5) SigG. The details are described in the security concept [SiKo-DTR]. Among other provisions, the employees must periodically present valid and unblemished criminal records.

5.3.3 Training

The CSP trains people working in the Certification Service.

5.3.4 Periodicity of Training and Instructions

The CSP trains people working in the Certification Service upon the initiation of their duties and when necessary.

5.3.5 Frequency and Consequences of Job-Rotation

Role-transferences are conducted in accordance with the security concept [SiKo-DTR] (access privileges, access control) and documented. The new personnel will receive extensive training before becoming involved in production processes.

5.3.6 Consequences of Prohibited Actions

The CSP releases unreliable employees from the Certification Service.

5.3.7 Conditions for Freelancers

Not applicable; freelancers are not employed.

5.3.8 Delivered Documentation

Comprehensive procedural instructions for every production step define the appropriate personnel-role, the personnel-rights and the manual and automatic monitoring-necessities. The technical security provisions implemented in the D-TRUST infrastructure ensure that the defined production steps can not be circumvented.

5.4 Monitoring

The CSP implements extensive monitoring capabilities (through video cameras for example) to secure the Certification Services, their IT-systems and documentation. These provisions are documented in the security concept [SiKo-DTR].

The monitoring capabilities are complemented by the organizational regulations. Visitors for example are only allowed onto the premise if appointments have been made at least 24 hours prior to their visit. Additionally, visitors must deposit their ID-documentations for the period of visitation. Visitors to the TrustCenter area must always be accompanied by an employee of the CSP.

Surveying threats to the CSP's operations and defining subsequent requirements and counter measures by continuous risk-analysis is a further part of the security concept. The risk-analysis also contains a residual-risk analysis, in which the tenability of the residual risk is shown.

5.5 Archiving of Records

5.5.1 Forms of Record Archives

There are two forms of archiving: electronically and paper-based.

The complete application documents (follow-up applications included), the procedural documents (CP, CPS), certificates, revocation documentation, digital data and protocols concerning the certificate life-cycle are archived.

5.5.2 Data Archiving Period

Class 3-2

Application documents and their verifications, the data concerning the certificate life-cycle as well as the certificates themselves are stored for at least five years and always additionally for the remainder of the year in which the archiving period expires⁴. The archiving period starts when the last certificate that has been issued upon the basis of these documents expires.

Class 3 EV-certificates

Application documents and their verifications, the data concerning the certificate life-cycle as well as the certificates themselves are stored for at least seven and always additionally for the remainder of the year in which the archiving period expires. The archiving period starts with the expiration of the last certificate that has been issued upon the basis of these documents.

5.5.3 Archive Security

The archive is located in secured rooms and is subject to the role- and access-control-concept of the CSP.

5.5.4 Archive Backup

Data confidentiality and integrity are observed. The documentation takes place instantly, so that retroactive alterations can not occur without detection. The German federal privacy requirements are observed.

5.5.5 Demands on Time-Stamping of Records

The CSP operates a time stamping service according to [SigG].

5.5.6 Archiving (internal / external)

Archiving takes place in the perimeter of the CSP as well as on equally secured external premises.

5.5.7 Procedures for Acquisition and Verification of Archive Information

The procedures for the acquisition and verification of archive information are subject to the role concept of the CSP.

5.6 CSP Key-Change

The CSP will generate new CA-keys an adequate time period before a CA expires. A new CA-instance will be created from the generated keys and subsequently published.

⁴ If the token should contain qualified EU-certificates or qualified EU-certificates from an accredited provider in addition to the non-qualified certificates of the Root-PKI, then the archiving period follows the procedure for the certificates of the highest class.

5.7 Compromise and CSP Business Takeover

5.7.1 Treatment of Incidents and Compromises

The CSP has a contingency-concept as well as a recovery-plan, which are both known to the concerned roles and can be implemented if the need arises. The responsibilities are clearly appointed and known.

5.7.2 Recovery after Resource-Compromise

The security-concept gives a description about the recovery-procedures.

5.7.3 Compromise of the Private CA-Key

In the case of a compromise or a publication of algorithm-weaknesses or associated parameters through the relevant authorities as named in section 6.1.6 the CSP will act as follows:

- implicated CA-certificates and their issued, still valid certificates are revoked,
- involved subscribers or applicants are informed about the incident and briefed on the consequences,
- the incident is published on the CSP's web-sites, noting that the certificates issued by the implicated CA have been invalidated.

The reasons for the compromise will be analyzed so that steps may be implemented to avoid future compromises. Taking the reason for the compromise into account, new CA-signature-keys are generated and new CA-certificates are issued.

5.7.4 Possibilities for Business Continuation after Compromise and Disaster

In case of emergency the CSP will decide, depending on the kind of incident, if a recovery of the backup described in section 6.2.4 will be conducted or if in case of compromise the procedures in section 5.7.3 are implemented.

5.8 CSP Discontinuation

If CAs are discontinued the CSP informs all subscribers and terminates possible contractor's access possibilities as related to the implemented CAs. Any valid certificates that were issued by the CAs will be revoked. Implicated private CA-keys will be destroyed.

The directory service as well as the application documents will be transferred to the Bundesdruckerei GmbH and continued in an equivalent manner. The preservation of the directory service is guaranteed until the EU-certificates expire and will either be transferred to a different CSP or to the Bundesdruckerei GmbH.

The CSP has an appropriate "letter of comfort" to cover the costs of these minimum requirements in the case of illiquidity of the CSP or for the case that the CSP can not cover the costs of the transferral for any other reasons.

If CSP operation is discontinued, the CAs functionality is ceased, so that a certification is no longer possible.

6. Technical Security Provision

The descriptions in this chapter refer to the class 3-2 CAs operated by the D-TRUST GMBH.

6.1 Creation and Installation of Key-Pairs

We differentiate between key-pairs for

- CA-certificates (D-TRUST Root CA Class 3-2 and their Sub-CAs) and
- End-User certificates (EU-certificates)

6.1.1 Creation of Key-Pairs

CA-keys are created in a „FIPS 140-2 Level 3“-conforming Hardware Security Module (HSM). The HSM is situated in the high-security tract of the TrustCenter. The creation of the key-pairs is subject to the role-concept and therefore always overseen by at least two operators.

EU-keys are created in a cryptographically secure manner by the CSP or the applicant and conform to the demands of the [CP] and CPS.

Class 3-2

If EU-keys and EU-certificate are saved to a SmartCard (Secure User Device (SUD) according to [ETSI-F], D-TRUST GMBH avails itself of certified SSCD as SUD), the CSP handles the acquisition, storage, personalization and PIN-handling as it does in its qualified, signature-law and security-concept conforming sector. The CSP may have third parties that abide by a signature-law conforming security concept generate the keys and personalize the SmartCards. The CSP has a signature-law-conforming interface to these external personalizers.

6.1.2 Delivery of Private-Keys to Subscribers

If the private keys are created by the CSP, they will be transferred as noted in chapter 4.4.1.

6.1.3 Delivery of Public-Keys to Certificate Issuers

CA-key-pairs are created in the TrustCenter.

The EU-key-pairs that are created in the CSP are known to the CSP. Certificate requests for available keys may be submitted as a PKCS#10-request by the applicant. The PKCS#10-request contains the public key and must be signed by the private key.

6.1.4 Delivery of Public CA-Keys to Relying Parties

A CAs public key is contained in its certificate. This certificate is usually stored on a token that is transferred to the applicant. CA-certificates may also be downloaded from the public directory service (compare chapter 2.1), into which they are published after their creation.

6.1.5 Key Length

Class 3-2

CA-certificates are currently issued with 2048-bit RSA-keys.

EU-certificates are currently issued with 2048-bit RSA-keys.

Class 1

CA-certificates are currently issued with 2048-bit RSA-keys.

EU-certificates are currently issued with 1024-bit RSA-keys.

6.1.6 Determination of Key-Parameters and Quality-Control

Class 3-2

CA- and EU-certificates are issued exclusively on the basis of keys that comply to the currently valid [ETSI-ALG].

Class 3 EV-Certificates

CA- and EU-certificates are issued exclusively on the basis of keys that comply to the currently valid [ETSI-ALG] and [GL-BRO].

Class 1

The CSP defines key-parameters for CA- and EU-certificates.

Signature- and encryption-algorithms are named in section 7.1.3 CPS.

6.1.7 Key-Usage

Private CA-Keys are exclusively used to sign certificates and CRLs (compare chapter 7.1.2).

EU-keys may only be used for the use-cases noted in the certificate. The use-cases are noted in the certificate fields *KeyUsage* and *ExtKeyUsage* and may be restricted by additional extensions (compare chapter 7.1.2).

6.2 Securing the Private-Key and Cryptographic-Module Requirements

6.2.1 Standards and Security Provisions for Cryptographic Modules

The CSP's cryptographic Modules work flawlessly. The modules are protected through technical and organizational procedures from unauthorized manipulation throughout their life-cycle (including delivery and storage).

A FIPS 140-2 Level 3 conforming HSM is used to secure CA-keys.

The CSP has fitting hardware as well as software based key-generators in order to guarantee the quality of EU-keys.

6.2.2 Multi-Person Private-Key Access-Control (n of m)

The HSM containing the CA-keys is situated in the high-security tract of the TrustCenter. To activate a private key, two authorized employees are necessary. The HSM can sign any desired amount of certificates after the private key is activated.

Private EU-keys are only accessed in case of key-escrow as described in chapter 6.2.3.

6.2.3 Key-escrow of Private-Keys

Private CA-keys are not escrowed.

Private EU-key escrow may be applied for. The keys will be encrypted and kept in the high-security tract of the TrustCenter. Encrypted keys can only be decrypted by authorized employees.

Class 3-2

EU-certificate signature-keys are not escrowed.

Class 3 EV-certificates

Class 3 EV-certificate signature-keys are not escrowed.

6.2.4 Backup of Private-Keys

Private CA-keys are backed up. A CA-key backup is performed in the high-security tract of the TrustCenter and requires two employees that are authorized to access the HSMs. The same requirements and security procedures that apply for the productive system also apply to the backup system. A restoration of the private key also requires two employees that are authorized to access the HSMs. There are no further copies of the private CA-keys.

A backup of private EU-keys is not offered except in a possible applicant-requested key escrow.

6.2.5 Private-Key Archiving

Private CA- and EU-keys are not archived.

6.2.6 Transferring Private-Keys into/out of Cryptographic Modules

Private CA-keys are only transferred into or out of an HSMs if they are backed up or recovered respectively. The presence of at least 2 administrators is enforced. In case of the export into, or the import out of a different HSM, the private CA-key is encrypted.

Private EU-keys may be transferred out of an HSM, if the transfer is technically possible and the applicant can prove along the guidelines in chapter 4.12.1 that he is entitled to re-use the key. The key is always encrypted when transferred.

6.2.7 Storage of Private-Keys in Cryptographic Modules

The private CA-keys are encrypted and stored in the HSM.

EU-keys are encrypted and stored in a database of the CA-system.

6.2.8 Activating Private-Keys

Private CA-keys can only be activated by at least two attending administrators in the appropriate roles and only for the allowed use-cases (*keyCertSign*, *cRLSign*).

Private EU-keys are activated by the correct PIN input.

6.2.9 Deactivating Private-Keys

Private CA-keys are deactivated upon the disconnection between the utilizing application and the HSM.

A private EU-key is deactivated by the utilizing application or by the removal of the SmartCard from the card reader respectively the deactivation or deletion of the soft-PSE, as the case may be.

A permanent deactivation of SmartCard based EU-private keys ensues after multiple incorrect PIN inputs. PUK reactivations of a card are numbered and MultipleSmartCards are not programmed to accept a PUK.

6.2.10 Destroying Private-Keys

Private CA-keys are deleted after their expiration. The keys are deleted from the HSM as well as from the backup mediums. If an HSM is decommissioned, the private keys are deleted from it.

If a SmartCard chip is destroyed or the files containing the private EU-key are deleted, the key is irreparably lost. The destruction of keys escrowed at the CSP may be requested (according to section 4.12.1).

6.2.11 Appraisal of Cryptographic Modules

The CSP makes use of qualified hard- and software based key-generators to ensure the quality of EU-keys. The production HSMs are FIPS 140-2 Level 3 certified.

6.3 Other Aspects of Key-Pair Management

6.3.1 Archiving Public-Keys

Public CA- and EU-keys are, conforming to the security concept, archived in form of the created certificates.

6.3.2 Certificate- and Key-Pair Validity-Period

The validity-period of CA-keys and certificates is variable and may be learned from the certificates. The maximum validity period is 30 years.

The validity-period of EU-keys and certificates is variable and may be learned from the certificates. The maximum validity period is:

Class 3-2
5 years,

Class 3 EV-certificates
27 months,

Class 1
15 years.

6.4 Activation-Data

6.4.1 Activation-Data Creation and Installation

CA-key activation-data is requested by the HSM. PINs are assigned during bootstrapping. The presence of at least two administrators is enforced.

Subscriber: if the key-pair is created by the subscriber, the activation-secret is also created and is available to the subscriber. A transport-PIN-procedure may be incorporated if the CSP creates the keys, otherwise the PINs will be printed to a PIN-letter and mailed- or given to the subscriber. An installation is not necessary.

6.4.2 Activation-Data Protection

CA-key activation-data is composed of two secrets, one and only one of which is known to one and only one authorized employee. Activation-data may only be accessed by certain designated employees.

Subscriber: If the transport-PIN-procedure is utilized, the SmartCards integrity can be verified through the transport-PIN. Otherwise the PINs are printed once to a specially secured letter and sent- or given to the subscriber.

6.4.3 Other Aspects of Activation-Data

Depending on the product in question, the subscriber may be given a Personal Unblocking Key-Number (PUK) to unlock the SmartCard in the case that the PIN should have been input incorrectly three times. MultipleSmartCards do not accept a PUK.

6.5 IT- Infrastructure Security-Provisions

6.5.1 Specific, Technical Security-Demands on the IT-Infrastructure

The computers, networks and other components employed by the CSP safeguard in their specific configuration that only those actions are permitted, that do not conflict with the provisions laid-out in the [CP] and [ETSI-F], and in the case of class 3 EV-certificates also in [GL-BRO].

The subscriber as well as the relying parties must only use trustworthy hard- and software.

6.5.2 Computer Security Evaluation

The computers, networks and other components employed for the CA-keys are evaluated by the Regulation Agency's approved technical control board, the TÜV Informationstechnik GmbH.

6.6 Technical Provisions throughout the Life Cycle

6.6.1 Security Provisions during Development

The CSP's system developments are continuously analyzed from the design stage onward according to their adherence to the highest safety requirements.

6.6.2 Security Provisions of Computer Management

Computers, networks and other involved components may exclusively be administered by personnel after a prior authorization corresponding to the role-concept (part of the security-concept of the signature-law complying CSP D-TRUST GMBH). Log files are periodically parsed for rule-infringements, attacks and other occurrences. Monitoring starts with the start of operations and ends with the decommissioning of a machine.

6.6.3 Security Provisions throughout the Life Cycle

Machines are operated according to the manufacturer's instructions. They are minutely inspected before being deployed and are only used if a manipulation can be excluded without a doubt. Manipulations and manipulation attempts are noticed as soon as a legitimate action takes place at the machines or the machines are inspected in the course of a periodic revision, since all access possibilities of incorporated hardware (disk-slots, USB-slots, screws etc.) are sealed and periodic software-checks, among other security provisions, are automatized. Should a machine's manipulation be suspected, a possibly planned action will not be carried out while the incident is reported to the head of the CSP. Clear escalation guidelines for each role have been defined in order to instantly react to eventual security-relevant incidents in a coordinated.

Capacity-requirements and –utilization as well as system suitability are monitored and adapted if necessary. Replaced systems are decommissioned such that functionality- and data misappropriations become impossible. System- or process changes are monitored by a change-management process. Critical changes are scrutinized by the security manager. The CA private-keys are destructed after CA expiration.

Relevant occurrences pertaining to a CAs life-cycle, its issued certificates and the generated keys are documented in electronic form or as hard-copy print-outs and are archived audit-compliantly (read-only revision-safe) on long-lived media.

Class 3 EV

As a minimum, the events listed in I 31 (b) [GL-BRO] are audit-compliantly logged or recorded.

6.7 Network Security Provisions

A network concept is inseparably linked to the operation of the CA. The network concept is documented in detail (security concept of the signature-law complying CSP D-TRUST GMBH – network concept [SiKo-DTR]), which may partially be made available on request, if a vested interest is in evidence. The security concept has been evaluated by the Regulation Agency's approved technical control board, the TÜV Informationstechnik GmbH.

6.8 Time-Stamps

The CSP operates a Time-Stamping-Authority in accordance with the [SigG]. Time stamps however are not offered within the framework of this CPS.

7. Profiles of Certificates, CRLs and OCSP

7.1 Certificate Profiles

7.1.1 Version Number

Certificates are issued along the X.509v3 format.

7.1.2 Certificate Extensions

The choice of extensions largely depends on the product.

CA-certificates contain the following *critical* extensions:

Extension	OID	Parameter
<i>KeyUsage</i>	2.5.29.15	<i>keyCertSign</i> , <i>cRLSign</i>
<i>BasicConstraints</i>	2.5.29.19	<i>ca=TRUE</i> , (<i>pathLenConstraint</i>)

CA-certificates may contain the following *uncritical* extensions:

Extension	OID	Parameter
<i>AuthorityKeyIdentifier</i>	2.5.29.35	160-bit SHA-1 Hash of the issuing key
<i>SubjectKeyIdentifier</i>	2.5.29.14	160-bit SHA-1 Hash of the Subject's Public Key
<i>CRLDistributionPoints</i>	2.5.29.31	LDAP-address of the CRL-distribution point
<i>AuthorityInfoAccess</i>	1.3.6.1.5.5.7.1.1	<i>accessMethod=OCSP</i> {1.3.6.1.5.5.7.48.1}, <i>accessLocation</i>
<i>certificatePolicies</i>	2.5.29.32	OID for supporting CPs
<i>SubjectAltName</i>	2.5.29.17	Alternative subject name

Additionally extensions may be incorporated if they comply with [X.509], [RFC 5280], and [Co-PKI] or are described in a referenced document.

EU-certificates contain the following *critical* extensions:

Extension	OID	Parameter
<i>KeyUsage</i>	2.5.29.15	Possible values: <i>digitalSignature</i> , <i>contentCommitment</i> , <i>keyEncipherment</i> , <i>dataEncipherment</i> , <i>keyAgreement</i> , <i>encipherOnly</i> , <i>decipherOnly</i> and combinations thereof

EU-certificates may contain the following *uncritical* extensions:

Extension	OID	Parameter
<i>ExtKeyUsage</i>	2.5.29.37	According to [RFC 5280]
<i>AuthorityKeyIdentifier</i>	2.5.29.35	160-bit SHA-1 Hash of the issuing key
<i>SubjectKeyIdentifier</i>	2.5.29.14	160-bit SHA-1 Hash of the Subject's Public Key
<i>CRLDistributionPoints</i>	2.5.29.31	CRL- distribution point in the form of an ldap-address
<i>AuthorityInfoAccess</i>	1.3.6.1.5.5.7.1.1	<i>accessMethod=OCSP</i> <i>{1.3.6.1.5.5.7.48.1}</i> , <i>accessLocation</i>
<i>certificatePolicies</i>	2.5.29.32	OID for supporting CPs <i>cpsURI</i>
<i>SubjectAltName</i>	2.5.29.17	Alternative subject name

Additionally extensions may be incorporated if they comply with [X.509], [RFC 5280], and [Co-PKI] or are described in a referenced document.

7.1.3 Algorithm-OIDs

The following encryption algorithm is currently employed in CA- and EU-certificates:

- RSA with the OID 1.2.840.113549.1.1.1.

The following signature algorithms are currently employed in CA- and EU-certificates:

- SHA1 RSA with the OID 1.2.840.113549.1.1.5,
- SHA256 RSA with the OID 1.2.840.113549.1.1.11.

7.1.4 Name Formats

The fields *subject* (here: end-user name) and *issuer* (issuer name) are used to store names in the [X.501] DistinguishedName format. The attributes detailed in section 3.1.4 may be assigned. The attributes are encoded as UTF8-string or, in the case of the attribute C (country) as PrintableString.

The fields *SubjectAltName* (alternative subscriber name) and *IssuerAltName* (alternative issuer name) can hold names according to [RFC 5280], which are encoded as IA5String.

7.1.5 Name Constraints

The extension „NameConstraints“ is not used.

7.1.6 Certificate Policy Object Identifier

The field „CertificatePolicies“ may hold the OID of supporting CPs. This CPS complies with the [ETSI-F] guidelines.

Class 3

Class 3 certificates may include the OID of the [ETSI-F] defined NCP or NCP+. Apart from these, other CPs may be referenced.

Class 3 EV

Class 3 EV-Certificates may include the OID of the [ETSI-F] defined EVCP. Additionally other CPs may be referenced.

Class 2

Class 2 certificates may include the OID of the [ETSI-F] defined LCP. Apart from the LCP other CPs may be referenced.

Class 1

Class 1 certificates will not reference any [ETSI-F] defined CPs. Other CPs may however be referenced.

7.1.7 Usage of the extension „PolicyConstraints“

The extension „PolicyConstraints“ is not used.

7.1.8 „PolicyQualifiers“ Syntax and Semantics

The extension „PolicyQualifier“ is not used.

7.1.9 Processing the Semantics of the Critical Extension CertificatePolicies

The extension *CertificatePolicies* is uncritical in CA- and EU-certificates. Subscribers and relying parties may or may not evaluate this extension.

7.2 CRL Profiles

7.2.1 Version Number(s)

CRL v2 are issued according to [RFC 5280]. Delta-CRLs are not offered.

7.2.2 CRL extensions and CRL items

CRLs may incorporate following uncritical extensions:

Extension	OID	Parameter
<i>cRLNumber</i>	2.5.29.20	CRL number
<i>AuthorityKeyIdentifier</i>	2.5.29.35	160-bit SHA-1 Hash of the issuing key

7.3 Status Monitoring Service (OCSP) Profile

7.3.1 Version Number(s)

OCSP v1 is employed according to [RFC 2560].

7.3.2 OCSP-extensions

In OCSP-requests, the responder supports the following extensions:

Extension	Parameter
<i>RetrieveIfAllowed</i>	If set, the certificate is included in the answer (optional).

The OCSP-responder uses the following extension in its answers:

Extension	Parameter
<i>ArchiveCutoff</i>	Time-period for which status information will be available through the OCSP-responder after a certificate has been created.
<i>CertHash</i>	In the cases of status = good or status = revoked, the SHA-1 hash-value of the certificate is included in this extension.
<i>CertInDirSince</i>	Time of certificate publication into the central directory service.
<i>RequestedCertificate</i>	Contains the certificate, if the request-extension <i>RetrieveIfAllowed</i> was set.

All the extensions are uncritical. Further uncritical extensions may be included.

8. Verifications and other Appraisals

The D-TRUST-Root-PKI CAs are hosted in the same facilities as the D-TRUST GMBH CA for the creation of qualified certificates with provider accreditation for being in strict accordance with the provisions of the German signature law. Revisions, objects subject to revision and processes are described in the security concept of the signature-law conforming Certification Service Providers D-TRUST GMBH – [SiKo-DTR]. The section “role-concept” of the same security concept [SiKo-DTR] describes the necessary qualification and the standing of the controller. The security concept was audited by the TÜV Informationstechnik GmbH. It may partially be made available on request, if a vested interest is in evidence. In addition, controls by external auditors of the technical control board TÜV Informationstechnik GmbH are conducted every three years in the course of the voluntary licensing process for the CSP’s accreditation according to §15 SigG (German Signature Law) and §11 SigV (German Signature Regulation). The signature-law approved procedure attests the D-TRUST GMBH a high security standard.

Class 3-2

Areas that cannot be reproduced along the lines of the qualified operations with provider accreditation (as for example the in-house operation of a root-CA) because of legal or technical differences are checked at least once a year in the course of internal revision procedures.

This CPS as well as the [CP] comply with the [ETSI-F] “NCP” and “NCP+” requirements for class 3 certificates, with “EVCP” requirements in the case of Class 3 EV-Certificates and with the [ETSI-F] “LCP” requirements in the case of class 2 certificates. A regular assessment by a „competent independent party“ as required in TS 102 042 [ETSI-F] (section 5.4.1) proves a continued compatibility.

The CSP only issues certificates including Policy-OIDs which reference [ETSI-F] after an initial and successful inspection regarding to [ETSI-F] compliancy by an independent, external and licensed auditor. Repeat inspections are carried out on a regular basis. Should the procedures not comply with the current [ETSI-F] guidelines anymore, the CSP will immediately stop issuing certificates until compliancy has been reestablished and audited accordingly.

Class 3 EV-certificates

The CSP issues EV-certificates only after having its procedures audited in respect to their compliance with the guidelines of [GL-BRO] by a J 35 [GL-BRO] entitled, independent and external certified accountant in possession of a WebTrust-license or in their compliance with the guidelines of [ETSI-F] “EVCP”. Should the procedures not comply with the current [GL-BRO] guidelines anymore, the CSP will immediately stop issuing certificates until compliancy has been reestablished and audited accordingly. The audit is conducted annually.

In addition to the above, internal audits are performed on a regular basis.

9. Other Financial and Legal Regulations

The provisions of chapter 9 are laid-out in chapter 9 of the [CP] and in the standard business terms.

Annex A Reasons for Revoking a Class 3 EV-certificate

Excerpt from the current guidelines for Extended Validation Certificates, CA/Browser Forum.

G 27 [GL-BRO]

Revocation Events *The CA MUST revoke an EV Certificate it has issued upon the occurrence of any of the following events:*

- 1. The Subscriber requests revocation of its EV Certificate;*
- 2. The Subscriber indicates that the original EV Certificate Request was not authorized and does not retroactively grant authorization;*
- 3. The CA obtains reasonable evidence that the Subscriber's Private Key (corresponding to the Public Key in the EV Certificate) has been compromised, or that the EV Certificate has otherwise been misused;*
- 4. The CA receives notice or otherwise becomes aware that a Subscriber has violated one or more of its material obligations under the Subscriber Agreement;*
- 5. The CA receives notice or otherwise becomes aware that a court or arbitrator has revoked a Subscriber's right to use the domain name listed in the EV Certificate, or that the Subscriber has failed to renew its domain name;*
- 6. The CA receives notice or otherwise becomes aware of a material change in the information contained in the EV Certificate;*
- 7. A determination, in the CA's sole discretion, that the EV Certificate was not issued in accordance with the terms and conditions of these Guidelines or the CA's EV Policies;*
- 8. The CA determines that any of the information appearing in the EV Certificate is not accurate.*
- 9. The CA ceases operations for any reason and has not arranged for another EV CA to provide revocation support for the EV Certificate;*
- 10. The CA's right to issue EV Certificates under these Guidelines expires or is revoked or terminated, unless the CA makes arrangements to continue maintaining the CRL/OCSP Repository;*
- 11. The Private Key of the CA's Root Certificate used for issuing that EV Certificate is suspected to have been compromised;*
- 12. Such additional revocation events as the CA publishes in its EV Policies; or*
- 13. The CA receives notice or otherwise becomes aware that a Subscriber has been added as a denied party or prohibited person to a blacklist, or is operating from a prohibited destination under the laws of the CA's jurisdiction of operation as described in Section 23 of these Guidelines.*