



# ENTRUST

## Entrust PKIaaS

### Certification Practice Statement

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# 1 About this guide

This document provides the complete Certification Practice Statement (CPS) for Entrust PKIaaS (PKI as a Service).

- [Acronyms](#)
- [Revision information](#)
- [Other documents](#)
- [Documentation feedback](#)

## Acronyms

See below a definition of acronyms that may appear in this document.

Acronym	Definition
ACME	Automatic Certificate Management Environment
ADCS	Microsoft Active Directory Certificate Services
ADDS	Microsoft Active Directory Domain Services
AES	Advanced Encryption Standard
AIA	Authority Information Access
CA	Certification Authority
CAGW	Entrust CA Gateway (API)
CEG	Entrust Certificate Enrollment Gateway
CEP	Certificate Enrollment Policy
CLI	Command-line Interface
CLM	Certificate Lifecycle Management
CMC	Cryptographic Message Syntax
CMP	Certificate Management Protocol
CN	Common Name

Acronym	Definition
CPS	Certification Practice Statement
CRL	Certificate Revocation List
CSR	Certificate Signing Request (PKCS #10)
CSS	Certificate Status Server
CT	Certificate Transparency
DHCP	Dynamic Host Configuration Protocol
DN	Distinguished Name
DNS	Domain Name System
ECDSA	Elliptic Curve Digital Signature Algorithm
ECC	Elliptic Curve Cryptography
ECS	Entrust Certificate Services
EEE	End Entity Enrollment
EST	Enrolment over Secure Transport
FIPS	Federal Information Processing Standard
FQDN	Fully Qualified Domain Name
JDK	Java Development Kit
HSM	Hardware Security Module
LDAP	Lightweight Directory Access Protocol
LDAPS	Lightweight Directory Access Protocol over SSL

Acronym	Definition
LRA	Local Registration Authority
MDM	Mobile Device Management
MDMWS	Entrust's Mobile Device Management Web Service API
MS-XCEP	X.509 Certificate Enrollment Policy Protocol (CEP)
MS-WSTEP	WS-Trust X.509v3 Token Enrollment Extensions Protocol (WSTEP)
NIST	National Institute of Standards and Technology
PKIaaS	Public Key Infrastructure as a Service
OA	Operational Authority
OCSP	Online Certificate Status Protocol
OID	Object Identifier
OTP	One-time Passcode
OVA	Open Virtual Appliance
P12	PKCS (Public Key Cryptography Standards) #12
PA	Policy Authority
PQ	Post-Quantum
PKCS	Public Key Cryptography Standards
PKI	Public Key Infrastructure
RA	Registration Authority
REST	Representational State Transfer



Acronym	Definition
RBAC	Role-Based Access Control
RDN	Relative Distinguished Name
RFC	Request for Comment
RHEL	Red Hat Enterprise Linux
RPO	Recovery Point Objective
RTO	Recovery Time Objective
SAN	Subject Alternative Names
SCEP	Simple Certificate Enrollment Protocol
SIEM	Security Information and Event Management
SHA	Secure Hash Algorithms
S/MIME	Secure/Multipurpose Internet Mail Extensions
TLS	Transport Layer Security
TPM	Trusted Platform Module
URL	Uniform Resource Locator
UEM	Unified Endpoint Management
V2G	Vehicle-to-Grid
VM	Virtual Machine
WHFB	Windows Hello for Business

## Revision information

See the following table for the document changes.

Date	Authors	Description
Feb 2021	Colin Tulloch Bruce Morton Charley Chell Alexandra Stockwell	Initial publication
May 2021	Jonah Guo Bruce Morton Charley Chell Alexandra Stockwell	Updated using PKIaaS 1.1 specs
Jan 2022	Jonah Guo Bruce Morton Alexandra Stockwell	Updated using PKIaaS 1.4 specs
Mar 2022	Jonah Guo Bruce Morton Alexandra Stockwell Blake Morgan	Updated to include the EU data centers New certificate profile updates
Dec 2022	Jonah Guo	Updated to include new certificate profiles
Mar 2023	Jonah Guo	Updated to include new certificate profiles
Jun 2023	Jonah Guo	Updated the default validity from 3 years to 1 year for most of the subscriber certificate profiles.
Oct 2023	Jonah Guo	Updated to include new certificate profiles Updated the subscriber key generation and delivery sections to cover the PCKS #12 scenarios
March 2024	Jonah Guo	Updated to include new certificate profiles
April 2025	Jonah Guo	Updated to add support for the NIST ML-DSA PQC algorithms and deprecate the old Dilithium algorithms

## Other documents

See the table below for other relevant documentation on Entrust PKIaaS.

Document	URL
PKIaaS Product Page	<a href="https://www.entrust.com/digital-security/certificate-solutions/products/pki/managed-services/pki-as-a-service">https://www.entrust.com/digital-security/certificate-solutions/products/pki/managed-services/pki-as-a-service</a>
PKIaaS Terms and Conditions	<a href="https://www.entrust.com/legal-compliance/terms-conditions/entrust-managed-pki">https://www.entrust.com/legal-compliance/terms-conditions/entrust-managed-pki</a>
Entrust PKIaaS customer guide	<a href="https://api.managed.entrust.com/pkiaas">https://api.managed.entrust.com/pkiaas</a>

## Documentation feedback

You can rate and provide feedback about product documentation by completing the online feedback form:

<https://go.entrust.com/documentation-feedback>

Any information you provide goes directly to the documentation team and is used to improve and correct the information in our guides.

## 2 Introduction

Entrust PKIaaS provides cloud-based, highly scalable PKI backed by Entrust nShield HSM clusters hosted in Entrust data centers. PKIaaS provides an agile PKI backend to applications that require privately trusted certificates, such as mobile device management, user authentication, IoT, and DevOps. This service is offered under the terms and conditions of a PKIaaS Agreement (defined below).

- [Scope](#)
- [Identification](#)
- [PKI Participants](#)
- [Certificate Usage](#)
- [Policy Administration](#)
- [Definitions](#)

### Scope

This CPS:

- Describes the practices and procedures of the Certificate Authorities (CAs) and other PKI participants and forms part of the PKIaaS Agreement under which Entrust makes the PKIaaS available.
- Applies to the Certificate types issued by a Customer's Root CAs or Issuing CAs operated by Entrust as part of the PKIaaS.
- Applies also to all persons, entities, and organizations, including, without limitation, all Applicants, Subscribers, Relying Parties, resellers, co-marketers, and any other persons, entities, or organizations that have a relationship with Entrust in respect to Certificates issued as part of PKIaaS and/or any services provided by Entrust in connection with PKIaaS.
- Is incorporated by reference into all Certificates issued by CAs created as part of PKIaaS.
- Provides Applicants, Subscribers, Relying Parties, resellers, co-marketers, and other persons, entities, and organizations with a statement of the practices and policies of the CAs. This CPS also provides a statement of the rights and obligations of Entrust, any third parties that are operating RAs under the CAs, Applicants, Subscribers, Relying Parties, resellers, co-marketers and any other persons, entities, or organizations that may use or rely on Certificates or have a relationship with a CA or a RA operating under a CA in respect to Certificates and/or any services regarding Certificates.
- Excludes PKI components and services deployed, hosted, and operated by the Customer or its delegates, such as root CAs, RA services, and subordinate or cross-certified CAs operated (by any party) outside of PKIaaS.
- Does not cover Entrust-managed PKI, Entrust-managed offline root CA, Entrust Digital Signing as a Service, Entrust Certificate Services, or any publicly trusted Certificates issued by Entrust.

### Identification

This document is the Entrust PKIaaS Certificate Practice Statement (PKIaaS CPS) and has been assigned the following Object Identifier (OID):

`2.16.840.1.114027.200.6.10`

### PKI Participants

See below for the PKI participants in Entrust PKIaaS.

- [Certification Authorities](#)

- [Registration Authorities](#)
- [Subscribers](#)
- [Relying Parties](#)
- [Entrust Policy Authority \(Policy Authority\)](#)
- [Operational Authority.](#)
- [Other Participants](#)

## Certification Authorities

The structure of the PKIaaS PKI environment is comprised of:

- **Root CAs.** The Root CAs serve as the Customer's PKI trust anchors. The Customer defines the Common Name (CN) of each Online Root CA. The Root CAs issue Certificates to the Issuing CAs and OCSP services.
- **Issuing CAs.** The Issuing CAs are subordinate to the Root CAs. The Issuing CAs are hosted and operated by PKIaaS—the Issuing CAs issue Certificates to or for Subscribers.

## Registration Authorities

The RA is the person or entity that decides whether or not a certificate should be issued in response to a Subscriber request. RAs verify Applicants' identities and submit certificate issuance requests on their behalf. They are also responsible for applicants' registration, identification, and authentication processes.

RAs are external to PKIaaS and thus outside the scope of this CPS. They interact with PKIaaS through published PKIaaS secure APIs. RAs typically use software applications that interface with the PKIaaS API and provide specific functionality applicable to certificate use.

The Customer is the RA responsible for the identity verification and certificate issuance to Subscribers.

## Subscribers

Subscribers may use CA services through an RA to support transactions and communications.

The Customer is responsible for determining:

- Who may be a Subscriber.
- Which people, entities, and devices may receive certificates.

## Relying Parties

A Relying Party is an entity that relies on or uses a Certificate to verify the Subject's identity, the integrity of a digitally signed message, or to establish confidential communications with the Subject. The Relying Party is responsible for checking the validity of the Certificate using the appropriate Certificate Status Service.

The Customer is responsible for determining who may use issued certificates.

## Entrust Policy Authority (Policy Authority)

Entrust is the Policy Authority responsible for overseeing and setting policy and practices as applicable to this CPS.

## Operational Authority.

Entrust is the Operational Authority (OA) and operates all Root and Issuing CA systems hosted and operated on behalf of Customers as part of PKIaaS. These systems issue and manage Certificates, Certificate Revocation Lists (CRLs), and OCSP responses issued in accordance with this CPS. The OA is responsible for:

- Developing and submitting to the Policy Authority for review and approval, the CPS;
- Responsible for all equipment and software, hosted by PKIaaS, and required to operate the Customer's PKI; and
- Ensuring that the CAs, Repository, and other PKI-related components hosted by PKIaaS are operated in accordance with this CPS.

## Other Participants

No stipulation.

## Certificate Usage

Private trust Certificates are issued to organizations to allow servers, devices, and individuals to identify themselves and/or communicate securely with entities and services within the organization.

## Appropriate Certificate Uses

The Customer may determine the appropriate uses of each Certificate type.

## Prohibited Certificate Uses

All Certificates issued shall be for lawful purposes and consistent with applicable laws, including, without limitation, applicable export or import laws. It is prohibited to use Certificates in any manner that violates the law. In addition, it is not permitted to use any Certificates in a manner that violates the PKIaaS Acceptable Use Policy.

## Policy Administration

See below for policy details on this document.

- [Organization Administration of this Document](#)
- [Contact Information](#)
- [Person Determining CPS Suitability for the Policy](#)

## Organization Administration of this Document

The CPS is administered by the Policy Authority; it is based on the policies established by Entrust.

## Contact Information

Questions regarding this CPS shall be directed to Entrust PKIaaS Policy Authority:

- Email: [support@entrust.com](mailto:support@entrust.com)
- Phone: 1 (866) 267-9297

## Person Determining CPS Suitability for the Policy

The Policy Authority determines the suitability and applicability of this CPS.

## Definitions

See below for a definition of the main PKIaaS-related concepts.

- Applicant
- Activation data
- Agreement
- CA certificate
- Certificate
- Certificate revocation list (CRL)
- Certification authority (CA)
- Certificate issuance
- Certification practice statement (CPS)
- Cryptographic module
- Customer
- Digital signature
- Distinguished name (DN)
- Issuing Certification Authority (Issuing CA)
- Key generation
- Key pair
- Public cloud
- Object identifier (OID)
- Online certificate status protocol (OCSP)
- OCSP responder
- PKI certificate
- Private key
- Public key
- Public key cryptography
- Public key infrastructure (PKI)
- Registration authority (RA)
- Relying party
- Repository
- Certificate revocation
- Request for comments (RFC)
- Root Certification Authority (Root CA)
- Subject
- Subscriber
- Trusted Role
- Validity period
- X.500
- X.509

## Applicant

A person, entity, or organization applying for the issuance or renewal of a certificate.

## Activation data

Data values, other than keys, that are required to operate cryptographic modules and that need to be protected – for example:

- PIN
- passphrases
- manually-held key share

## Agreement

A legally binding contract for PKIaaS comprising:

- The PKIaaS terms of use.
- The PKIaaS schedule.
- The Entrust General Terms and Conditions provided with the PKIaaS Schedule at <https://www.entrust.com/-/media/documentation/licensingandagreements/certificate-solutions-general-terms.pdf>
- An Order for PKIaaS as defined in the General Terms.

## CA certificate

A certificate for the public key of a CA (Certificate Authority).

## Certificate

A digital document issued by the CA that, at a minimum, meets the following:

- Identifies the CA issuing it.
- Names or otherwise identifies a Subject.
- Contains a Public Key of a Key Pair.
- Identifies its Operational Period.
- Contains a serial number and is digitally signed by a CA.

## Certificate revocation list (CRL)

A time-stamped list of the serial numbers of certificates that have been revoked before the expiration of their validity periods

## Certification authority (CA)

The technology to create, issue, manage, and revoke certificates.

## Certificate issuance

The act performed by a CA in creating a certificate listing with the CA as "Issuer".

## Certification practice statement (CPS)

A statement of the practices for a CA to issue, manage, revoke, renew, or re-key certificates.

## Cryptographic module

A software, device, or utility for:

- Generating key pairs,
- Storing cryptographic information.
- Performing cryptographic functions.



## Customer

The entity that has entered into a PKIaaS Agreement with Entrust.

## Digital signature

The transformation of an electronic record by one person using a private key and public key cryptography so that another person having the corresponding public key can determine:

- The record transformation was created using the private key corresponding to the public key.
- The record has been altered since the transformation was made.

## Distinguished name (DN)

The unique identifier for a subject so it can be located in a directory based on the ITU/CCITT X.500. PKIaaS has no restriction on distinguished names per certificate profile; all certificate profiles support the following identifiers.

Alias	OID
'CN' 'CommonName'	2.5.4.3
'SN' 'SurName'	2.5.4.4
'SERIALNUMBER' 'DeviceSerialNumber'	2.5.4.5
'C' 'Country'	2.5.4.6
'L' 'Locality'	2.5.4.7
'ST' 'S' 'State'	2.5.4.8
'STREET' 'StreetAddress'	2.5.4.9
'O' 'Org' 'Organization'	2.5.4.10
'OU' 'OrganizationalUnit' 'OrganizationUnit' 'OrgUnit'	2.5.4.11
'T' 'Title'	2.5.4.12
'BUSINESSCATEGORY'	2.5.4.15
'POSTALCODE'	2.5.4.17
'givenName' 'G'	2.5.4.42

Alias	OID
'I' 'Initials'	2.5.4.43
'ORGANIZATIONIDENTIFIER'	2.5.4.97
'UID'	0.9.2342.19200300.100.1.1
'DC' 'DomainComponent'	0.9.2342.19200300.100.1.25
'Email' 'E'	1.2.840.113549.1.9.1
'unstructuredName'	1.2.840.113549.1.9.2
'unstructuredAddress'	1.2.840.113549.1.9.8
'JurisdictionOfIncorporationLocalityName'	1.3.6.1.4.1.311.60.2.1.1
'JurisdictionOfIncorporationStateOrProvinceName'	1.3.6.1.4.1.311.60.2.1.2
'JurisdictionOfIncorporationCountryName'	1.3.6.1.4.1.311.60.2.1.3
'TrademarkOfficeName'	1.3.6.1.4.1.53087.1.2
'TrademarkCountryOrRegionName'	1.3.6.1.4.1.53087.1.3
'TrademarkRegistration'	1.3.6.1.4.1.53087.1.4
'LegalEntityIdentifier'	1.3.6.1.4.1.53087.1.5
'WordMark'	1.3.6.1.4.1.53087.1.6
'MarkType'	1.3.6.1.4.1.53087.1.13
'StatuteCountryName'	1.3.6.1.4.1.53087.3.2
'StatuteStateOrProvinceName'	1.3.6.1.4.1.53087.3.3
'StatuteLocalityName'	1.3.6.1.4.1.53087.3.4

Alias	OID
'StatuteCitation'	1.3.6.1.4.1.53087.3.5
'StatuteURL'	1.3.6.1.4.1.53087.3.6

## Issuing Certification Authority (Issuing CA)

In the context of a particular certificate, the issuing CA is the CA that issued the certificate.

## Key generation

The process of creating a key pair.

## Key pair

Two mathematically related cryptographic keys with the following properties.

- A message encrypted with one key can only be decrypted with the other.
- Even knowing one key, it is believed to be computationally infeasible to discover the other key.

## Public cloud

Computing services provided by third-party providers over the public Internet.

## Object identifier (OID)

A unique alphanumeric identifier registered under the ISO registration standard to reference a specific object or object class. In this document, OIDs uniquely identify certificates and cryptographic algorithms.

## Online certificate status protocol (OCSP)

A protocol to validate certificate statuses in real time.

## OCSP responder

A service that responds to certificate status requests with one of three responses.

- Valid
- Invalid
- Unknown

## PKI certificate

A certificate issued pursuant to the PKIaaS Certification Practice Statement.

## Private key

The sensitive key in the key pair protected by the subject and kept secret. The private key can:

- Create digital signatures.
- Decrypt data previously encrypted using the corresponding public key.

## Public key

The non-sensitive key in the key pair. This key:

- Is submitted as part of a certificate signing request by the subscriber
- Is disclosed in the subsequently-issued certificate.

The public key can:

- Verify digital signatures created using the corresponding private key.
- Encrypt data meant for decryption with the corresponding private Keyk

## Public key cryptography

A type of cryptography also known as asymmetric cryptography. This cryptography uses a key pair rather than a single key to secure data authentication and confidentiality.

## Public key infrastructure (PKI)

The architecture, technology, practices, and procedures supporting a security system that uses certificates and public key cryptography.

## Registration authority (RA)

An individual, organization or process responsible for verifying the identity of a subscriber.

## Relying party

An individual or legal entity that relies on a certificate or any digital signature verified using that certificate.

## Repository

An online system for storing and retrieving certificates and other information relevant to certificates, including certificate validity or revocation information.

## Certificate revocation

A permanent invalidation of a certificate from a specific time onward. Revocation includes:

- Listing the certificate in CRL.
- Preventing users from accessing the certificate once connected to the central infrastructure.

## Request for comments (RFC)

A document series for communicating information about the Internet. Some RFCs are designated by the IAB (Internet Architecture Board) as Internet standards. Most RFCs document protocol specifications such as Telnet and FTP.

## Root Certification Authority (Root CA)

A top-level CA. That is, a CA whose public key is not certified by another CA.

## Subject

The individual, legal entity, organization, or device identified in a certificate. The subject holds the private key corresponding to the public Key in the certificate.

## Subscriber

The person, legal entity, or organization that has applied for and has been issued a certificate. Before the identity verification and issuance of a certificate, a subscriber is an applicant.

## Trusted Role

An employee or contractor with authorized access to or control over PKIaaS.

## Validity period

The intended term of validity of a certificate, This period begins with the later of the following dates:

- The date of issuance stated in the "Issued On" certificate field.
- The date stated in the "Valid From" or "Activation" certificate fields.

The period ends with the earlier of two dates:

- The expiration date stated in the "Valid To" or "Expiry" certificate fields.
- The revocation date asserted in the CRL. This CRL is published in the distribution point within the certificate.

## X.500

A series of computer networking standards covering electronic directory services such as:

- Directory access protocol (DAP)
- Directory system protocol (DSP)
- Directory information shadowing protocol (DISP)
- Directory operational bindings management protocol (DOP)

## X.509

A standard issued by the ITU-T (Technical committee of the International Telecommunication Union) for public key certificates and certification path validation.

### 3 Publication and Repository Responsibilities

Entrust maintains the repository to store information related to certificates and the operation of CAs. This CPS and related information are published in the Repository.

- [Repository](#)
- [Publication of Certification Information](#)
- [Time or Frequency of Publication](#)
- [Access Controls on Repositories](#)

#### Repository

Entrust maintains the Repository to allow access to Certificate-related and Certificate revocation information. The information is accessible through a web interface, available 24/7, and periodically updated as set forth in this CPS. The Repository is the only approved source for CRL and other information about Certificates.

PKIaaS will adhere to the latest version of the CPS published in the Repository.

The Repository can be accessed at <https://www.entrust.net/CPS>.

#### Publication of Certification Information

PKIaaS publishes this CPS, CA Certificates, its form of Agreement, and CRLs in the Repositories.

#### Time or Frequency of Publication

The CPS will be reissued and published at least once per year.

#### Access Controls on Repositories

Information published in the Repository is public. Read-only access is unrestricted. Entrust has implemented logical and physical controls to prevent unauthorized write access to its Repositories.

## 4 Identification and Authentication

See below for the practice statements on identification and authentication.

- [Naming](#)
- [Initial Identity Validation](#)
- [Identification and Authentication for Re-Key Requests](#)
- [Identification and Authentication for Revocation Requests](#)

### Naming

See below for the practice statements on naming.

- [Types of Names](#)
- [Need for Names to be Meaningful](#)
- [Anonymity or Pseudonymity of Subscribers](#)
- [Rules for Interpreting Various Name Forms](#)
- [Uniqueness of Names](#)
- [Recognition, Authentication, and Role of Trademarks](#)

### Types of Names

The Subject names in a Certificate comply with the X.501 Distinguished Name (DN) form.

### Need for Names to be Meaningful

CA Certificates must identify the subject as a CA and include the Customer organization name. The RA is responsible for ensuring the Subject names in Subscriber Certificates are meaningful to Relying Parties.

### Anonymity or Pseudonymity of Subscribers

No stipulation

### Rules for Interpreting Various Name Forms

No stipulation

### Uniqueness of Names

CA distinguished names shall be unique.

### Recognition, Authentication, and Role of Trademarks

No stipulation.

### Initial Identity Validation

See below for the practice statements on initial identity validation.

- [Method to Prove Possession of Private Key](#)
- [Authentication of an Organization Identity](#)

- [Authentication of an Individual Identity](#)
- [Non-verified Subscriber Information](#)
- [Validation of Authority](#)
- [Criteria for Interoperation](#)

## Method to Prove Possession of Private Key

The CA will perform proof of possession tests for CSRs created using reversible asymmetric algorithms (such as RSA) by validating the signature on the CSR submitted with the Certificate Application.

## Authentication of an Organization Identity

Responsibility of the RA.

## Authentication of an Individual Identity

Responsibility of the RA.

## Non-verified Subscriber Information

Responsibility of the RA.

## Validation of Authority

During the initial onboarding process, the Customer identifies who will act as the RA and be responsible for the Customer's RA credentials. A one-time passcode (OTP) used to create the RA credential is generated and securely transmitted to the identified RA.

Validation of Authority for Subscriber Certificates is the responsibility of the RA.

## Criteria for Interoperation

Responsibility of the RA.

## Identification and Authentication for Re-Key Requests

The RA is responsible for:

- Identification and Authentication for Routine Re-key
- Identification and Authentication for Re-key after Certificate Revocation

## Identification and Authentication for Revocation Requests

Before revoking Certificates, the RA shall validate the authorization to revoke such Certificate.



## 5 Certificate Life-Cycle Operational Requirements

See below for the certificate life-cycle operational requirements.

- [Certificate Application](#)
- [Certificate Application Processing](#)
- [Certificate Issuance](#)
- [Certificate Acceptance](#)
- [Key Pair and Certificate Usage](#)
- [Certificate Renewal](#)
- [Certificate Re-Key](#)
- [Certificate Modification](#)
- [Certificate Revocation and Suspension](#)
- [Certificate Status Services](#)
- [End of Subscription](#)
- [Key Escrow and Recovery](#)

### Certificate Application

Application for Certificates issued under this CPS are submitted via electronic means.

- [Who Can Submit a Certificate Application](#)
- [Enrollment Process and Responsibilities](#)

### Who Can Submit a Certificate Application

Applications for Certificates are submitted via authenticated API request from an RA. Each RA is assigned unique authentication credentials.

### Enrollment Process and Responsibilities

The enrollment process includes authentication of the API requests and validation of the certificate request contents.

All communications among PKI components (e.g., CAs, RAs) supporting the Certificate application and issuance process are authenticated and protected from modification. Electronic communication between the Customer or RA enrollment environments, automated RA applications, and the CAs is encrypted and digitally signed.

### Certificate Application Processing

Certificate application processing follows the life-cycle outlined below.

- [Performing Identification and Authentication Functions](#)
- [Approval or Rejection of Certificate Applications](#)
- [Time to Process Certificate Applications](#)

### Performing Identification and Authentication Functions

The CA performs verification of the RA by checking that the credentials supplied in the API request entitle the RA to issue certificates for the designated CA and that the designated CA has license capacity.

The RA will identify and authenticate the Subscriber.

## Approval or Rejection of Certificate Applications

PKIaaS approves a Certificate application if the following conditions are met:

- Request is syntactically valid
- Proof of possession verification passes
- The customer has an available Certificate inventory to consume

## Time to Process Certificate Applications

Certificate Application processing is the responsibility of the RA. The CA will respond to API requests with a Certificate or with an error as to why the Certificate was not issued.

## Certificate Issuance

After verifying the information provided with a Certificate Application, an RA operating under a CA may request that a CA issue a Certificate.

- [CA Actions during Certificate Issuance](#)
- [Notification to Subscriber by the CA of Issuance of Certificate](#)

## CA Actions during Certificate Issuance

Upon receiving the issuance API request, the CA verifies the integrity of the information in the Certificate request, builds and signs a Certificate, and returns the Certificate in the API response to the API requestor (RA).

The CA will not issue any Certificates with validity period that exceeds the validity period of the corresponding Issuing CA Certificate.

## Notification to Subscriber by the CA of Issuance of Certificate

Notification to Subscriber is the responsibility of the RA.

## Certificate Acceptance

Certificate acceptance processing follows the life-cycle outlined below.

## Conduct Constituting Certificate Acceptance

No stipulation.

## Publication of the Certificate by the CA

The CA will provide the Certificate to the RA through an API response.

## Notification of Certificate Issuance by the CA to Other Entities

The CA does not provide notification of Certificate issuance to other entities.

## Key Pair and Certificate Usage

See below for the practice statement on key pair and certificate usage.

## Subscriber Private Key and Certificate Usage

The Customer is responsible for how Subscriber Private Keys and Certificates are used.

## Relying Party Public key and Certificate Usage

PKIaaS provides Certificate status in accordance with this CPS. Relying Party Public key and Certificate usage is outside the scope of this CPS.

## Certificate Renewal

See below for the practice statement on certificate renewal.

- [Circumstance for Certificate Renewal](#)
- [Who May Request Renewal](#)
- [Processing Certificate Renewal Requests](#)
- [Notification of New Certificate Issuance to Subscriber](#)
- [Conduct Constituting Acceptance of a Renewal Certificate](#)
- [Publication of the Renewal Certificate by the CA](#)
- [Notification of Certificate Issuance by the CA to Other Entities](#)

## Circumstance for Certificate Renewal

Responsibility of the RA.

## Who May Request Renewal

Responsibility of the RA.

## Processing Certificate Renewal Requests

Certificate renewal is processed the same as Certificate issuance.

## Notification of New Certificate Issuance to Subscriber

Notification to Subscriber is the responsibility of the RA.

## Conduct Constituting Acceptance of a Renewal Certificate

No stipulation.

## Publication of the Renewal Certificate by the CA

The CA will provide the Certificate to the RA through an API response.

## Notification of Certificate Issuance by the CA to Other Entities

The CA does not provide notification of Certificate issuance to other entities.

## Certificate Re-Key

See below for the practice statement in certificate re-keying.

- [Circumstance for Certificate Re-key](#)
- [Who May Request Certification of a New Public Key](#)
- [Processing Certificate Re-keying Requests](#)
- [Notification of New Certificate Issuance to Subscriber](#)
- [Conduct Constituting Acceptance of a Re-keyed Certificate](#)
- [Publication of the Re-keyed Certificate by the CA](#)
- [Notification of Certificate Issuance by the CA to Other Entities](#)

### Circumstance for Certificate Re-key

A Subscriber should request a Certificate with a new Public Key if the Private Key is compromised or at the end of the lifecycle of the Key Pair.

### Who May Request Certification of a New Public Key

Responsibility of the RA.

### Processing Certificate Re-keying Requests

Certificate re-key is processed the same as Certificate issuance.

### Notification of New Certificate Issuance to Subscriber

Notification to Subscriber is the responsibility of the RA.

### Conduct Constituting Acceptance of a Re-keyed Certificate

No stipulation.

### Publication of the Re-keyed Certificate by the CA

The CA will provide the Certificate to the RA through an API response.

## Notification of Certificate Issuance by the CA to Other Entities

The CA does not provide notification of Certificate issuance to other entities.

## Certificate Modification

Certificate modification is treated the same as issuance. The RA is responsible for submitting the modified CSR and for revoking the replaced certificate.

## Certificate Revocation and Suspension

The CA will revoke a Certificate after receiving a valid revocation request from an RA operating under such CA.

- [Circumstances for Revocation](#)
- [Who can Request Revocation of a Certificate](#)
- [Procedure for Revocation Request](#)
- [Certificate Revocation Grace Period](#)
- [Time Within Which CA Must Process The Revocation Request](#)
- [Revocation Checking Requirement for Relying Parties](#)
- [Revocation Lists Issuance Frequency](#)
- [Maximum Latency for CRLs](#)
- [On-line Revocation/Status Checking Availability](#)
- [On-line Revocation Checking Requirements](#)
- [Other Forms of Revocation Advertisements Available](#)
- [Special Requirements re: Key Compromise](#)
- [Circumstances for Suspension](#)
- [Who Can Request Suspension](#)
- [Procedure for Suspension Request](#)
- [Limits on Suspension Period](#)

### Circumstances for Revocation

Revocation of CA Certificates may be performed by Entrust in the following circumstances.

- The RA requests for an Issuing Certificate to be revoked;
- The RA can be shown to have violated, or is suspected of violating, the requirements of this CPS or the Agreement;
- There is a suspected compromise of the associated private key; or
- When the Agreement with Entrust is terminated.

Revocation of Subscriber Certificates is to be performed when the RA requests for a Subscriber Certificate to be revoked.

### Who can Request Revocation of a Certificate

The RA may request revocation of any Certificates issued.

It is the responsibility of the RA to handle Subscriber requests for Certificate revocation.

### Procedure for Revocation Request

The RA shall request revocation of their Issuing CA Certificate, or of an individual Subscriber Certificate if the RA has a suspicion or knowledge of or a reasonable basis for believing that any of the following events have occurred:

1. Compromise of the Certificates Private Key;
2. Knowledge that the original Certificate request was not authorized

The RA shall submit revocation requests to the CA via authenticated API.

### Certificate Revocation Grace Period

CAs to not apply any grace period. Revocation requests are processed synchronously in sequence with the API request and response.

## Time Within Which CA Must Process The Revocation Request

CAs will revoke Certificates upon receipt of a proper revocation request.

## Revocation Checking Requirement for Relying Parties

It is recommended that Relying Parties implement revocation checking. The matter of how often new revocation data should be obtained is a determination to be made by the Relying Party, considering the risk, responsibility, and consequences for using a Certificate whose revocation status cannot be guaranteed.

## Revocation Lists Issuance Frequency

CRLs are generated every 24 hours and are valid for 7 days.

The revocation request of a certificate can set an instant CRL update flag. In this case a new CRL will be generated containing the revoked certificate in the requests as soon as possible, depending on the service load. In a normal load the CRL will be generated in less than 15 minutes.

## Maximum Latency for CRLs

CRLs are available within seconds of issuance. No delay is imposed between the issuance and publication of CRLs for caching or any other purpose.

## On-line Revocation/Status Checking Availability

On-line revocation/status checking of Certificates is available on a continuous basis by CRL and optionally OCSP.

## On-line Revocation Checking Requirements

CAs support an OCSP capability using the GET and POST methods for Certificates issued in accordance with this CPS.

The CAs shall sign and make available OCSP as follows:

1. OCSP responses for Issuing CA Certificates are issued upon request.
2. OCSP responses for Subscriber Certificates are issued upon request.

If the OCSP responder receives a request for status of a Certificate serial number that is "unused", then the responder will not respond with a "good" status.

The on-line locations of the CRL and the OCSP response are included in the Certificate to support software applications that perform automatic Certificate status checking.

## Other Forms of Revocation Advertisements Available

The CA does not provide any other forms of Certificate status.

## Special Requirements re: Key Compromise

If an RA suspects, knows, or is informed of Private Key compromise, then the RA is required to take necessary steps to revoke the Certificate, immediately stop using such Certificate, and remove such Certificate from any devices and/or software in which such Certificate has been installed.

## Circumstances for Suspension

Suspension of Certificates is to be performed when the RA requests for a Certificate to be suspended.

## Who Can Request Suspension

The RA may request suspension of any Certificates issued.

It is the responsibility of the RA to handle requests for Certificate suspension.

## Procedure for Suspension Request

The RA shall submit suspension requests to the CA via authenticated API.

## Limits on Suspension Period

There is no time limit on suspension.

## Certificate Status Services

See below for the practice statement on certificate status service.

## Operational Characteristics

Revocation entries on a CRL or OCSP response are not removed until after the expiry date of the revoked Certificate.

## Service Availability

The CA operates and maintains its CRL and OCSP capability with resources sufficient to provide a response time of ten seconds or less under normal operating conditions. Certificate status services are available on a continuous basis.

## Optional Features

No stipulation.

## End of Subscription

End of subscription is addressed in the Agreement.

## Key Escrow and Recovery

CA and Subscriber key escrow are not supported. Subscriber key recovery is not supported.

## Key Escrow and Recovery Policy and Practices

CA Keys can be recovered from an database and HSM backup.

## Session Key Encapsulation and Recovery Policy and Practices

No stipulation.



## 6 Management, Operational and Physical Controls

See below for the practice statement on management, operational and physical controls.

- [Physical Security Controls](#)
- [Procedural Controls for the CA](#)
- [Personnel Controls](#)
- [Audit Logging Procedures](#)
- [Records Archival](#)
- [Key Changeover](#)
- [Compromise and Disaster Recovery](#)
- [CA Termination](#)

### Physical Security Controls

See below for the practice statement on physical security controls.

- [Site Location and Construction](#)
- [Physical Access](#)
- [Power and Air Conditioning](#)
- [Water Exposures](#)
- [Fire Prevention and Protection](#)
- [Media Storage](#)
- [Waste Disposal](#)
- [Off-Site Backup](#)

#### Site Location and Construction

The HSM and Activation Data are located in Tier III, SSAE-18 datacenters or stored in a two-person-controlled safe in a facility where only Entrust-authorized personnel have access. Access to these facilities is restricted to personnel in Trusted Roles.

One or more public clouds provide the computing facilities that host the Certificate issuance, revocation, and status service components. The physical security controls imposed on components residing within a Public Cloud are outside the scope of this CPS.

#### Physical Access

Two-person control is required for physical access to the HSM. Alarm mechanisms notify security personnel of any violation of the rules for access to the HSM.

#### Power and Air Conditioning

The HSM is hosted in Tier III datacenters. The security zone is equipped with:

- Filtered, conditioned, power connected to an appropriately sized UPS and generator;
- Heating, ventilation, and air conditioning appropriate for a commercial data processing facility; and
- Emergency lighting.

The environmental controls conform to local standards and are appropriately secured to prevent unauthorized access and/or tampering with the equipment. Temperature control alarms and alerts are activated upon detection of threatening temperature conditions.

## Water Exposures

The HSM is hosted in Tier III datacenters and is not in danger of exposure to water. No liquid, gas, exhaust, etc. pipes traverse the controlled space other than those directly required for the area's HVAC system and for the pre-action fire suppression system. Water pipes for the pre-action fire suppression system are only filled when multiple fire alarms are activated.

## Fire Prevention and Protection

The HSM is hosted in Tier III datacenters equipped with fire suppression mechanisms. The facility is fully wired for fire detection, alarm, and suppression. Routine, frequent inspections of all systems are made to assure adequate operation.

## Media Storage

All media is stored away from sources of heat and from obvious sources of water or other obvious hazards. Electromagnetic media (e.g. tapes) are stored away from obvious sources of strong magnetic fields.

## Waste Disposal

Waste containing sensitive information shall be destroyed, such that the information is unrecoverable, before disposal. Media used to store sensitive data shall be destroyed before disposal, such that the information is unrecoverable.

## Off-Site Backup

Backups of the CA key material and CA databases, sufficient to recover from system failure, shall be made on a periodic schedule in accordance with the disaster recovery requirements.

## Procedural Controls for the CA

See below for the practice statements on procedural controls for the CA.

- [Trusted Roles](#)
- [Number of Persons Required Per Task](#)
- [Identification and Authentication for Each Role](#)
- [Roles Requiring Separation of Duties](#)

## Trusted Roles

Personnel in Trusted Roles will not be assigned other responsibilities that conflict with their operational responsibilities for the CA. Their privileges will be limited to the minimum required to carry out their assigned duties.

## Number of Persons Required Per Task

The CA Private Keys are backed up, stored, and recovered only by personnel in Trusted Roles using dual control in a physically secured environment.

## Identification and Authentication for Each Role

An individual performing a Trusted Role shall identify and authenticate their identity before being permitted to perform any actions or responsibilities associated with that Trusted Role.

## Roles Requiring Separation of Duties

Personnel in Trusted Roles who can deploy to or access the PKIaaS production systems do not have the ability to commit software code, and development team members who can commit code cannot deploy to or access PKIaaS production systems.

## Personnel Controls

See below for the practice statements on personnel controls.

- [Qualifications, Experience, and Clearance Requirements](#)
- [Background Check Procedures](#)
- [Training Requirements](#)
- [Retraining Frequency and Requirements](#)
- [Job Rotation Frequency and Sequence](#)
- [Sanctions for Unauthorized Actions](#)
- [Contracting Personnel Requirements](#)
- [Documentation Supplied to Personnel](#)

## Qualifications, Experience, and Clearance Requirements

Personnel in Trusted Roles must undergo background investigations and must be trained for their specific role.

## Background Check Procedures

Background checks are conducted as per the Entrust hiring processes.

## Training Requirements

Personnel in Trusted Roles will receive training. Where applicable, training will be conducted in the following areas:

- CA security principles and mechanisms;
- PKI duties they are expected to perform;
- Disaster recovery and business continuity procedures; and
- Stipulations of this CPS.

## Retraining Frequency and Requirements

No stipulation.

## Job Rotation Frequency and Sequence

No stipulation.

## Sanctions for Unauthorized Actions

No stipulation.

## Contracting Personnel Requirements

Contractor personnel employed to perform functions pertaining to the PKIaaS must meet applicable requirements as set forth in this CPS.

## Documentation Supplied to Personnel

No stipulation.

## Audit Logging Procedures

See below for the practice statements on audit logging procedures.

- [Types of Events Recorded](#)
- [Frequency of Processing Data](#)
- [Retention Period for Security Audit Data](#)
- [Protection of Security Audit Data](#)
- [Audit Log Backup Procedures](#)
- [Audit Collection System](#)
- [Notification to Event-Causing Subject](#)
- [Vulnerability Assessments](#)
- [Risk Assessments](#)

## Types of Events Recorded

Significant security events in the CAs are automatically time-stamped and recorded as audit logs. Audit logs are archived periodically. Where these events cannot be electronically logged, the CA shall supplement electronic audit logs with physical logs as necessary.

The foregoing record requirements include, but are not limited to, an obligation to record the following events:

- CA Certificate key lifecycle events, including:
  - CA Private Key generation, backup, storage destruction, and recovery
  - CA certificate requests and CA certificate revocation;
  - Cryptographic device lifecycle management events;
- Subscriber Certificate lifecycle management events, including:
  - Certificate issuance requests and revocation requests;
- Generation of CRLs; Security events, including:
  - Successful and unsuccessful PKI system access attempts;
  - PKI and security system actions performed;
  - Entries to and exits from the facility housing the HSM.

## Frequency of Processing Data

A security Information and Event Management (SIEM) system continuously monitors the audit logs. Policy violations and other significant events generate alerts that operations and security teams review for malicious activity.

## Retention Period for Security Audit Data

The audit logs are retained on the PKI system for at least three months and periodically archived in accordance with section [Records Archival](#).

## Protection of Security Audit Data

Audit logs remain stored on the PKI systems until archived in accordance with section [Records Archival](#). Only Trusted Role personnel have access to the PKI systems.

## Audit Log Backup Procedures

Audit logs are periodically archived in accordance with section [Records Archival](#).

## Audit Collection System

Audit collection processes are integral to the system and cover its entire deployment time. Should it become apparent that an automated audit system has failed, the Operational Authority will be notified and will consider suspending operations until the audit capability can be restored.

## Notification to Event-Causing Subject

No stipulation.

## Vulnerability Assessments

Vulnerability scans are conducted monthly to identify system weaknesses and patching requirements for operating systems and supporting infrastructure. Identified vulnerabilities are analyzed and addressed in accordance with Entrust's Patch and Vulnerability Management Standards.

## Risk Assessments

An annual risk assessment.

1. Identifies foreseeable internal and external threats that could result in unauthorized access, disclosure, misuse, alteration, or destruction of any Certificate data or Certificate management processes;
2. Assesses the likelihood and potential damage of these threats, taking into consideration the sensitivity of the Certificate data and Certificate management processes; and
3. Assesses the sufficiency of the policies, procedures, information systems, technology, and other arrangements that the CA has in place to counter such threats.

Based on the risk assessment, a security plan is developed, implemented, and maintained, consisting of security procedures, measures, and products designed to achieve the above objectives and manage and control the risks identified during the risk assessment. The security plan includes administrative, organizational, technical, and physical safeguards appropriate to the sensitivity of the Certificate data and Certificate management processes. The security plan also considers the available technology and the cost of implementing the specific measures. It implements a reasonable level of security appropriate to the harm that might result from a security breach and the nature of the data to be protected.

## Records Archival

See below the practice statement on record archival.

- [Types of Records Archived](#)
- [Retention Period for Archive](#)
- [Protection of Archive](#)
- [Archive Backup Procedures](#)
- [Requirements for Time-Stamping of Records](#)

- [Archive Collection System](#)
- [Procedures to Obtain and Verify Archive Information](#)

## Types of Records Archived

The audit logs, data, and revocation information for the CAs are archived, as are data necessary to access or verify archive contents.

## Retention Period for Archive

PKIaaS retains audit logs for a maximum of 6 years. The data and revocation information of expired or deleted CAs are permanently deleted within 60 days.

## Protection of Archive

The archive data is stored in a two-person-controlled safe in a facility to which only Entrust-authorized personnel have access.

## Archive Backup Procedures

No stipulation.

## Requirements for Time-Stamping of Records

No stipulation.

## Archive Collection System

Archive data will be collected as part of the routine system backup procedures, along with physical materials such as cryptographic modules and datacenter access logs, which will be stored manually.

## Procedures to Obtain and Verify Archive Information

No stipulation.

## Key Changeover

CAs will not be re-keyed. CA key pairs will be retired from service at the end of their lifetimes. New CA key pairs will be created as required to support the continuation of CA Services. Each CA will continue to publish CRLs signed with the original key pair until all Certificates issued using that original key pair have expired.

## Compromise and Disaster Recovery

See below for the practice statement on compromise and disaster recovery.

- [Incident and Compromise Handling Procedures](#)
- [Computing Resources, Software, and/or Data are Corrupted](#)
- [Entity Private Key Compromise Procedures](#)
- [Business Continuity Capabilities After a Disaster](#)

## Incident and Compromise Handling Procedures

The disaster recovery plan addresses the following:

1. The conditions for activating the plans
2. resumption procedures
3. a maintenance schedule for the plan
4. awareness and education requirements
5. the responsibilities of the individuals
6. recovery point objective (RPO) of fifteen minutes
7. recovery time objective (RTO) of 24 hours for essential CA operations, which include Certificate revocation, and issuance of Certificate revocation status
8. testing of recovery plans

To mitigate the event of a disaster, the CAs have implemented the following:

1. Four datacenters with highly available HSMs and secure on-site and off-site storage of backup HSMs containing copies of all CA Private Keys
2. secure on-site and off-site storage of all requisite activation materials
3. database replication between primary and secondary regions
4. daily database backups within both the primary and secondary regions
5. weekly backup of critical data to a secure off-site storage facility
6. secure off-site storage of the disaster recovery plan and disaster recovery procedures

Entrust has implemented physical data centers near Dallas, TX, and Denver, CO. It has also implemented physical data centers for European Union coverage in Munich and Frankfurt, Germany.

Cloud-based components utilize multiple availability zones for high availability and a secondary region for disaster recovery.

Entrust requires rigorous security controls to maintain the integrity of the CAs. Entrust views the compromise of the Private Key used by a CA as being very unlikely; however, Entrust has policies and procedures that will be employed in the event of such a compromise. At a minimum, all RAs will be informed as soon as practicable of such a compromise. Certificates signed by the compromised CA will be revoked.

## Computing Resources, Software, and/or Data are Corrupted

No stipulation.

## Entity Private Key Compromise Procedures

In the event of a compromised RA credential, the credential is revoked.

## Business Continuity Capabilities After a Disaster

No stipulation.

## CA Termination

In the event of termination because the Customer has terminated service, new Customer issuance and revocation operations will be rejected, and publication of certificate status will cease.

## 7 Technical Security Controls

See below for the performed technical security controls.

- [Key Pair Generation](#)
- [Private Key Protection](#)
- [Other Aspects of Key Pair Management](#)
- [Activation Data](#)
- [Computer Security Controls](#)
- [Life-Cycle Technical Controls](#)
- [Network Security Controls](#)
- [Time-stamping](#)

### Key Pair Generation

See below for the practice statements on key pair generation.

- [CA Key Pair Generation](#)
- [Subscriber Key Pair Generation](#)
- [Key Delivery to Subscriber](#)
- [Public Key Delivery to Certificate Issuer](#)
- [CA Public Key Delivery to Relying Parties](#)
- [Key Sizes](#)
- [Public Key Parameters Generation and Quality Checking](#)
- [Key Usage Purposes](#)

#### CA Key Pair Generation

At the RA request, an API-based, automated, documented process to generate CA key pairs is executed.

The CA system will perform the following when generating a CA Key Pair:

1. Generate the CA Key Pair in a physically secured environment;
2. Generate the CA Key Pair within hardware cryptographic modules meeting the applicable requirements of §6.2.11;
3. Log its CA Key Pair generation activities; and
4. Maintain adequate controls to provide reasonable assurance that the Private Key was generated and protected in conformance with the procedures described in this CPS.

#### Subscriber Key Pair Generation

The Applicant or Subscriber must generate or initiate a new, secure, and cryptographically sound Key Pair to be used with the Subscriber's Certificate or Applicant's Certificate Application.

PKIaaS only generates the subscriber key pairs when a chosen certificate profile supports the PKCS #12 format.

#### Key Delivery to Subscriber

In the case where the CA generates the Key Pair on behalf of the Subscriber, the Private Key will be delivered to the Subscriber in a cryptographically secure manner with at least 168-bit encryption strength in a PKCS #12 format.



## Public Key Delivery to Certificate Issuer

Subscriber Public Keys are delivered to the CA in a Certificate Signing Request as part of the Certificate Application process.

## CA Public Key Delivery to Relying Parties

The CA Public Keys are provided to the Relying Parties by the RA.

## Key Sizes

For CA and Subscriber Certificates, the key sizes supported are:

- RSA 4096
- RSA 3072
- RSA 2048
- ECDSA P-521
- ECDSA P-384
- ECDSA P-256

## Public Key Parameters Generation and Quality Checking

CA Public Keys are generated and protected on a cryptographic module compliant with at least FIPS 140-2 Level 3 certification standards.

Subscriber Public Keys: no stipulation.

## Key Usage Purposes

No stipulation

## Private Key Protection

See below for the practice statement on private key protection.

- [Cryptographic Module Standards and Control](#)
- [CA Private Key Multi-Person Control](#)
- [Private Key Escrow](#)
- [Private Key Backup](#)
- [Private Key Archival](#)
- [Private Key Transfer into or from Cryptographic Module](#)
- [Private Key Storage on Cryptographic Module](#)
- [Method of Activating Private Keys](#)
- [Private Key Deactivation Methods](#)
- [Private Signature Key Destruction Method](#)
- [Cryptographic Module Rating](#)

## Cryptographic Module Standards and Control

CA Private Keys must be used and unlocked on cryptographic modules that meet or exceed the requirements as defined in §6.2.11. The cryptographic modules are held in secure facilities.

## CA Private Key Multi-Person Control

Upon activation of any CA Private Key, a minimum of two-person control will be established, and it may be implemented as a combination of technical and procedural controls. Persons involved in managing and using the CA Private Keys shall be Trusted Roles.

## Private Key Escrow

CA Private Keys are not escrowed.

## Private Key Backup

All copies of the CA's Private Key shall be protected in the same manner as the original.

## Private Key Archival

CA Private Keys are not archived.

## Private Key Transfer into or from Cryptographic Module

CA Private Keys shall be generated by and secured in a cryptographic module. Private Keys are backed up and restored to multiple HSMs to provide high availability and disaster recovery, while remaining secured within the boundary of the cryptographic module.

## Private Key Storage on Cryptographic Module

CA Private Keys are stored and secured on a cryptographic module as defined in §6.2.11.

## Method of Activating Private Keys

CA Private Keys are activated upon generation and available for automated signing of revocation data and RA-initiated certificate signing.

## Private Key Deactivation Methods

CA Private Keys will be deactivated upon termination of service.

## Private Signature Key Destruction Method

No stipulation.

## Cryptographic Module Rating

CA Key Pairs are generated and protected on a cryptographic module that is compliant with at least FIPS 140-2 Level 3 certification standards.

## Other Aspects of Key Pair Management

See below for the practice statement in other aspects of key pair Management

## Public Key Archival

CA public keys are archived.

## Certificate Operational Periods and Key Pair Usage Periods

CA Certificate Key Pairs are not reused and therefore are valid for the life of the Certificate, up to, but no more than, 20 years.

There is no stipulation on the usage period of Subscriber certificate key pairs.

## Activation Data

See below for the practice statement on activation data.

- [Activation Data Generation and Installation](#)
- [Activation Data Protection](#)
- [Other Aspects of Activation Data](#)

### Activation Data Generation and Installation

CA Private Key activation data is generated by Trusted Role personnel under two-person control using the methods provided by the HSM. If the activation data must be transmitted, it is protected from tampering or disclosure and transmitted separately from the associated cryptographic module.

Activation data for RA private keys is transmitted via an appropriately protected channel, and out-of-band from the associated cryptographic module.

### Activation Data Protection

Access to CA Private Key activation data is restricted to Trusted Role personnel. Physical storage of CA Private Key activation data is secured under two person control as described in section 5.1.2.

Protection of activation data for RA private keys is the responsibility of the RA.

### Other Aspects of Activation Data

No stipulation.

## Computer Security Controls

See below for the practice statement on security control.

### Specific Computer Security Technical Requirements

The CA systems are physically secured as described in §5.1. The CA systems operate enforce identification and authentication of users. All Trusted Roles that are authorized to have access to the CAs are required to use hardware tokens in conjunction with a PIN or biometric to gain access to the physical room that contains the CA key material being used for such CAs.

## Computer Security Rating

No stipulation.

## Life-Cycle Technical Controls

See below for the practice statement on life-cycle technical controls.

## System Development Controls

Systems developed by Entrust are deployed according to Entrust software lifecycle development standards.

## Security Management Controls

The configuration of the CA system and any modifications and upgrades shall be documented and controlled. Methods of detecting unauthorized modifications to the CA system and configuration are in place to ensure the integrity of the security software, firmware, and hardware for correct operation. A formal configuration and change management methodology is used to install and maintain the CA system.

## Life Cycle Security Controls

No stipulation.

## Network Security Controls

A network firewall must protect network access to the CA system. The network firewall limits services allowed to and from the CA system to those required to perform CA functions.

Protection of the CA system is provided against known network attacks. All unused network ports and services are turned off.

Any boundary control devices used to protect the network on which PKI systems are hosted deny all but the necessary services to the CA system.

The CA, network, and all connected ancillary equipment hosted and operated are scanned no less than once per month using recognized tools designed to detect network and system vulnerabilities. The scanning tools are updated prior to each scan with the latest vulnerability signatures. Scans are performed inside the environment, and from outside the environment to identify vulnerabilities that must be mitigated. Identified vulnerabilities are remediated in accordance with the Entrust security remediation standard and patch management standard.

All CA systems and all connected ancillary equipment hosted and operated by Entrust have active virus protection and mitigation as defined in the Entrust malware protection standard.

## Time-stamping

The CA will record the time of all issued Certificates and recorded transactions using the system clock time derived, and periodically corrected, from a recognized time source.

## 8 Certificate and CRL Profiles

See the practice statement on certificates and CRL profiles.

- [Certificate Profile](#)
- [CRL Profile](#)
- [OCSP Profile](#)

### Certificate Profile

CAs issue Certificates in accordance with the X.509 version 3. Certificate profiles for Root CA Certificate.

- [Version Numbers](#)
- [Certificate Extensions](#)
- [Algorithm Object Identifiers](#)
- [Name Forms](#)
- [Name Constraints](#)
- [Certificate Policy Object Identifier](#)
- [Usage of Policy Constraints Extension](#)
- [Policy Qualifiers Syntax and Semantics](#)
- [Processing Semantics for the Critical Certificate Policy Extension](#)

### Version Numbers

The CA issues X.509 v3 Certificates (*version* field populated with integer "2").

### Certificate Extensions

Certificate extensions are set as stipulated in IETF RFC 5280 and in accordance with Appendix A.

### Algorithm Object Identifiers

Certificates issued under this CPS shall use at least one the following OIDs for signatures:

Signature Algorithm ID	OID
sha256WithRSAEncryption	{iso(1) member-body(2) us(840) rsadsi(113549) pkcs(1) pkcs-1(1) 11}
sha384WithRSAEncryption	{iso(1) member-body(2) us(840) rsadsi(113549) pkcs(1) pkcs-1(1) 12}
sha512WithRSAEncryption	{iso(1) member-body(2) us(840) rsadsi(113549) pkcs(1) pkcs-1(1) 13}
ecdsa-with-SHA256	{iso(1) member-body(2) us(840) ansi-x962(10045) signatures(4) ecdsa-with-SHA2(3) 2}
ecdsa-with-SHA384	ecdsa-with-SHA384 {iso(1) member-body(2) us(840) ansi-x962(10045) signatures(4) ecdsa-with-SHA2(3) 3}

Signature Algorithm ID	OID
ecdsa-with-SHA512	ecdsa-with-SHA512 {iso(1) member-body(2) us(840) ansi-x962(10045) signatures(4) ecdsa-with-SHA2(3) 4}

Certificates under this CPS will use the following OIDs for identifying the algorithm for which the subject key was generated:

Algorithm ID	OID
rsaEncryption	{iso(1) member-body(2) us(840) rsadsi(113549) pkcs(1) pkcs-1(1) 1}
ecPublicKey	{iso(1) member-body(2) us(840) ansi-x962(10045) keyType(2) 1}

For certificate encrypted using ECDSA(ecPublicKey) algorithm, the following OIDs are supported to identify EC name curves:

EC Named Curves	OID
ECDSA P-256	{iso(1) member-body(2) us(840) ansi-x962(10045) curves(3) prime(1) 7}
ECDSA P-384	{iso(1) identified-organization(3) certicom(132) curve(0) 34}
ECDSA P-521	{iso(1) identified-organization(3) certicom(132) curve(0) 35}

## Name Forms

The content of the certificate issuer DN field will match the subject DN of the issuing CA to support name chaining as specified in RFC 5280, section 4.1.2.4.

## Name Constraints

The *nameConstraints* extension field is not used in CA Certificates.

## Certificate Policy Object Identifier

See below for the practice statement on certificate policy object identifiers.

### Reserved Certificate Policy Identifiers

No stipulation.

### Root CA Certificates

Root CA Certificates do not contain the certificate policy object identifiers.

## Issuing CA Certificates

No stipulation.

## Subscriber Certificates

No stipulation.

## Usage of Policy Constraints Extension

The `policyConstraints` extension is not used in CA Certificates.

## Policy Qualifiers Syntax and Semantics

No stipulation.

## Processing Semantics for the Critical Certificate Policy Extension

Certificate policies extension is marked Not Critical.

## CRL Profile

The following fields of the X.509 version 2 CRL format are used by the CAs:

Field	Description
version	Set to v2
Signature	Identifier of the algorithm used to sign the CRL
Issuer	The full Distinguished Name of the CA issuing the CRL
This update	Time of CRL issuance
Next update	Time of next expected CRL update
Revoked certificates	List of revoked Certificate information

## Version Numbers

No stipulation.

## CRL Entry Extensions

CRLs issued support the Authority Key Identifier, `crlNumber`, `invalidityDate`, and `expiredCertsOnCRL` extensions.

## OCSP Profile

OCSP systems operated under this policy shall use OCSP requests and responses in accordance with RFC 6960.

## Version Number(s)

No stipulation.

## OCSP Extensions

Critical OCSP extensions are not used. OCSP responses include the nonce extension.



## 9 Compliance Audit and Other Assessment

See below for considerations on compliance audit and other assessment.

- [Frequency or Circumstances of Assessment](#)
- [Identity/Qualifications of Compliance Auditor](#)
- [Compliance Auditor's Relationship to Audited Party](#)
- [Topics Covered by Compliance Audit](#)
- [Actions Taken as a Result of Deficiency](#)
- [Communication of Result](#)

### Frequency or Circumstances of Assessment

The Compliance Auditor shall perform an annual audit of all active CAs.

### Identity/Qualifications of Compliance Auditor

The compliance audit of the CAs will be performed by an auditor ("Compliance Auditor") who possesses the following qualifications and skills:

- Ability to conduct an audit that addresses the criteria of the audit schemes specified in §8.4;
- Bound by the Entrust professional code of ethics.

### Compliance Auditor's Relationship to Audited Party

The Compliance Auditor is an internal Entrust Compliance and Audit team employee.

### Topics Covered by Compliance Audit

Verify that all CAs comply with the requirements of the current version of this CPS.

### Actions Taken as a Result of Deficiency

Upon receipt of a compliance audit that identifies deficiencies, the audited CA will correct them expeditiously.

### Communication of Result

The results of all compliance audits will be communicated to the Policy Authority.

## **10 Other Business and Legal Matters**

As per the applicable Agreement.

## 11 Certificate profiles reference

Entrust provides the following set of certificate profiles for authorities and end-entities.

- [Authority profiles](#)
- [Subscriber certificate profiles](#)

### Authority profiles

Entrust authorities support the following profiles.

Profile set	Profiles
<a href="#">Azure Firewall Intermediate CA certificate profile</a>	azure-firewall-ca-subord
<a href="#">Basic authorities certificate profiles</a>	basic-ca-root basic-ca-subord basic-ocsp
<a href="#">TLS Proxy CA certificate profile</a>	tlsproxy-ca-subord

### Azure Firewall Intermediate CA certificate profile

The Azure Firewall Intermediate CA service provides a `azure-firewall-ca-subord` profile for root Certificate Authorities.

- [Azure Firewall Subordinate CA signing use cases](#)
- [Azure Firewall Subordinate CA request extensions](#)
- [Azure Firewall Subordinate CA certificate fields](#)
- [Azure Firewall Subordinate CA certificate extensions](#)
- [Azure Firewall Subordinate CA algorithm constraints](#)
- [Azure Firewall Subordinate CA distinguished names](#)

### Azure Firewall Subordinate CA signing use cases


The `azure-firewall-ca-subord` profile supports the following use cases.

- ECS Enterprise UI
- CA Gateway API

### Azure Firewall Subordinate CA request extensions

The `azure-firewall-ca-subord` profile supports the following non-critical extensions in request.

Extension name	Extension OID
Certificate Policies	2.5.29.32

 Follow the [Microsoft Azure Intermediate requirements](#) to generate the CSR before requesting the CA certificate from PKIaaS.

## Azure Firewall Subordinate CA certificate fields

The `azure-firewall-ca-subord` profile sets the following certificate fields.

Field	Value
Issuer	Customer's subordinate issuing CA.
Subject	No constraint
Validity period	Defaults to 1 year if not specified.

## Azure Firewall Subordinate CA certificate extensions


The `azure-firewall-ca-subord` profile sets the following certificate extensions.

Extension	Critical	Value
AIA	No	Supplied if the customer enables OCSP when creating the CA
Authority Key Identifier	No	Matches subjectKeyIdentifier of the signing certificate
Basic Constraints	Yes	cA=True, pathLenConstraint=1
CRL Distribution Points	No	Always present
Key Usage	Yes	Certificate Signing, CRL Signing, Digital Signature
Subject Alternative Name	No	No constraints
Subject Key Identifier	No	«The leftmost 160-bits of the SHA-256 hash of the value of the BIT STRING subjectPublicKey» as described in <a href="#">RFC 7093 section 2</a>

## Azure Firewall Subordinate CA algorithm constraints

The `azure-firewall-ca-subord` profile supports the following key and signature algorithms.

Key algorithm	Signature algorithm
ECDSA P-256	ecdsa-with-SHA256
ECDSA P-384	ecdsa-with-SHA384
ECDSA P-521	ecdsa-with-SHA512
RSA 2048	sha256WithRSAEncryption
RSA 3072	sha256WithRSAEncryption
RSA 4096	sha512WithRSAEncryption

 NIST will deprecate some algorithms after Dec 31, 2030. See <https://nvlpubs.nist.gov/nistpubs/ir/2024/NIST.IR.8547.ipd.pdf>

### Azure Firewall Subordinate CA distinguished names

Entrust has no restriction on Distinguished Names (DNs) per certificate profile. All certificate profiles support the following identifiers.

Alias	OID
'CN' 'CommonName'	2.5.4.3
'SN' 'SurName'	2.5.4.4
'SERIALNUMBER' 'DeviceSerialNumber'	2.5.4.5
'C' 'Country'	2.5.4.6
'L' 'Locality'	2.5.4.7
'ST' 'S' 'State'	2.5.4.8
'STREET' 'StreetAddress'	2.5.4.9
'O' 'Org' 'Organization'	2.5.4.10


Alias	OID
'OU' 'OrganizationalUnit' 'OrganizationUnit' 'OrgUnit'	2.5.4.11
'T' 'Title'	2.5.4.12
'BUSINESSCATEGORY'	2.5.4.15
'POSTALCODE'	2.5.4.17
'givenName' 'G'	2.5.4.42
'I' 'Initials'	2.5.4.43
'ORGANIZATIONIDENTIFIER'	2.5.4.97
'UID'	0.9.2342.19200300.100.1.1
'DC' 'DomainComponent'	0.9.2342.19200300.100.1.25
'Email' 'E'	1.2.840.113549.1.9.1
'unstructuredName'	1.2.840.113549.1.9.2
'unstructuredAddress'	1.2.840.113549.1.9.8
'JurisdictionOfIncorporationLocalityName'	1.3.6.1.4.1.311.60.2.1.1
'JurisdictionOfIncorporationStateOrProvinceName'	1.3.6.1.4.1.311.60.2.1.2
'JurisdictionOfIncorporationCountryName'	1.3.6.1.4.1.311.60.2.1.3
'TrademarkOfficeName'	1.3.6.1.4.1.53087.1.2
'TrademarkCountryOrRegionName'	1.3.6.1.4.1.53087.1.3
'TrademarkRegistration'	1.3.6.1.4.1.53087.1.4
'LegalEntityIdentifier'	1.3.6.1.4.1.53087.1.5

Alias	OID
'WordMark'	1.3.6.1.4.1.53087.1.6
'MarkType'	1.3.6.1.4.1.53087.1.13
'StatuteCountryName'	1.3.6.1.4.1.53087.3.2
'StatuteStateOrProvinceName'	1.3.6.1.4.1.53087.3.3
'StatuteLocalityName'	1.3.6.1.4.1.53087.3.4
'StatuteCitation'	1.3.6.1.4.1.53087.3.5
'StatuteURL'	1.3.6.1.4.1.53087.3.6

## Basic authorities certificate profiles

Entrust provides the following basic profiles for root Certificate Authorities, issuing Certificate Authorities, and Validation Authorities (OCSP).

- basic-ca-root
- basic-ca-subord
- basic-ocsp

 These profiles are not exposed nor configurable. External root CAs are not covered by this profile.

See below a description of these profiles.

- [Key and signature algorithms](#)
- [Certificate fields](#)
- [Certificate critical extensions](#)
- [Certificate non-critical extensions](#)

## Key and signature algorithms

All authority basic profiles support the following key and signature algorithms.

Key algorithm	Signature algorithm
ECDSA P-256	ecdsa-with-SHA256
ECDSA P-384	ecdsa-with-SHA384
ECDSA P-521	ecdsa-with-SHA512

Key algorithm	Signature algorithm
RSA 2048	sha256WithRSAEncryption
RSA 3072	sha256WithRSAEncryption
RSA 4096	sha512WithRSAEncryption

**i** NIST will deprecate some algorithms after Dec 31, 2030. See <https://nvlpubs.nist.gov/nistpubs/ir/2024/NIST.IR.8547.ipd.pdf>

## Certificate fields

The authority basic profiles set the following certificate fields.

Field	basic-ca-root	basic-ca-subord	basic-ocsp
Issuer	Self-signed	Customer's online root CA	Customer's online root/issuing CA
Subject	No constraint	No constraint	No constraint
Validity period	Less than or equal to 20 years	Less than or equal to 10 years. The subordinate expiry cannot exceed the root validity.	30 days

## Certificate critical extensions

The authority basic profiles set the following certificate critical extensions.

Extension	basic-ca-root	basic-ca-subord	basic-ocsp
Basic Constraints	cA=True	cA=True, pathLenConstraint=0	cA = False
Extended Key Usage	Never present	Never present	OCSP Signing
Key Usage	digitalSignature, keyCertSign, cRLSign	digitalSignature, keyCertSign, cRLSign	digitalSignature, keyCertSign, cRLSign

## Certificate non-critical extensions

The authority basic profiles set the following non-critical certificate extensions.



Extension	basic-ca-root	basic-ca-subord	basic-ocsp
AIA	Never present	Supplied when the customer enables OCSP on CA creation	Always present
Authority Key Identifier	Never present	Matches subjectKeyIdentifier of the signing certificate	Matches subjectKeyIdentifier of the signing certificate
CRL Distribution Points	Never present (not applicable)	Always present	Always present
OCSP	Never present	Never present	No check
Subject Key Identifier	«The leftmost 160-bits of the SHA-256 hash of the value of the BIT STRING subjectPublicKey» as described in <a href="#">RFC 7093 section 2</a>	«The leftmost 160-bits of the SHA-256 hash of the value of the BIT STRING subjectPublicKey» as described in <a href="#">RFC 7093 section 2</a>	«The leftmost 160-bits of the SHA-256 hash of the value of the BIT STRING subjectPublicKey» as described in <a href="#">RFC 7093 section 2</a>

## TLS Proxy CA certificate profile

The TLS Proxy CA service provides provides a `tlsproxy-ca-subord` certificate profile for root Certificate Authorities.

- [TLS Proxy CA use cases](#)
- [TLS Proxy CA request extensions](#)
- [TLS Proxy CA certificate fields](#)
- [TLS Proxy CA certificate extensions](#)
- [TLS Proxy CA algorithm constraints](#)
- [TLS Proxy CA distinguished names](#)

**i** Each external subordinate CA issued by a PKIaaS root CA only consumes one PKIaaS Certificate license. Entrust does not charge for certificates issued by external subordinate CAs because those certificates are considered external and not using the PKIaaS infrastructure.

## TLS Proxy CA use cases

The `tlsproxy-ca-subord` profile supports the following use cases.

- ECS Enterprise UI
- CA Gateway API

## TLS Proxy CA request extensions

The `tlsproxy-ca-subord` profile supports the following non-critical extensions in request.

Extension name	Extension OID
CertificatePolicies	2.5.29.32

## TLS Proxy CA certificate fields

The `tlsproxy-ca-subord` profile sets the following certificate fields.

Field	Value
Issuer	Customer's subordinate issuing CA.
Subject	No constraint
Validity period	Defaults to 1 year if not specified.

## TLS Proxy CA certificate extensions

The `tlsproxy-ca-subord` profile sets the following certificate extensions.


Extension	Critical	Value
AIA	No	Supplied if the customer enables OCSP when creating the CA
Authority Key Identifier	No	Matches subjectKeyIdentifier of the signing certificate
Basic Constraints	Yes	cA=True, pathLenConstraint=0
CRL Distribution Points	No	Always present
Extended Key Usage	No	TLS server authentication (1.3.6.1.5.5.7.3.1), TLS client authentication (1.3.6.1.5.5.7.3.2)
Key Usage	Yes	Certificate Signing, CRL Signing, Digital Signature

Extension	Critical	Value
Subject Alternative Name	No	No constraints
Subject Key Identifier	No	«The leftmost 160-bits of the SHA-256 hash of the value of the BIT STRING subjectPublicKey» as described in <a href="#">RFC 7093 section 2</a>

### TLS Proxy CA algorithm constraints

The `tlsproxy-ca-subord` profile supports the following key and signature algorithms.

Key algorithm	Signature algorithm
ECDSA P-256	ecdsa-with-SHA256
ECDSA P-384	ecdsa-with-SHA384
ECDSA P-521	ecdsa-with-SHA512
RSA 2048	sha256WithRSAEncryption
RSA 3072	sha256WithRSAEncryption
RSA 4096	sha512WithRSAEncryption

 NIST will deprecate some algorithms after Dec 31, 2030. See <https://nvlpubs.nist.gov/nistpubs/ir/2024/NIST.IR.8547.ipd.pdf>

### TLS Proxy CA distinguished names

Entrust has no restriction on Distinguished Names (DNs) per certificate profile. All certificate profiles support the following identifiers.

Alias	OID
'CN' 'CommonName'	2.5.4.3
'SN' 'SurName'	2.5.4.4
'SERIALNUMBER' 'DeviceSerialNumber'	2.5.4.5

Alias	OID
'C' 'Country'	2.5.4.6
'L' 'Locality'	2.5.4.7
'ST' 'S' 'State'	2.5.4.8
'STREET' 'StreetAddress'	2.5.4.9
'O' 'Org' 'Organization'	2.5.4.10
'OU' 'OrganizationalUnit' 'OrganizationUnit' 'OrgUnit'	2.5.4.11
'T' 'Title'	2.5.4.12
'BUSINESSCATEGORY'	2.5.4.15
'POSTALCODE'	2.5.4.17
'givenName' 'G'	2.5.4.42
'I' 'Initials'	2.5.4.43
'ORGANIZATIONIDENTIFIER'	2.5.4.97
'UID'	0.9.2342.19200300.100.1.1
'DC' 'DomainComponent'	0.9.2342.19200300.100.1.25
'Email' 'E'	1.2.840.113549.1.9.1
'unstructuredName'	1.2.840.113549.1.9.2
'unstructuredAddress'	1.2.840.113549.1.9.8
'JurisdictionOfIncorporationLocalityName'	1.3.6.1.4.1.311.60.2.1.1
'JurisdictionOfIncorporationStateOrProvinceName'	1.3.6.1.4.1.311.60.2.1.2

Alias	OID
'JurisdictionOfIncorporationCountryName'	1.3.6.1.4.1.311.60.2.1.3
'TrademarkOfficeName'	1.3.6.1.4.1.53087.1.2
'TrademarkCountryOrRegionName'	1.3.6.1.4.1.53087.1.3
'TrademarkRegistration'	1.3.6.1.4.1.53087.1.4
'LegalEntityIdentifier'	1.3.6.1.4.1.53087.1.5
'WordMark'	1.3.6.1.4.1.53087.1.6
'MarkType'	1.3.6.1.4.1.53087.1.13
'StatuteCountryName'	1.3.6.1.4.1.53087.3.2
'StatuteStateOrProvinceName'	1.3.6.1.4.1.53087.3.3
'StatuteLocalityName'	1.3.6.1.4.1.53087.3.4
'StatuteCitation'	1.3.6.1.4.1.53087.3.5
'StatuteURL'	1.3.6.1.4.1.53087.3.6

## Subscriber certificate profiles

Entrust provides the following certificate policies for end-entity subscribers

Title	Profiles
<a href="#">Active Directory (WSTEP) certificate profiles</a>	wstep-digital-signature wstep-digital-signature-key-encipherment wstep-key-encipherment wstep-non-repudiation wstep-non-repudiation-key-encipherment
<a href="#">CMPv2 certificate profiles</a>	cmp-digital-signature cmp-digital-signature-key-encipherment cmp-key-encipherment

Title	Profiles
	cmp-non-repudiation
Code signing certificate profile	codesigning-digital-signature
EST certificate profiles	est-digital-signature est-digital-signature-key-encipherment est-key-encipherment est-non-repudiation
Intune certificate profiles	intune-digital-signature intune-digital-signature-key-encipherment intune-digital-signature-key-encipherment-clientauth intune-key-encipherment intune-non-repudiation
MDMWS certificate profiles	mdmws-digital-signature mdmws-digital-signature-key-encipherment mdmws-digital-signature-key-encipherment-clientauth mdmws-key-encipherment mdmws-non-repudiation mdmws-p12-digital-signature mdmws-p12-digital-signature-key-encipherment mdmws-p12-digital-signature-key-encipherment-clientauth mdmws-p12-key-encipherment mdmws-p12-non-repudiation
Mobile device certificate profile	mobile-device-p12-digital-signature-client-authentication
Multiuse certificate profiles	multiuse-p12-client multiuse-p12-client-server multiuse-p12-custom multiuse-p12-key-data-encipherment-non-repudiation-client multiuse-p12-key-data-encipherment-non-repudiation-client-server multiuse-p12-key-encipherment-client multiuse-p12-key-encipherment-client-server multiuse-p12-key-encipherment-custom multiuse-p12-key-encipherment-non-repudiation-client multiuse-p12-key-encipherment-non-repudiation-client-server multiuse-p12-key-encipherment-non-repudiation-custom multiuse-p12-key-encipherment-non-repudiation-server multiuse-p12-key-encipherment-server

Title	Profiles
	multiuse-p12-non-repudiation-client multiuse-p12-non-repudiation-client-server multiuse-p12-non-repudiation-custom multiuse-p12-non-repudiation-server multiuse-p12-server
Private SSL (ACMEv2) certificate profiles	privatessl-tls-client privatessl-tls-client-server privatessl-tls-client-server-data-encipherment privatessl-tls-client-server-supply-san privatessl-tls-server privatessl-tls-server-supply-san
S_MIME certificate profiles	smime-digital-signature-key-encipherment smime-key-encipherment smime-non-repudiation
SCEP certificate profiles	scep-digital-signature scep-digital-signature-key-encipherment scep-key-encipherment scep-non-repudiation
Smartcard certificate profiles	smartcard-card-authentication smartcard-digital-signature smartcard-domain-controller smartcard-key-management smartcard-piv-authentication smartcard-piv-content-signing
V2G certificate profiles	v2g-supply-equipment v2g-user-identity

## Active Directory (WSTEP) certificate profiles

Entrust provides the following Active Directory (WSTEP) certificate profiles.

- wstep-digital-signature
- wstep-digital-signature-key-encipherment
- wstep-key-encipherment
- wstep-non-repudiation
- wstep-non-repudiation-key-encipherment

These profiles support the following features.

- [WSTEP use cases](#)
- [WSTEP key usages](#)
- [WSTEP request extensions](#)

- [WSTEP certificate fields](#)
- [WSTEP certificate extensions](#)
- [WSTEP algorithm constraints](#)
- [WSTEP distinguished names](#)

## WSTEP use cases

All WSTEP profiles support the following use cases.

- ECS Enterprise UI
- CA Gateway API
- Entrust-hosted Enrollment Gateway
- On-prem Enrollment Gateway

## WSTEP key usages

See below the Key Usage extension values supported by each WSTEP profile.

Profile	Key Usage
wstep-digital-signature	Digital Signature
wstep-digital-signature-key-encipherment	Digital Signature, Key Encipherment
wstep-key-encipherment	Key Encipherment
wstep-non-repudiation	Digital Signature, Non-Repudiation
wstep-non-repudiation-key-encipherment	Digital Signature, Non-Repudiation, Key Encipherment

## WSTEP request extensions

All WSTEP profiles support the following non-critical extensions in request.

Extension name	Extension OID
Certificate Policies	2.5.29.32
Extended Key Usage	2.5.29.37
Application Policies	1.3.6.1.4.1.311.21.10
Smime Capabilities	1.2.840.113549.1.9.15
MSTemplateOID	1.3.6.1.4.1.311.21.7



Extension name	Extension OID
MSTemplateName	1.3.6.1.4.1.311.20.2
szOID_NTDS_CA_SECURITY_EXT	1.3.6.1.4.1.311.25.2

## WSTEP certificate fields

All WSTEP profiles set the following certificate fields.

Field	Value
Issuer	Customer's subordinate issuing CA.
Subject	No constraint.
Validity period	Less than or equal to the expiry of the issuing CA. Defaults to 1 year if not specified in the request.

## WSTEP certificate extensions

All WSTEP profiles set the following certificate extensions.

Extension	Critical	Value
AIA	No	Supplied if the customer enables OCSP when creating the CA
Authority Key Identifier	No	Matches subjectKeyIdentifier of the signing certificate
Basic Constraints	Yes	cA=False
CRL Distribution Points	No	Always present
Subject Alternative Name	No	No constraints
Subject Key Identifier	No	«The leftmost 160-bits of the SHA-256 hash of the value of the BIT STRING subjectPublicKey» as described in <a href="#">RFC 7093 section 2</a>

## WSTEP algorithm constraints

All WSTEP profiles support the following key and signature algorithms.

Key algorithm	Signature algorithm
ECDSA P-256	ecdsa-with-SHA256
ECDSA P-384	ecdsa-with-SHA384
ECDSA P-521	ecdsa-with-SHA512
RSA 2048	sha256WithRSAEncryption
RSA 3072	sha256WithRSAEncryption
RSA 4096	sha512WithRSAEncryption

**i** NIST will deprecate some algorithms after Dec 31, 2030. See <https://nvlpubs.nist.gov/nistpubs/ir/2024/NIST.IR.8547.ipd.pdf>

## WSTEP distinguished names

Entrust has no restriction on Distinguished Names (DNs) per certificate profile. All certificate profiles support the following identifiers.

Alias	OID
'CN' 'CommonName'	2.5.4.3
'SN' 'SurName'	2.5.4.4
'SERIALNUMBER' 'DeviceSerialNumber'	2.5.4.5
'C' 'Country'	2.5.4.6
'L' 'Locality'	2.5.4.7
'ST' 'S' 'State'	2.5.4.8
'STREET' 'StreetAddress'	2.5.4.9
'O' 'Org' 'Organization'	2.5.4.10

Alias	OID
'OU' 'OrganizationalUnit' 'OrganizationUnit' 'OrgUnit'	2.5.4.11
'T' 'Title'	2.5.4.12
'BUSINESSCATEGORY'	2.5.4.15
'POSTALCODE'	2.5.4.17
'givenName' 'G'	2.5.4.42
'I' 'Initials'	2.5.4.43
'ORGANIZATIONIDENTIFIER'	2.5.4.97
'UID'	0.9.2342.19200300.100.1.1
'DC' 'DomainComponent'	0.9.2342.19200300.100.1.25
'Email' 'E'	1.2.840.113549.1.9.1
'unstructuredName'	1.2.840.113549.1.9.2
'unstructuredAddress'	1.2.840.113549.1.9.8
'JurisdictionOfIncorporationLocalityName'	1.3.6.1.4.1.311.60.2.1.1
'JurisdictionOfIncorporationStateOrProvinceName'	1.3.6.1.4.1.311.60.2.1.2
'JurisdictionOfIncorporationCountryName'	1.3.6.1.4.1.311.60.2.1.3
'TrademarkOfficeName'	1.3.6.1.4.1.53087.1.2
'TrademarkCountryOrRegionName'	1.3.6.1.4.1.53087.1.3
'TrademarkRegistration'	1.3.6.1.4.1.53087.1.4
'LegalEntityIdentifier'	1.3.6.1.4.1.53087.1.5

Alias	OID
'WordMark'	1.3.6.1.4.1.53087.1.6
'MarkType'	1.3.6.1.4.1.53087.1.13
'StatuteCountryName'	1.3.6.1.4.1.53087.3.2
'StatuteStateOrProvinceName'	1.3.6.1.4.1.53087.3.3
'StatuteLocalityName'	1.3.6.1.4.1.53087.3.4
'StatuteCitation'	1.3.6.1.4.1.53087.3.5
'StatuteURL'	1.3.6.1.4.1.53087.3.6

## CMPv2 certificate profiles

Entrust provides the following CMPv2 certificate profiles.

- cmp-digital-signature
- cmp-digital-signature-key-encipherment
- cmp-key-encipherment
- cmp-non-repudiation

These profiles support the following features.

- [CMPv2 use cases](#)
- [CMPv2 key usages](#)
- [CMPv2 request extensions](#)
- [CMPv2 certificate fields](#)
- [CMPv2 certificate extensions](#)
- [CMPv2 algorithm constraints](#)
- [CMPv2 distinguished names](#)

## CMPv2 use cases

All CMPv2 profiles support the following use cases.

- ECS Enterprise UI
- CA Gateway API

## CMPv2 key usages

See below the Key Usage extension values supported by each CMPv2 profile.

Profile	Key Usage
cmp-digital-signature	Digital Signature
cmp-digital-signature-key-encipherment	Digital Signature, Key Encipherment
cmp-key-encipherment	Key Encipherment
cmp-non-repudiation	Digital Signature, Non-Repudiation

### CMPv2 request extensions

All CMPv2 profiles support the following non-critical extensions in request.

Extension name	Extension OID
Certificate Policies	2.5.29.32
Extended Key Usage	2.5.29.37
Application Policies	1.3.6.1.4.1.311.21.10
Smime Capabilities	1.2.840.113549.1.9.15
MSTemplateOID	1.3.6.1.4.1.311.21.7
MSTemplateName	1.3.6.1.4.1.311.20.2
szOID_NTDS_CA_SECURITY_EXT	1.3.6.1.4.1.311.25.2

### CMPv2 certificate fields

All CMPv2 profiles set the following certificate fields.

Field	Value
Issuer	Customer's subordinate issuing CA.
Subject	No constraint.

Field	Value
Validity period	Less than or equal to the expiry of the issuing CA. Defaults to 1 year if not specified in the request.

### CMPv2 certificate extensions

All CMPv2 profiles set the following certificate extension.


Extension	Critical	Value
AIA	No	Supplied if the customer enables OCSP when creating the CA
Authority Key Identifier	No	Matches subjectKeyIdentifier of the signing certificate
Basic Constraints	Yes	cA=False
CRL Distribution Points	No	Always present
Extended Key Usage	No	No constraints
Subject Alternative Name	No	No constraints
Subject Key Identifier	No	«The leftmost 160-bits of the SHA-256 hash of the value of the BIT STRING subjectPublicKey» as described in <a href="#">RFC 7093 section 2</a>

### CMPv2 algorithm constraints

All CMPv2 profiles support the following key and signature algorithms.

Key algorithm	Signature algorithm
ECDSA P-256	ecdsa-with-SHA256
ECDSA P-384	ecdsa-with-SHA384
ECDSA P-521	ecdsa-with-SHA512
RSA 2048	sha256WithRSAEncryption

Key algorithm	Signature algorithm
RSA 3072	sha256WithRSAEncryption
RSA 4096	sha512WithRSAEncryption

 NIST will deprecate some algorithms after Dec 31, 2030. See <https://nvlpubs.nist.gov/nistpubs/ir/2024/NIST.IR.8547.ipd.pdf>

## CMPv2 distinguished names

Entrust has no restriction on Distinguished Names (DNs) per certificate profile. All certificate profiles support the following identifiers.

Alias	OID
'CN' 'CommonName'	2.5.4.3
'SN' 'SurName'	2.5.4.4
'SERIALNUMBER' 'DeviceSerialNumber'	2.5.4.5
'C' 'Country'	2.5.4.6
'L' 'Locality'	2.5.4.7
'ST' 'S' 'State'	2.5.4.8
'STREET' 'StreetAddress'	2.5.4.9
'O' 'Org' 'Organization'	2.5.4.10
'OU' 'OrganizationalUnit' 'OrganizationUnit' 'OrgUnit'	2.5.4.11
'T' 'Title'	2.5.4.12
'BUSINESSCATEGORY'	2.5.4.15
'POSTALCODE'	2.5.4.17

Alias	OID
'givenName' 'G'	2.5.4.42
'I' 'Initials'	2.5.4.43
'ORGANIZATIONIDENTIFIER'	2.5.4.97
'UID'	0.9.2342.19200300.100.1.1
'DC' 'DomainComponent'	0.9.2342.19200300.100.1.25
'Email' 'E'	1.2.840.113549.1.9.1
'unstructuredName'	1.2.840.113549.1.9.2
'unstructuredAddress'	1.2.840.113549.1.9.8
'JurisdictionOfIncorporationLocalityName'	1.3.6.1.4.1.311.60.2.1.1
'JurisdictionOfIncorporationStateOrProvinceName'	1.3.6.1.4.1.311.60.2.1.2
'JurisdictionOfIncorporationCountryName'	1.3.6.1.4.1.311.60.2.1.3
'TrademarkOfficeName'	1.3.6.1.4.1.53087.1.2
'TrademarkCountryOrRegionName'	1.3.6.1.4.1.53087.1.3
'TrademarkRegistration'	1.3.6.1.4.1.53087.1.4
'LegalEntityIdentifier'	1.3.6.1.4.1.53087.1.5
'WordMark'	1.3.6.1.4.1.53087.1.6
'MarkType'	1.3.6.1.4.1.53087.1.13
'StatuteCountryName'	1.3.6.1.4.1.53087.3.2
'StatuteStateOrProvinceName'	1.3.6.1.4.1.53087.3.3



Alias	OID
'StatuteLocalityName'	1.3.6.1.4.1.53087.3.4
'StatuteCitation'	1.3.6.1.4.1.53087.3.5
'StatuteURL'	1.3.6.1.4.1.53087.3.6

## Code signing certificate profile

Entrust provides the `codesigning-digital-signature` certificate profile for code signing.

- [Code signing use cases](#)
- [Code signing certificate fields](#)
- [Code signing certificate extensions](#)
- [Code signing algorithm constraints](#)
- [Code signing distinguished names](#)

### Code signing use cases

The `codesigning-digital-signature` profile supports the following use cases.

- ECS Enterprise UI
- CA Gateway API

### Code signing certificate fields

The `codesigning-digital-signature` profile sets the following certificate fields.

Field	Value
Issuer	Customer's subordinate issuing CA
Validity period	Less than or equal to the expiry of the issuing CA. Default to 1 year if not specified in the request.
Subject	No constraint

### Code signing certificate extensions

The `codesigning-digital-signature` profile sets the following certificate extensions.

Extension	Critical	Value
AIA	No	Supplied if the customer enables OCSP when creating the CA
Authority Key Identifier	No	Matches subjectKeyIdentifier of the signing certificate
Basic Constraints	Yes	cA =False
CRL Distribution Points	No	Always present
Extended Key Usage	No	Code Signing (1.3.6.1.5.5.7.3.3)
Key Usage	Yes	Digital Signature
Subject Alternative Name	No	No constraints
Subject Key Identifier	No	«The leftmost 160-bits of the SHA-256 hash of the value of the BIT STRING subjectPublicKey» as described in <a href="#">RFC 7093 section 2</a>

## Code signing algorithm constraints

The `codesigning-digital-signature` profile supports the following key and signature algorithms.

Key algorithm	Signature algorithm
ECDSA P-256	ecdsa-with-SHA256
ECDSA P-384	ecdsa-with-SHA384
ECDSA P-521	ecdsa-with-SHA512
RSA 2048	sha256WithRSAEncryption
RSA 3072	sha256WithRSAEncryption
RSA 4096	sha512WithRSAEncryption

**i** NIST will deprecate some algorithms after Dec 31, 2030. See <https://nvlpubs.nist.gov/nistpubs/ir/2024/NIST.IR.8547.ipd.pdf>

## Code signing distinguished names

Entrust has no restriction on Distinguished Names (DNs) per certificate profile. All certificate profiles support the following identifiers.

Alias	OID
'CN' 'CommonName'	2.5.4.3
'SN' 'SurName'	2.5.4.4
'SERIALNUMBER' 'DeviceSerialNumber'	2.5.4.5
'C' 'Country'	2.5.4.6
'L' 'Locality'	2.5.4.7
'ST' 'S' 'State'	2.5.4.8
'STREET' 'StreetAddress'	2.5.4.9
'O' 'Org' 'Organization'	2.5.4.10
'OU' 'OrganizationalUnit' 'OrganizationUnit' 'OrgUnit'	2.5.4.11
'T' 'Title'	2.5.4.12
'BUSINESSCATEGORY'	2.5.4.15
'POSTALCODE'	2.5.4.17
'givenName' 'G'	2.5.4.42
'I' 'Initials'	2.5.4.43
'ORGANIZATIONIDENTIFIER'	2.5.4.97
'UID'	0.9.2342.19200300.100.1.1
'DC' 'DomainComponent'	0.9.2342.19200300.100.1.25
'Email' 'E'	1.2.840.113549.1.9.1

Alias	OID
'unstructuredName'	1.2.840.113549.1.9.2
'unstructuredAddress'	1.2.840.113549.1.9.8
'JurisdictionOfIncorporationLocalityName'	1.3.6.1.4.1.311.60.2.1.1
'JurisdictionOfIncorporationStateOrProvinceName'	1.3.6.1.4.1.311.60.2.1.2
'JurisdictionOfIncorporationCountryName'	1.3.6.1.4.1.311.60.2.1.3
'TrademarkOfficeName'	1.3.6.1.4.1.53087.1.2
'TrademarkCountryOrRegionName'	1.3.6.1.4.1.53087.1.3
'TrademarkRegistration'	1.3.6.1.4.1.53087.1.4
'LegalEntityIdentifier'	1.3.6.1.4.1.53087.1.5
'WordMark'	1.3.6.1.4.1.53087.1.6
'MarkType'	1.3.6.1.4.1.53087.1.13
'StatuteCountryName'	1.3.6.1.4.1.53087.3.2
'StatuteStateOrProvinceName'	1.3.6.1.4.1.53087.3.3
'StatuteLocalityName'	1.3.6.1.4.1.53087.3.4
'StatuteCitation'	1.3.6.1.4.1.53087.3.5
'StatuteURL'	1.3.6.1.4.1.53087.3.6

## eSIM certificate profiles

Entrust provides the following certificate profiles for eSIM end-entity users.

- esim-delivery-auth
- esim-delivery-binding
- esim-delivery-tls-server
- esim-discovery-auth

- esim-discovery-tls-server

These profiles support the following features.

- [eSIM use cases](#)
- [eSIM key usages and certificate policies](#)
- [eSIM certificate fields](#)
- [eSIM certificate extensions](#)
- [eSIM algorithm constraints](#)
- [eSIM distinguished names](#)

## eSIM use cases

All eSIM end-entity profiles support the following use cases.

- ECS Enterprise UI
- CA Gateway API

## eSIM key usages and certificate policies

See below the Key Usage, Extended Key Usage (EKU), and Certificate Policy extension values supported by each eSIM profile.

Profile	Key Usage	Extended Key Usage	Certificate Policy
esim-delivery-auth	Digital Signature	—	id-rspRole-dp-auth (2.23.146.1.2.1.4)
esim-delivery-binding	Digital Signature	—	id-rspRole-dp-pb (2.23.146.1.2.1.5)
esim-delivery-tls-server	Digital Signature	TLS server authentication (1.3.6.1.5.5.7.3.1)	id-rspRole-dp-tls (2.23.146.1.2.1.3)
esim-discovery-auth	Digital Signature	—	id-rspRole-ds-auth (2.23.146.1.2.1.7)
esim-discovery-tls-server	Digital Signature	TLS server authentication (1.3.6.1.5.5.7.3.1)	id-rspRole-ds-tls (2.23.146.1.2.1.6)

## eSIM certificate fields

All eSIM profiles set the following certificate fields.

Field	Value
Issuer	Customer's subordinate issuing CA.

Field	Value
Subject	No constraint.
Validity period	Less than or equal to the expiry of the issuing CA. Defaults to 3 years if not specified in the request.

### eSIM certificate extensions

All eSIM profiles set the following certificate extensions.


Extension	Critical	Value
AIA	No	Supplied if the customer enables OCSP when creating the CA
Authority Key Identifier	No	Matches subjectKeyIdentifier of the signing certificate
Basic Constraints	Yes	cA =False
CRL Distribution Points	No	Always present
Subject Alternative Name	No	No constraints
Subject Key Identifier	No	«The leftmost 160-bits of the SHA-256 hash of the value of the BIT STRING subjectPublicKey» as described in <a href="#">RFC 7093 section 2</a>

### eSIM algorithm constraints

All eSIM profiles support the following key and signature algorithms.

Key algorithm	Signature algorithm
ECDSA P-256	ecdsa-with-SHA256
ECDSA P-384	ecdsa-with-SHA384
ECDSA P-521	ecdsa-with-SHA512
RSA 2048	sha256WithRSAEncryption

Key algorithm	Signature algorithm
RSA 3072	sha256WithRSAEncryption
RSA 4096	sha512WithRSAEncryption

 NIST will deprecate some algorithms after Dec 31, 2030. See <https://nvlpubs.nist.gov/nistpubs/ir/2024/NIST.IR.8547.ipd.pdf>

## eSIM distinguished names

Entrust has no restriction on Distinguished Names (DNs) per certificate profile. All certificate profiles support the following identifiers.

Alias	OID
'CN' 'CommonName'	2.5.4.3
'SN' 'SurName'	2.5.4.4
'SERIALNUMBER' 'DeviceSerialNumber'	2.5.4.5
'C' 'Country'	2.5.4.6
'L' 'Locality'	2.5.4.7
'ST' 'S' 'State'	2.5.4.8
'STREET' 'StreetAddress'	2.5.4.9
'O' 'Org' 'Organization'	2.5.4.10
'OU' 'OrganizationalUnit' 'OrganizationUnit' 'OrgUnit'	2.5.4.11
'T' 'Title'	2.5.4.12
'BUSINESSCATEGORY'	2.5.4.15
'POSTALCODE'	2.5.4.17

Alias	OID
'givenName' 'G'	2.5.4.42
'I' 'Initials'	2.5.4.43
'ORGANIZATIONIDENTIFIER'	2.5.4.97
'UID'	0.9.2342.19200300.100.1.1
'DC' 'DomainComponent'	0.9.2342.19200300.100.1.25
'Email' 'E'	1.2.840.113549.1.9.1
'unstructuredName'	1.2.840.113549.1.9.2
'unstructuredAddress'	1.2.840.113549.1.9.8
'JurisdictionOfIncorporationLocalityName'	1.3.6.1.4.1.311.60.2.1.1
'JurisdictionOfIncorporationStateOrProvinceName'	1.3.6.1.4.1.311.60.2.1.2
'JurisdictionOfIncorporationCountryName'	1.3.6.1.4.1.311.60.2.1.3
'TrademarkOfficeName'	1.3.6.1.4.1.53087.1.2
'TrademarkCountryOrRegionName'	1.3.6.1.4.1.53087.1.3
'TrademarkRegistration'	1.3.6.1.4.1.53087.1.4
'LegalEntityIdentifier'	1.3.6.1.4.1.53087.1.5
'WordMark'	1.3.6.1.4.1.53087.1.6
'MarkType'	1.3.6.1.4.1.53087.1.13
'StatuteCountryName'	1.3.6.1.4.1.53087.3.2
'StatuteStateOrProvinceName'	1.3.6.1.4.1.53087.3.3



Alias	OID
'StatuteLocalityName'	1.3.6.1.4.1.53087.3.4
'StatuteCitation'	1.3.6.1.4.1.53087.3.5
'StatuteURL'	1.3.6.1.4.1.53087.3.6

## EST certificate profiles

Entrust provides the following EST (Enrollment over Secure Transport) certificate profiles.

- est-digital-signature
- est-digital-signature-key-encipherment
- est-key-encipherment
- est-non-repudiation

These profiles support the following features.

- [EST signing use cases](#)
- [EST key usages](#)
- [EST request extensions](#)
- [EST certificate fields](#)
- [EST certificate extensions](#)
- [EST algorithm constraints](#)
- [EST signing distinguished names](#)

## EST signing use cases

All EST profiles support the following use cases.

- ECS Enterprise UI
- CA Gateway API

## EST key usages

See below the Key Usage extension values each EST profile supports.

Profile	Key Usage
est-digital-signature	Digital Signature
est-digital-signature-key-encipherment	Digital Signature, Key Encipherment
est-key-encipherment	Key Encipherment
est-non-repudiation	Digital Signature, Non-Repudiation

## EST request extensions

All EST profiles support the following non-critical extensions in request.

Extension name	Extension OID
Certificate Policies	2.5.29.32
Extended Key Usage	2.5.29.37
Application Policies	1.3.6.1.4.1.311.21.10
Smime Capabilities	1.2.840.113549.1.9.15
MSTemplateOID	1.3.6.1.4.1.311.21.7
MSTemplateName	1.3.6.1.4.1.311.20.2
szOID_NTDS_CA_SECURITY_EXT	1.3.6.1.4.1.311.25.2

## EST certificate fields

All EST profiles set the following certificate fields.

Field	Value
Issuer	Customer's subordinate issuing CA.
Subject	No constraint.
Validity period	Less than or equal to the expiry of the issuing CA. Defaults to 1 year if not specified in the request.

## EST certificate extensions

All EST profiles set the following certificate extension values.

Extension	Critical	Value
AIA	No	Supplied if the customer enables OCSP when creating the CA
Authority Key Identifier	No	Matches subjectKeyIdentifier of the signing certificate

Extension	Critical	Value
Basic Constraints	Yes	cA =False
CRL Distribution Points	No	Always present
Extended Key Usage	No	No constraints
Subject Alternative Name	No	No constraints
Subject Key Identifier	No	«The leftmost 160-bits of the SHA-256 hash of the value of the BIT STRING subjectPublicKey» as described in <a href="#">RFC 7093 section 2</a>

## EST algorithm constraints

All EST profiles support the following key and signature algorithms.

Key algorithm	Signature algorithm
ECDSA P-256	ecdsa-with-SHA256
ECDSA P-384	ecdsa-with-SHA384
ECDSA P-521	ecdsa-with-SHA512
RSA 2048	sha256WithRSAEncryption
RSA 3072	sha256WithRSAEncryption
RSA 4096	sha512WithRSAEncryption

**i** NIST will deprecate some algorithms after Dec 31, 2030. See <https://nvlpubs.nist.gov/nistpubs/ir/2024/NIST.IR.8547.ipd.pdf>

## EST signing distinguished names

Entrust has no restriction on Distinguished Names (DNs) per certificate profile. All certificate profiles support the following identifiers.

Alias	OID
'CN' 'CommonName'	2.5.4.3
'SN' 'SurName'	2.5.4.4
'SERIALNUMBER' 'DeviceSerialNumber'	2.5.4.5
'C' 'Country'	2.5.4.6
'L' 'Locality'	2.5.4.7
'ST' 'S' 'State'	2.5.4.8
'STREET' 'StreetAddress'	2.5.4.9
'O' 'Org' 'Organization'	2.5.4.10
'OU' 'OrganizationalUnit' 'OrganizationUnit' 'OrgUnit'	2.5.4.11
'T' 'Title'	2.5.4.12
'BUSINESSCATEGORY'	2.5.4.15
'POSTALCODE'	2.5.4.17
'givenName' 'G'	2.5.4.42
'I' 'Initials'	2.5.4.43
'ORGANIZATIONIDENTIFIER'	2.5.4.97
'UID'	0.9.2342.19200300.100.1.1
'DC' 'DomainComponent'	0.9.2342.19200300.100.1.25
'Email' 'E'	1.2.840.113549.1.9.1
'unstructuredName'	1.2.840.113549.1.9.2

Alias	OID
'unstructuredAddress'	1.2.840.113549.1.9.8
'JurisdictionOfIncorporationLocalityName'	1.3.6.1.4.1.311.60.2.1.1
'JurisdictionOfIncorporationStateOrProvinceName'	1.3.6.1.4.1.311.60.2.1.2
'JurisdictionOfIncorporationCountryName'	1.3.6.1.4.1.311.60.2.1.3
'TrademarkOfficeName'	1.3.6.1.4.1.53087.1.2
'TrademarkCountryOrRegionName'	1.3.6.1.4.1.53087.1.3
'TrademarkRegistration'	1.3.6.1.4.1.53087.1.4
'LegalEntityIdentifier'	1.3.6.1.4.1.53087.1.5
'WordMark'	1.3.6.1.4.1.53087.1.6
'MarkType'	1.3.6.1.4.1.53087.1.13
'StatuteCountryName'	1.3.6.1.4.1.53087.3.2
'StatuteStateOrProvinceName'	1.3.6.1.4.1.53087.3.3
'StatuteLocalityName'	1.3.6.1.4.1.53087.3.4
'StatuteCitation'	1.3.6.1.4.1.53087.3.5
'StatuteURL'	1.3.6.1.4.1.53087.3.6

## Intune certificate profiles

Entrust provides the following Intune certificate profiles.

- intune-digital-signature
- intune-digital-signature-key-encipherment
- intune-digital-signature-key-encipherment-clientauth
- intune-key-encipherment
- intune-non-repudiation

These profiles support the following features.

- [Intune use cases](#)
- [Intune key usages](#)
- [Intune request extensions](#)
- [Intune certificate fields](#)
- [Intune certificate extensions](#)
- [Intune algorithm constraints](#)
- [Intune distinguished names](#)

## Intune use cases

All Intune profiles support the following use cases.

- ECS Enterprise UI
- CA Gateway API
- Entrust-hosted Enrollment Gateway
- On-prem Enrollment Gateway

## Intune key usages

See below the Key Usage and Extended Key Usage (EKU) extension values supported by each Intune profile.

Profile	Key Usage	Extended Key Usage	Allows Extended Key Usage in request
intune-digital-signature	Digital Signature	—	✓
intune-digital-signature-key-encipherment	Digital Signature, Key Encipherment	—	✓
intune-digital-signature-key-encipherment-clientauth	Digital Signature, Key Encipherment	TLS client authentication (1.3.6.1.5.5.7.3.2)	✗
intune-key-encipherment	Key Encipherment	—	✓
intune-non-repudiation	Digital Signature, Non-Repudiation	—	✓

## Intune request extensions

All Intune profiles support the following non-critical extensions in request.

Extension name	Extension OID
Certificate Policies	2.5.29.32

Extension name	Extension OID
Application Policies	1.3.6.1.4.1.311.21.10
Smime Capabilities	1.2.840.113549.1.9.15
MSTemplateOID	1.3.6.1.4.1.311.21.7
MSTemplateName	1.3.6.1.4.1.311.20.2
szOID_NTDS_CA_SECURITY_EXT	1.3.6.1.4.1.311.25.2

### Intune certificate fields

All Intune profiles set the following certificate fields.

Field	Value
Issuer	Customer's subordinate issuing CA.
Subject	No constraint.
Validity period	Less than or equal to the expiry of the issuing CA. Defaults to 1 year if not specified in the request.

### Intune certificate extensions

All Intune profiles set the following certificate extensions.


Extension	Critical	Value
AIA	No	Supplied if the customer enables OCSP when creating the CA
Authority Key Identifier	No	Matches subjectKeyIdentifier of the signing certificate
Basic Constraints	Yes	cA=False
CRL Distribution Points	No	Always present
Subject Alternative Name	No	No constraints

Extension	Critical	Value
Subject Key Identifier	No	«The leftmost 160-bits of the SHA-256 hash of the value of the BIT STRING subjectPublicKey» as described in <a href="#">RFC 7093 section 2</a>

### Intune algorithm constraints

All Intune profiles support the following key and signature algorithms.

Key algorithm	Signature algorithm
ECDSA P-256	ecdsa-with-SHA256
ECDSA P-384	ecdsa-with-SHA384
ECDSA P-521	ecdsa-with-SHA512
RSA 2048	sha256WithRSAEncryption
RSA 3072	sha256WithRSAEncryption
RSA 4096	sha512WithRSAEncryption

 NIST will deprecate some algorithms after Dec 31, 2030. See <https://nvlpubs.nist.gov/nistpubs/ir/2024/NIST.IR.8547.ipd.pdf>

### Intune distinguished names

Entrust has no restriction on Distinguished Names (DNs) per certificate profile. All certificate profiles support the following identifiers.

Alias	OID
'CN' 'CommonName'	2.5.4.3
'SN' 'SurName'	2.5.4.4
'SERIALNUMBER' 'DeviceSerialNumber'	2.5.4.5
'C' 'Country'	2.5.4.6



Alias	OID
'L' 'Locality'	2.5.4.7
'ST' 'S' 'State'	2.5.4.8
'STREET' 'StreetAddress'	2.5.4.9
'O' 'Org' 'Organization'	2.5.4.10
'OU' 'OrganizationalUnit' 'OrganizationUnit' 'OrgUnit'	2.5.4.11
'T' 'Title'	2.5.4.12
'BUSINESSCATEGORY'	2.5.4.15
'POSTALCODE'	2.5.4.17
'givenName' 'G'	2.5.4.42
'I' 'Initials'	2.5.4.43
'ORGANIZATIONIDENTIFIER'	2.5.4.97
'UID'	0.9.2342.19200300.100.1.1
'DC' 'DomainComponent'	0.9.2342.19200300.100.1.25
'Email' 'E'	1.2.840.113549.1.9.1
'unstructuredName'	1.2.840.113549.1.9.2
'unstructuredAddress'	1.2.840.113549.1.9.8
'JurisdictionOfIncorporationLocalityName'	1.3.6.1.4.1.311.60.2.1.1
'JurisdictionOfIncorporationStateOrProvinceName'	1.3.6.1.4.1.311.60.2.1.2
'JurisdictionOfIncorporationCountryName'	1.3.6.1.4.1.311.60.2.1.3

Alias	OID
'TrademarkOfficeName'	1.3.6.1.4.1.53087.1.2
'TrademarkCountryOrRegionName'	1.3.6.1.4.1.53087.1.3
'TrademarkRegistration'	1.3.6.1.4.1.53087.1.4
'LegalEntityIdentifier'	1.3.6.1.4.1.53087.1.5
'WordMark'	1.3.6.1.4.1.53087.1.6
'MarkType'	1.3.6.1.4.1.53087.1.13
'StatuteCountryName'	1.3.6.1.4.1.53087.3.2
'StatuteStateOrProvinceName'	1.3.6.1.4.1.53087.3.3
'StatuteLocalityName'	1.3.6.1.4.1.53087.3.4
'StatuteCitation'	1.3.6.1.4.1.53087.3.5
'StatuteURL'	1.3.6.1.4.1.53087.3.6

## MDMWS certificate profiles

Entrust provides the following MDMWS (Mobile Device Management Web Service) certificate profiles.

- mdmws-digital-signature
- mdmws-digital-signature-key-encipherment
- mdmws-digital-signature-key-encipherment-clientauth
- mdmws-key-encipherment
- mdmws-non-repudiation
- mdmws-p12-digital-signature
- mdmws-p12-digital-signature-key-encipherment
- mdmws-p12-digital-signature-key-encipherment-clientauth
- mdmws-p12-key-encipherment
- mdmws-p12-non-repudiation

These profiles support the following features.

- [MDMWS use cases](#)
- [MDMWS issuance modes and key usages](#)
- [MDMWS request extensions](#)
- [MDMWS certificate fields](#)
- [MDMWS certificate extensions](#)

- [MDMWS algorithm constraints](#)
- [MDMWS distinguished names](#)

## MDMWS use cases

All MDMWS profiles support the following use cases.

- ECS Enterprise UI
- CA Gateway API
- Entrust-hosted Enrollment Gateway
- On-prem Enrollment Gateway

## MDMWS issuance modes and key usages

MDMWS profiles support the following issuance modes:

- Issue the certificate from a CSR.
- Issue the certificate and an RSA2048 private key in a P12 file.

See below the issuance mode, Key Usage, and Extended Key Usage (EKU) values each MDMWSprofile supports.

Profile	CS R	P1 2	Key Usage	Extended Key Usage	Allows Extended Key Usage in request
mdmws-digital-signature	✓	✗	Digital Signature	No constraints	✓
mdmws-digital-signature- key-encipherment	✓	✗	Digital Signature, Key Encipherment	No constraints	✓
mdmws-digital-signature- key-encipherment- clientauth	✓	✗	Digital Signature, Key Encipherment	TLS client authentication (1.3.6.1.5.5.7.3.2)	✗
mdmws-key-encipherment	✓	✗	Key Encipherment	No constraints	✓
mdmws-non-repudiation	✓	✗	Digital Signature, Non- Repudiation	No constraints	✓
mdmws-p12-digital- signature	✓	✓	Digital Signature	No constraints	✓
mdmws-p12-digital- signature-key- encipherment	✓	✓	Digital Signature, Key Encipherment	No constraints	✓

Profile	CS R	P1 2	Key Usage	Extended Key Usage	Allows Extended Key Usage in request
mdmws-p12-digital- signature-key- encipherment-clientauth	✓	✓	Digital Signature, Key Encipherment	TLS client authentication (1.3.6.1.5.5.7.3.2)	✗
mdmws-p12-key- encipherment	✓	✓	Key Encipherment	No constraints	✓
mdmws-p12-non- repudiation	✓	✓	Digital Signature, Non- Repudiation	No constraints	✓

### MDMWS request extensions

All MDMWS profiles support the following non-critical extensions in request.

Extension name	Extension OID
Certificate Policies	2.5.29.32
Application Policies	1.3.6.1.4.1.311.21.10
Smime Capabilities	1.2.840.113549.1.9.15
MSTemplateOID	1.3.6.1.4.1.311.21.7
MSTemplateName	1.3.6.1.4.1.311.20.2
szOID_NTDS_CA_SECURITY_EXT	1.3.6.1.4.1.311.25.2

### MDMWS certificate fields

All MDMWS profiles set the following certificate fields.

Field	Value
Issuer	Customer's subordinate issuing CA.
Subject	No constraint.

Field	Value
Validity period	Less than or equal to the expiry of the issuing CA. Defaults to 1 year if not specified in the request.

### MDMWS certificate extensions


All MDMWS profiles set the following certificate extension values.

Extension	OID
CertificatePolicies	2.5.29.32
ApplicationPolicies	1.3.6.1.4.1.311.21.10
SmimeCapabilities	1.2.840.113549.1.9.15
MSTemplateOID	1.3.6.1.4.1.311.21.7
MSTemplateName	1.3.6.1.4.1.311.20.2
szOID_NTDS_CA_SECURITY_EXT	1.3.6.1.4.1.311.25.2

### MDMWS algorithm constraints

All MDMWS profiles support the following key and signature algorithms.

Key algorithm	Signature algorithm
ECDSA P-256	ecdsa-with-SHA256
ECDSA P-384	ecdsa-with-SHA384
ECDSA P-521	ecdsa-with-SHA512
RSA 2048	sha256WithRSAEncryption
RSA 3072	sha256WithRSAEncryption
RSA 4096	sha512WithRSAEncryption

 NIST will deprecate some algorithms after Dec 31, 2030. See <https://nvlpubs.nist.gov/nistpubs/ir/2024/NIST.IR.8547.ipd.pdf>

## MDMWS distinguished names

Entrust has no restriction on Distinguished Names (DNs) per certificate profile. All certificate profiles support the following identifiers.

Alias	OID
'CN' 'CommonName'	2.5.4.3
'SN' 'SurName'	2.5.4.4
'SERIALNUMBER' 'DeviceSerialNumber'	2.5.4.5
'C' 'Country'	2.5.4.6
'L' 'Locality'	2.5.4.7
'ST' 'S' 'State'	2.5.4.8
'STREET' 'StreetAddress'	2.5.4.9
'O' 'Org' 'Organization'	2.5.4.10
'OU' 'OrganizationalUnit' 'OrganizationUnit' 'OrgUnit'	2.5.4.11
'T' 'Title'	2.5.4.12
'BUSINESSCATEGORY'	2.5.4.15
'POSTALCODE'	2.5.4.17
'givenName' 'G'	2.5.4.42
'I' 'Initials'	2.5.4.43
'ORGANIZATIONIDENTIFIER'	2.5.4.97
'UID'	0.9.2342.19200300.100.1.1

Alias	OID
'DC' 'DomainComponent'	0.9.2342.19200300.100.1.25
'Email' 'E'	1.2.840.113549.1.9.1
'unstructuredName'	1.2.840.113549.1.9.2
'unstructuredAddress'	1.2.840.113549.1.9.8
'JurisdictionOfIncorporationLocalityName'	1.3.6.1.4.1.311.60.2.1.1
'JurisdictionOfIncorporationStateOrProvinceName'	1.3.6.1.4.1.311.60.2.1.2
'JurisdictionOfIncorporationCountryName'	1.3.6.1.4.1.311.60.2.1.3
'TrademarkOfficeName'	1.3.6.1.4.1.53087.1.2
'TrademarkCountryOrRegionName'	1.3.6.1.4.1.53087.1.3
'TrademarkRegistration'	1.3.6.1.4.1.53087.1.4
'LegalEntityIdentifier'	1.3.6.1.4.1.53087.1.5
'WordMark'	1.3.6.1.4.1.53087.1.6
'MarkType'	1.3.6.1.4.1.53087.1.13
'StatuteCountryName'	1.3.6.1.4.1.53087.3.2
'StatuteStateOrProvinceName'	1.3.6.1.4.1.53087.3.3
'StatuteLocalityName'	1.3.6.1.4.1.53087.3.4
'StatuteCitation'	1.3.6.1.4.1.53087.3.5
'StatuteURL'	1.3.6.1.4.1.53087.3.6

## Mobile device certificate profile

Entrust provides the `mobile-device-p12-digital-signature-client-authentication` certificate profile for mobile devices.

- [Mobile device use cases](#)
- [Mobile device certificate issuance mode](#)
- [Mobile device certificate fields](#)
- [Mobile device certificate extensions](#)
- [Mobile device algorithm constraints](#)
- [Mobile distinguished names](#)

### Mobile device use cases

The `mobile-device-p12-digital-signature-client-authentication` profile supports the following use cases.

- ECS Enterprise UI
- CA Gateway API

### Mobile device certificate issuance mode

The `mobile-device-p12-digital-signature-client-authentication` profile supports the following issuance modes:

- Issue the certificate from a CSR.
- Issue the certificate and an RSA2048 private key in a P12 file.

### Mobile device certificate fields

The `mobile-device-p12-digital-signature-client-authentication` profile sets the following certificate fields.

Field	Value
Issuer	Customer's subordinate issuing CA
Validity period	Less than or equal to subordinate expiry of the issuing CA. Default to 1 year if not specified in the request.
Subject	No constraint

### Mobile device certificate extensions

The `mobile-device-p12-digital-signature-client-authentication` profile sets the following certificate extensions.



Extension	Critical	Value
AIA	No	Supplied if the customer enables OCSP when creating the CA
Authority Key Identifier	No	Matches subjectKeyIdentifier of the signing certificate
Basic Constraints	Yes	cA =False
CRL Distribution Points	No	Always present
Extended Key Usage	No	TLS client authentication (1.3.6.1.5.5.7.3.2)
Key Usage	Yes	Digital Signature
Subject Alternative Name	No	No constraints
Subject Key Identifier	No	«The leftmost 160-bits of the SHA-256 hash of the value of the BIT STRING subjectPublicKey» as described in <a href="#">RFC 7093 section 2</a>

### Mobile device algorithm constraints

The `mobile-device-p12-digital-signature-client-authentication` profile supports the following key and signature algorithms.

Key algorithm	Signature algorithm
ECDSA P-256	ecdsa-with-SHA256
ECDSA P-384	ecdsa-with-SHA384
ECDSA P-521	ecdsa-with-SHA512
RSA 2048	sha256WithRSAEncryption
RSA 3072	sha256WithRSAEncryption
RSA 4096	sha512WithRSAEncryption

**i** NIST will deprecate some algorithms after Dec 31, 2030. See <https://nvlpubs.nist.gov/nistpubs/ir/2024/NIST.IR.8547.ipd.pdf>

## Mobile distinguished names

Entrust has no restriction on Distinguished Names (DNs) per certificate profile. All certificate profiles support the following identifiers.

Alias	OID
'CN' 'CommonName'	2.5.4.3
'SN' 'SurName'	2.5.4.4
'SERIALNUMBER' 'DeviceSerialNumber'	2.5.4.5
'C' 'Country'	2.5.4.6
'L' 'Locality'	2.5.4.7
'ST' 'S' 'State'	2.5.4.8
'STREET' 'StreetAddress'	2.5.4.9
'O' 'Org' 'Organization'	2.5.4.10
'OU' 'OrganizationalUnit' 'OrganizationUnit' 'OrgUnit'	2.5.4.11
'T' 'Title'	2.5.4.12
'BUSINESSCATEGORY'	2.5.4.15
'POSTALCODE'	2.5.4.17
'givenName' 'G'	2.5.4.42
'I' 'Initials'	2.5.4.43
'ORGANIZATIONIDENTIFIER'	2.5.4.97
'UID'	0.9.2342.19200300.100.1.1
'DC' 'DomainComponent'	0.9.2342.19200300.100.1.25
'Email' 'E'	1.2.840.113549.1.9.1

Alias	OID
'unstructuredName'	1.2.840.113549.1.9.2
'unstructuredAddress'	1.2.840.113549.1.9.8
'JurisdictionOfIncorporationLocalityName'	1.3.6.1.4.1.311.60.2.1.1
'JurisdictionOfIncorporationStateOrProvinceName'	1.3.6.1.4.1.311.60.2.1.2
'JurisdictionOfIncorporationCountryName'	1.3.6.1.4.1.311.60.2.1.3
'TrademarkOfficeName'	1.3.6.1.4.1.53087.1.2
'TrademarkCountryOrRegionName'	1.3.6.1.4.1.53087.1.3
'TrademarkRegistration'	1.3.6.1.4.1.53087.1.4
'LegalEntityIdentifier'	1.3.6.1.4.1.53087.1.5
'WordMark'	1.3.6.1.4.1.53087.1.6
'MarkType'	1.3.6.1.4.1.53087.1.13
'StatuteCountryName'	1.3.6.1.4.1.53087.3.2
'StatuteStateOrProvinceName'	1.3.6.1.4.1.53087.3.3
'StatuteLocalityName'	1.3.6.1.4.1.53087.3.4
'StatuteCitation'	1.3.6.1.4.1.53087.3.5
'StatuteURL'	1.3.6.1.4.1.53087.3.6

## Multiuse certificate profiles

Entrust provides the following multiuse profiles.

- multiuse-p12-client
- multiuse-p12-client-server
- multiuse-p12-custom
- multiuse-p12-key-data-encipherment-non-repudiation-client

- multiuse-p12-key-data-encipherment-non-repudiation-client-server
- multiuse-p12-key-encipherment-client
- multiuse-p12-key-encipherment-client-server
- multiuse-p12-key-encipherment-custom
- multiuse-p12-key-encipherment-non-repudiation-client
- multiuse-p12-key-encipherment-non-repudiation-client-server
- multiuse-p12-key-encipherment-non-repudiation-custom
- multiuse-p12-key-encipherment-non-repudiation-server
- multiuse-p12-key-encipherment-server
- multiuse-p12-non-repudiation-client
- multiuse-p12-non-repudiation-client-server
- multiuse-p12-non-repudiation-custom
- multiuse-p12-non-repudiation-server
- multiuse-p12-server

These profiles support the following features.

- [Multiuse use cases](#)
- [Multiuse issuance modes](#)
- [Multiuse key usages](#)
- [Multiuse request extensions](#)
- [Multiuse certificate fields](#)
- [Multiuse certificate extensions](#)
- [Multiuse algorithm constraints](#)
- [Multiuse distinguished names](#)

## Multiuse use cases

All multiuse profiles support the following use cases.

- ECS Enterprise UI
- CA Gateway API

## Multiuse issuance modes

All multiuse profiles support the following issuance modes:

- Issue the certificate from a CSR.
- Issue the certificate and an RSA2048 private key in a P12 file.

## Multiuse key usages

See below the Key Usage and Extended Key Usage (EKU) extension values each multiuse profile supports.

Profile Name	Key Usage	Extended Key Usage	Allows Extended Key Usage in request
multiuse-p12-client	Digital Signature, Key Agreement	TLS client Authentication (1.3.6.1.5.5.7.3.2)	✗

Profile Name	Key Usage	Extended Key Usage	Allows Extended Key Usage in request
multiuse-p12-client-server	Digital Signature, Key Agreement	TLS client Authentication (1.3.6.1.5.5.7.3.2)  TLS server authentication (1.3.6.1.5.5.7.3.1)	✗
multiuse-p12-custom	Digital Signature, Key Agreement	No constraints	✓
multiuse-p12-key-data-encipherment-non-repudiation-client	Digital Signature, Non-Repudiation, Key Encipherment, Data Encipherment	TLS client Authentication (1.3.6.1.5.5.7.3.2)	✗
multiuse-p12-key-data-encipherment-non-repudiation-client-server	Digital Signature, Non-Repudiation, Key Encipherment, Data Encipherment	TLS client Authentication (1.3.6.1.5.5.7.3.2)	✗
multiuse-p12-key-encipherment-client	Digital Signature, Key Agreement, Key Encipherment	TLS client Authentication (1.3.6.1.5.5.7.3.2)	✗
multiuse-p12-key-encipherment-client-server	Digital Signature, Key Agreement, Key Encipherment	TLS client Authentication (1.3.6.1.5.5.7.3.2)  TLS server authentication (1.3.6.1.5.5.7.3.1)	✗
multiuse-p12-key-encipherment-custom	Digital Signature, Key Agreement, Key Encipherment	No constraints	✓
multiuse-p12-key-encipherment-non-repudiation-client	Digital Signature, Key Agreement, Key Encipherment, Non-Repudiation	TLS client Authentication (1.3.6.1.5.5.7.3.2)	✗

Profile Name	Key Usage	Extended Key Usage	Allows Extended Key Usage in request
multiuse-p12-key-encipherment-non-repudiation-client-server	Digital Signature, Key Agreement, Key Encipherment, Non-Repudation	TLS client Authentication (1.3.6.1.5.5.7.3.2)  TLS server authentication (1.3.6.1.5.5.7.3.1)	✗
multiuse-p12-key-encipherment-non-repudiation-custom	Digital Signature, Key Agreement, Key Encipherment, Non-Repudation	No constraints	✓
multiuse-p12-key-encipherment-non-repudiation-server	Digital Signature, Key Agreement, Key Encipherment, Non-Repudation	TLS server authentication (1.3.6.1.5.5.7.3.1)	✗
multiuse-p12-key-encipherment-server	Digital Signature, Key Agreement, Key Encipherment	TLS server authentication (1.3.6.1.5.5.7.3.1)	✗
multiuse-p12-non-repudiation-client	Digital Signature, Key Agreement, Non-Repudation	TLS client Authentication (1.3.6.1.5.5.7.3.2)	✗
multiuse-p12-non-repudiation-client-server	Digital Signature, Key Agreement, Non-Repudation	TLS client Authentication (1.3.6.1.5.5.7.3.2)  TLS server authentication (1.3.6.1.5.5.7.3.1)	✗
multiuse-p12-non-repudiation-custom	Digital Signature, Key Agreement, Non-Repudation	No constraints	✓
multiuse-p12-non-repudiation-server	Digital Signature, Key Agreement, Non-Repudation	TLS server authentication (1.3.6.1.5.5.7.3.1)	✗
multiuse-p12-server	Digital Signature, Key Agreement	TLS server authentication (1.3.6.1.5.5.7.3.1)	✗

## Multiuse request extensions

All multiuse profiles support the following non-critical extensions in request.

Extension	OID
ApplicationPolicies	1.3.6.1.4.1.311.21.10
CertificatePolicies	2.5.29.32

## Multiuse certificate fields

All multiuse profiles set the following certificate fields.

Field	Value
Issuer	Customer's subordinate issuing CA.
Subject	No constraint.
Validity period	Less than or equal to the expiry of the issuing CA. Defaults to 1 year if not specified in the request.

## Multiuse certificate extensions

All multiuse profiles set the following certificate extensions.


Extension	Critical	Value
AIA	No	Supplied if the customer enables OCSP when creating the CA
Authority Key Identifier	No	Matches subjectKeyIdentifier of the signing certificate
Basic Constraints	Yes	cA=False
CRL Distribution Points	No	Always present
Key Usage	Yes	Digital Signature, Key Encipherment
Subject Alternative Name	No	No constraints

Extension	Critical	Value
Subject Key Identifier	No	«The leftmost 160-bits of the SHA-256 hash of the value of the BIT STRING subjectPublicKey» as described in <a href="#">RFC 7093 section 2</a>

### Multiuse algorithm constraints

All multiuse profiles support the following key and signature algorithms.

Key algorithm	Signature algorithm
ECDSA P-256	ecdsa-with-SHA256
ECDSA P-384	ecdsa-with-SHA384
ECDSA P-521	ecdsa-with-SHA512
RSA 2048	sha256WithRSAEncryption
RSA 3072	sha256WithRSAEncryption
RSA 4096	sha512WithRSAEncryption

 NIST will deprecate some algorithms after Dec 31, 2030. See <https://nvlpubs.nist.gov/nistpubs/ir/2024/NIST.IR.8547.ipd.pdf>

### Multiuse distinguished names

Entrust has no restriction on Distinguished Names (DNs) per certificate profile. All certificate profiles support the following identifiers.

Alias	OID
'CN' 'CommonName'	2.5.4.3
'SN' 'SurName'	2.5.4.4
'SERIALNUMBER' 'DeviceSerialNumber'	2.5.4.5
'C' 'Country'	2.5.4.6



Alias	OID
'L' 'Locality'	2.5.4.7
'ST' 'S' 'State'	2.5.4.8
'STREET' 'StreetAddress'	2.5.4.9
'O' 'Org' 'Organization'	2.5.4.10
'OU' 'OrganizationalUnit' 'OrganizationUnit' 'OrgUnit'	2.5.4.11
'T' 'Title'	2.5.4.12
'BUSINESSCATEGORY'	2.5.4.15
'POSTALCODE'	2.5.4.17
'givenName' 'G'	2.5.4.42
'I' 'Initials'	2.5.4.43
'ORGANIZATIONIDENTIFIER'	2.5.4.97
'UID'	0.9.2342.19200300.100.1.1
'DC' 'DomainComponent'	0.9.2342.19200300.100.1.25
'Email' 'E'	1.2.840.113549.1.9.1
'unstructuredName'	1.2.840.113549.1.9.2
'unstructuredAddress'	1.2.840.113549.1.9.8
'JurisdictionOfIncorporationLocalityName'	1.3.6.1.4.1.311.60.2.1.1
'JurisdictionOfIncorporationStateOrProvinceName'	1.3.6.1.4.1.311.60.2.1.2
'JurisdictionOfIncorporationCountryName'	1.3.6.1.4.1.311.60.2.1.3

Alias	OID
'TrademarkOfficeName'	1.3.6.1.4.1.53087.1.2
'TrademarkCountryOrRegionName'	1.3.6.1.4.1.53087.1.3
'TrademarkRegistration'	1.3.6.1.4.1.53087.1.4
'LegalEntityIdentifier'	1.3.6.1.4.1.53087.1.5
'WordMark'	1.3.6.1.4.1.53087.1.6
'MarkType'	1.3.6.1.4.1.53087.1.13
'StatuteCountryName'	1.3.6.1.4.1.53087.3.2
'StatuteStateOrProvinceName'	1.3.6.1.4.1.53087.3.3
'StatuteLocalityName'	1.3.6.1.4.1.53087.3.4
'StatuteCitation'	1.3.6.1.4.1.53087.3.5
'StatuteURL'	1.3.6.1.4.1.53087.3.6

## Private SSL (ACMEv2) certificate profiles

Entrust provides the following Private SSL (ACMEv2) certificate profiles.

- `privatessl-tls-client`
- `privatessl-tls-client-server`
- `privatessl-tls-client-server-data-encipherment`
- `privatessl-tls-client-server-supply-san`
- `privatessl-tls-server`
- `privatessl-tls-server-supply-san`

These profiles support the following features.

- [Private SSL use cases](#)
- [Private SSL key usages](#)
- [Private SSL fill\\_san\\_dns\\_with\\_cn](#)
- [Private SSL request extensions](#)
- [Private SSL certificate fields](#)
- [Private SSL certificate extensions](#)
- [Private SSL algorithm constraints](#)
- [Private SSL distinguished names](#)

## Private SSL use cases

All private SSL profiles support the following use cases.

- ECS Enterprise UI
- CA Gateway API

## Private SSL key usages

See below the Key Usage and Extended Key Usage (EKU) extension values each private SSL profile supports.

Profile	Key Usage	Extended Key Usage
privatessl-tls-client	Digital Signature	TLS client authentication (1.3.6.1.5.5.7.3.2)
privatessl-tls-client-server	Digital Signature	TLS client authentication (1.3.6.1.5.5.7.3.2) TLS server authentication (1.3.6.1.5.5.7.3.1)
privatessl-tls-client-server-data-encipherment	Digital Signature, Data Encipherment	TLS client authentication (1.3.6.1.5.5.7.3.2) TLS server authentication (1.3.6.1.5.5.7.3.1)
privatessl-tls-client-server-supply-san	Digital Signature	TLS client authentication (1.3.6.1.5.5.7.3.2) TLS server authentication (1.3.6.1.5.5.7.3.1)
privatessl-tls-server	Digital Signature	TLS server authentication (1.3.6.1.5.5.7.3.1)
privatessl-tls-server-supply-san	Digital Signature	TLS server authentication (1.3.6.1.5.5.7.3.1)

## Private SSL fill\_san\_dns\_with\_cn

When the `fill_san_dns_with_cn` parameter is `True`, the profile copies in the `SubjectAltname` extension all the `CN` fields:

- included in the `Subject` extension, and
- not already in the `SubjectAltname` extension (to avoid duplicated entries).

See below the value of this parameter in each profile.

Profile	fill_san_dns_with_cn
privatessl-tls-client	False
privatessl-tls-client-server	False
privatessl-tls-client-server-data-encipherment	False
privatessl-tls-client-server-supply-san	True
privatessl-tls-server	False
privatessl-tls-server-supply-san	True

### Private SSL request extensions

All private SSL profiles support the following non-critical extensions in request.

Extension Name	Extension OID
Application Policies	1.3.6.1.4.1.311.21.10
Certificate Policies	2.5.29.32

### Private SSL certificate fields

All Private SSL profiles set the following certificate fields.

Field	Value
Issuer	Customer's subordinate issuing CA.
Subject	No constraint.
Validity period	Less than or equal to the expiry of the issuing CA. Defaults to 1 year if not specified in the request.

### Private SSL certificate extensions


All private SSL profiles set the following certificate extensions.

Extension	Critical	Value
AIA	No	Supplied if the customer enables OCSP when creating the CA
Authority Key Identifier	No	Matches subjectKeyIdentifier of the signing certificate
Basic Constraints	Yes	cA =False
CRL Distribution Points	No	Always present
Subject Alternative Name	No	No constraints
Subject Key Identifier	No	«The leftmost 160-bits of the SHA-256 hash of the value of the BIT STRING subjectPublicKey» as described in <a href="#">RFC 7093 section 2</a>

### Private SSL algorithm constraints

All private SSL profiles support the following key and signature algorithms.

Key algorithm	Signature algorithm
ECDSA P-256	ecdsa-with-SHA256
ECDSA P-384	ecdsa-with-SHA384
ECDSA P-521	ecdsa-with-SHA512
RSA 2048	sha256WithRSAEncryption
RSA 3072	sha256WithRSAEncryption
RSA 4096	sha512WithRSAEncryption

 NIST will deprecate some algorithms after Dec 31, 2030. See <https://nvlpubs.nist.gov/nistpubs/ir/2024/NIST.IR.8547.ipd.pdf>

### Private SSL distinguished names

Entrust has no restriction on Distinguished Names (DNs) per certificate profile. All certificate profiles support the following identifiers.

Alias	OID
'CN' 'CommonName'	2.5.4.3
'SN' 'SurName'	2.5.4.4
'SERIALNUMBER' 'DeviceSerialNumber'	2.5.4.5
'C' 'Country'	2.5.4.6
'L' 'Locality'	2.5.4.7
'ST' 'S' 'State'	2.5.4.8
'STREET' 'StreetAddress'	2.5.4.9
'O' 'Org' 'Organization'	2.5.4.10
'OU' 'OrganizationalUnit' 'OrganizationUnit' 'OrgUnit'	2.5.4.11
'T' 'Title'	2.5.4.12
'BUSINESSCATEGORY'	2.5.4.15
'POSTALCODE'	2.5.4.17
'givenName' 'G'	2.5.4.42
'I' 'Initials'	2.5.4.43
'ORGANIZATIONIDENTIFIER'	2.5.4.97
'UID'	0.9.2342.19200300.100.1.1
'DC' 'DomainComponent'	0.9.2342.19200300.100.1.25
'Email' 'E'	1.2.840.113549.1.9.1
'unstructuredName'	1.2.840.113549.1.9.2

Alias	OID
'unstructuredAddress'	1.2.840.113549.1.9.8
'JurisdictionOfIncorporationLocalityName'	1.3.6.1.4.1.311.60.2.1.1
'JurisdictionOfIncorporationStateOrProvinceName'	1.3.6.1.4.1.311.60.2.1.2
'JurisdictionOfIncorporationCountryName'	1.3.6.1.4.1.311.60.2.1.3
'TrademarkOfficeName'	1.3.6.1.4.1.53087.1.2
'TrademarkCountryOrRegionName'	1.3.6.1.4.1.53087.1.3
'TrademarkRegistration'	1.3.6.1.4.1.53087.1.4
'LegalEntityIdentifier'	1.3.6.1.4.1.53087.1.5
'WordMark'	1.3.6.1.4.1.53087.1.6
'MarkType'	1.3.6.1.4.1.53087.1.13
'StatuteCountryName'	1.3.6.1.4.1.53087.3.2
'StatuteStateOrProvinceName'	1.3.6.1.4.1.53087.3.3
'StatuteLocalityName'	1.3.6.1.4.1.53087.3.4
'StatuteCitation'	1.3.6.1.4.1.53087.3.5
'StatuteURL'	1.3.6.1.4.1.53087.3.6

## S/MIME Secure Email certificate profiles

Entrust provides the following S/MIME Secure Email certificate profiles.

- smime-digital-signature-key-encipherment
- smime-key-encipherment
- smime-non-repudiation

These profiles support the following features.

- [S/MIME use cases](#)
- [S/MIME key usages](#)

- [S/MIME certificate fields](#)
- [S/MIME certificate extensions](#)
- [S/MIME algorithm constraints](#)
- [S/MIME distinguished names](#)

## S/MIME use cases

All S/MIME Secure Email profiles support the following use cases.

- ECS Enterprise UI
- CA Gateway API

## S/MIME key usages

See below the Key Usage and Extended Key Usage (EKU) extension values each profile supports.

Profile	Key Usage	Extended Key Usage
smime-digital-signature-key-encipherment	Digital Signature, Key Encipherment	TLS client authentication (1.3.6.1.5.5.7.3.2) Email Protection (1.3.6.1.5.5.7.3.4)
smime-key-encipherment	Key Encipherment	Email Protection (1.3.6.1.5.5.7.3.4)
smime-non-repudiation	Digital Signature, Non-Repudiation	Email Protection (1.3.6.1.5.5.7.3.4)

## S/MIME certificate fields

All S/MIME Secure Email profiles set the following certificate fields.

Field	Value
Issuer	Customer's subordinate issuing CA.
Subject	No constraint.
Validity period	Less than or equal to the expiry of the issuing CA. Defaults to 1 year if not specified in the request.

## S/MIME certificate extensions

All S/MIME Secure Email profiles set the following certificate extensions.




Extension	Critical	Value
AIA	No	Supplied if the customer enables OCSP when creating the CA
Authority Key Identifier	No	Matches subjectKeyIdentifier of the signing certificate
Basic Constraints	Yes	cA =False
CRL Distribution Points	No	Always present
Subject Alternative Name	No	No constraints
Subject Key Identifier	No	«The leftmost 160-bits of the SHA-256 hash of the value of the BIT STRING subjectPublicKey» as described in <a href="#">RFC 7093 section 2</a>

### S/MIME algorithm constraints

All S/MIME Secure Email profiles support the following key and signature algorithms.

Key algorithm	Signature algorithm
ECDSA P-256	ecdsa-with-SHA256
ECDSA P-384	ecdsa-with-SHA384
ECDSA P-521	ecdsa-with-SHA512
RSA 2048	sha256WithRSAEncryption
RSA 3072	sha256WithRSAEncryption
RSA 4096	sha512WithRSAEncryption

 NIST will deprecate some algorithms after Dec 31, 2030. See <https://nvlpubs.nist.gov/nistpubs/ir/2024/NIST.IR.8547.ipd.pdf>

### S/MIME distinguished names

Entrust has no restriction on Distinguished Names (DNs) per certificate profile. All certificate profiles support the following identifiers.

Alias	OID
'CN' 'CommonName'	2.5.4.3
'SN' 'SurName'	2.5.4.4
'SERIALNUMBER' 'DeviceSerialNumber'	2.5.4.5
'C' 'Country'	2.5.4.6
'L' 'Locality'	2.5.4.7
'ST' 'S' 'State'	2.5.4.8
'STREET' 'StreetAddress'	2.5.4.9
'O' 'Org' 'Organization'	2.5.4.10
'OU' 'OrganizationalUnit' 'OrganizationUnit' 'OrgUnit'	2.5.4.11
'T' 'Title'	2.5.4.12
'BUSINESSCATEGORY'	2.5.4.15
'POSTALCODE'	2.5.4.17
'givenName' 'G'	2.5.4.42
'I' 'Initials'	2.5.4.43
'ORGANIZATIONIDENTIFIER'	2.5.4.97
'UID'	0.9.2342.19200300.100.1.1
'DC' 'DomainComponent'	0.9.2342.19200300.100.1.25
'Email' 'E'	1.2.840.113549.1.9.1
'unstructuredName'	1.2.840.113549.1.9.2

Alias	OID
'unstructuredAddress'	1.2.840.113549.1.9.8
'JurisdictionOfIncorporationLocalityName'	1.3.6.1.4.1.311.60.2.1.1
'JurisdictionOfIncorporationStateOrProvinceName'	1.3.6.1.4.1.311.60.2.1.2
'JurisdictionOfIncorporationCountryName'	1.3.6.1.4.1.311.60.2.1.3
'TrademarkOfficeName'	1.3.6.1.4.1.53087.1.2
'TrademarkCountryOrRegionName'	1.3.6.1.4.1.53087.1.3
'TrademarkRegistration'	1.3.6.1.4.1.53087.1.4
'LegalEntityIdentifier'	1.3.6.1.4.1.53087.1.5
'WordMark'	1.3.6.1.4.1.53087.1.6
'MarkType'	1.3.6.1.4.1.53087.1.13
'StatuteCountryName'	1.3.6.1.4.1.53087.3.2
'StatuteStateOrProvinceName'	1.3.6.1.4.1.53087.3.3
'StatuteLocalityName'	1.3.6.1.4.1.53087.3.4
'StatuteCitation'	1.3.6.1.4.1.53087.3.5
'StatuteURL'	1.3.6.1.4.1.53087.3.6

## SCEP certificate profiles

Entrust provides the following SCEP (Simple Certificate Enrollment Protocol) certificate profiles.

- scep-digital-signature
- scep-digital-signature-key-encipherment
- scep-key-encipherment
- scep-non-repudiation

These profiles support the following features.

- [SCEP use cases](#)

- [SCEP key usages](#)
- [SCEP request extensions](#)
- [SCEP certificate fields](#)
- [SCEP certificate extensions](#)
- [SCEP algorithm constraints](#)
- [SCEP distinguished names](#)

## SCEP use cases

All SCEP profiles support the following use cases.

- ECS Enterprise UI
- CA Gateway API

## SCEP key usages

See below the Key Usage extension values each profile supports.

Profile	Key Usage
scep-digital-signature	Digital Signature
scep-digital-signature-key-encipherment	Digital Signature, Key Encipherment
scep-key-encipherment	Key Encipherment
scep-non-repudiation	Digital Signature, Non-Repudiation

## SCEP request extensions

All SCEP profiles support the following non-critical extensions in request.

Extension name	Extension OID
Certificate Policies	2.5.29.32
Extended Key Usage	2.5.29.37
Application Policies	1.3.6.1.4.1.311.21.10
Smime Capabilities	1.2.840.113549.1.9.15
MSTemplateOID	1.3.6.1.4.1.311.21.7
MSTemplateName	1.3.6.1.4.1.311.20.2

Extension name	Extension OID
szOID_NTDS_CA_SECURITY_EXT	1.3.6.1.4.1.311.25.2

### SCEP certificate fields

All SCEP profiles set the following certificate fields.

Field	Value
Issuer	Customer's subordinate issuing CA.
Subject	No constraint.
Validity period	Less than or equal to the expiry of the issuing CA. Defaults to 1 year if not specified in the request.

### SCEP certificate extensions

All SCEP profiles set the following certificate extensions.

Extension	Critical	Value
AIA	No	Supplied if the customer enables OCSP when creating the CA
Authority Key Identifier	No	Matches subjectKeyIdentifier of the signing certificate
Basic Constraints	Yes	cA=False
CRL Distribution Points	No	Always present
Extended Key Usage	No	No constraints
Subject Alternative Name	No	No constraints
Subject Key Identifier	No	«The leftmost 160-bits of the SHA-256 hash of the value of the BIT STRING subjectPublicKey» as described in <a href="#">RFC 7093 section 2</a>

### SCEP algorithm constraints

All SCEP profiles support the following key and signature algorithms.

Key algorithm	Signature algorithm
ECDSA P-256	ecdsa-with-SHA256
ECDSA P-384	ecdsa-with-SHA384
ECDSA P-521	ecdsa-with-SHA512
RSA 2048	sha256WithRSAEncryption
RSA 3072	sha256WithRSAEncryption
RSA 4096	sha512WithRSAEncryption

**i** NIST will deprecate some algorithms after Dec 31, 2030. See <https://nvlpubs.nist.gov/nistpubs/ir/2024/NIST.IR.8547.ipd.pdf>

## SCEP distinguished names

Entrust has no restriction on Distinguished Names (DNs) per certificate profile. All certificate profiles support the following identifiers.

Alias	OID
'CN' 'CommonName'	2.5.4.3
'SN' 'SurName'	2.5.4.4
'SERIALNUMBER' 'DeviceSerialNumber'	2.5.4.5
'C' 'Country'	2.5.4.6
'L' 'Locality'	2.5.4.7
'ST' 'S' 'State'	2.5.4.8
'STREET' 'StreetAddress'	2.5.4.9
'O' 'Org' 'Organization'	2.5.4.10

Alias	OID
'OU' 'OrganizationalUnit' 'OrganizationUnit' 'OrgUnit'	2.5.4.11
'T' 'Title'	2.5.4.12
'BUSINESSCATEGORY'	2.5.4.15
'POSTALCODE'	2.5.4.17
'givenName' 'G'	2.5.4.42
'I' 'Initials'	2.5.4.43
'ORGANIZATIONIDENTIFIER'	2.5.4.97
'UID'	0.9.2342.19200300.100.1.1
'DC' 'DomainComponent'	0.9.2342.19200300.100.1.25
'Email' 'E'	1.2.840.113549.1.9.1
'unstructuredName'	1.2.840.113549.1.9.2
'unstructuredAddress'	1.2.840.113549.1.9.8
'JurisdictionOfIncorporationLocalityName'	1.3.6.1.4.1.311.60.2.1.1
'JurisdictionOfIncorporationStateOrProvinceName'	1.3.6.1.4.1.311.60.2.1.2
'JurisdictionOfIncorporationCountryName'	1.3.6.1.4.1.311.60.2.1.3
'TrademarkOfficeName'	1.3.6.1.4.1.53087.1.2
'TrademarkCountryOrRegionName'	1.3.6.1.4.1.53087.1.3
'TrademarkRegistration'	1.3.6.1.4.1.53087.1.4
'LegalEntityIdentifier'	1.3.6.1.4.1.53087.1.5

Alias	OID
'WordMark'	1.3.6.1.4.1.53087.1.6
'MarkType'	1.3.6.1.4.1.53087.1.13
'StatuteCountryName'	1.3.6.1.4.1.53087.3.2
'StatuteStateOrProvinceName'	1.3.6.1.4.1.53087.3.3
'StatuteLocalityName'	1.3.6.1.4.1.53087.3.4
'StatuteCitation'	1.3.6.1.4.1.53087.3.5
'StatuteURL'	1.3.6.1.4.1.53087.3.6

## Smartcard certificate profiles

Entrust provides the following smartcard certificate profiles.

- smartcard-card-authentication
- smartcard-digital-signature
- smartcard-domain-controller
- smartcard-key-management
- smartcard-piv-authentication
- smartcard-piv-content-signing

These profiles support the following features.

- [Smartcard use cases](#)
- [Smartcard key usages and request extensions](#)
- [Smartcard certificate fields](#)
- [Smartcard certificate extensions](#)
- [Smartcard algorithm constraints](#)
- [Smartcard distinguished names](#)

### Smartcard use cases

All smartcard profiles support the following use cases.

- ECS Enterprise UI
- CA Gateway API

### Smartcard key usages and request extensions

See below the Key Usage and Extended Key Usage (EKU) extension values each smartcard profile supports.



Profile	Key Usage	Extended Key Usage	Allowed in request
smartcard-card-authentication	Digital Signature	No constraints	PIV Interim Indicator (2.16.840.1.101.3.6.9.1)  Security ID (1.3.6.1.4.1.311.25.2)
smartcard-digital-signature	Digital Signature, Non-Repudiation	No constraints	PIV Interim Indicator (2.16.840.1.101.3.6.9.1)  Security ID (1.3.6.1.4.1.311.25.2)
smartcard-domain-controller	Digital Signature, Key Encipherment	TLS server authentication (1.3.6.1.5.5.7.3.1)  TLS client authentication (1.3.6.1.5.5.7.3.2)	—
smartcard-key-management	Key Encipherment	No constraints	PIV Interim Indicator (2.16.840.1.101.3.6.9.1)  Security ID (1.3.6.1.4.1.311.25.2)
smartcard-piv-authentication	Digital Signature	Any Extended Key Usage (2.5.29.37.0)  Microsoft Smart Card Login (1.3.6.1.4.1.311.20.2.2)  TLS client authentication (1.3.6.1.5.5.7.3.2)	PIV Interim Indicator (2.16.840.1.101.3.6.9.1)  Security ID (1.3.6.1.4.1.311.25.2)
smartcard-piv-content-signing	Digital Signature, Non-Repudiation	No constraints	—

## Smartcard certificate fields

All smartcard profiles set the following certificate fields.

Field	Value
Issuer	Customer's subordinate issuing CA.
Subject	No constraint.

Field	Value
Validity period	Less than or equal to the expiry of the issuing CA. Defaults to 1 year if not specified in the request.

### Smartcard certificate extensions

All smartcard profiles set the following certificate extensions.


Extension	Critical	Value
AIA	No	Supplied if the customer enables OCSP when creating the CA
Authority Key Identifier	No	Matches subjectKeyIdentifier of the signing certificate
Basic Constraints	Yes	cA=False
CRL Distribution Points	No	Always present
Subject Alternative Name	No	No constraints
Subject Key Identifier	No	«The leftmost 160-bits of the SHA-256 hash of the value of the BIT STRING subjectPublicKey» as described in <a href="#">RFC 7093 section 2</a>

### Smartcard algorithm constraints

All smartcard profiles support the following key and signature algorithms.

Key algorithm	Signature algorithm
ECDSA P-256	ecdsa-with-SHA256
ECDSA P-384	ecdsa-with-SHA384
ECDSA P-521	ecdsa-with-SHA512
RSA 2048	sha256WithRSAEncryption
RSA 3072	sha256WithRSAEncryption

Key algorithm	Signature algorithm
RSA 4096	sha512WithRSAEncryption

 NIST will deprecate some algorithms after Dec 31, 2030. See <https://nvlpubs.nist.gov/nistpubs/ir/2024/NIST.IR.8547.ipd.pdf>

## Smartcard distinguished names

Entrust has no restriction on Distinguished Names (DNs) per certificate profile. All certificate profiles support the following identifiers.

Alias	OID
'CN' 'CommonName'	2.5.4.3
'SN' 'SurName'	2.5.4.4
'SERIALNUMBER' 'DeviceSerialNumber'	2.5.4.5
'C' 'Country'	2.5.4.6
'L' 'Locality'	2.5.4.7
'ST' 'S' 'State'	2.5.4.8
'STREET' 'StreetAddress'	2.5.4.9
'O' 'Org' 'Organization'	2.5.4.10
'OU' 'OrganizationalUnit' 'OrganizationUnit' 'OrgUnit'	2.5.4.11
'T' 'Title'	2.5.4.12
'BUSINESSCATEGORY'	2.5.4.15
'POSTALCODE'	2.5.4.17
'givenName' 'G'	2.5.4.42

Alias	OID
'I' 'Initials'	2.5.4.43
'ORGANIZATIONIDENTIFIER'	2.5.4.97
'UID'	0.9.2342.19200300.100.1.1
'DC' 'DomainComponent'	0.9.2342.19200300.100.1.25
'Email' 'E'	1.2.840.113549.1.9.1
'unstructuredName'	1.2.840.113549.1.9.2
'unstructuredAddress'	1.2.840.113549.1.9.8
'JurisdictionOfIncorporationLocalityName'	1.3.6.1.4.1.311.60.2.1.1
'JurisdictionOfIncorporationStateOrProvinceName'	1.3.6.1.4.1.311.60.2.1.2
'JurisdictionOfIncorporationCountryName'	1.3.6.1.4.1.311.60.2.1.3
'TrademarkOfficeName'	1.3.6.1.4.1.53087.1.2
'TrademarkCountryOrRegionName'	1.3.6.1.4.1.53087.1.3
'TrademarkRegistration'	1.3.6.1.4.1.53087.1.4
'LegalEntityIdentifier'	1.3.6.1.4.1.53087.1.5
'WordMark'	1.3.6.1.4.1.53087.1.6
'MarkType'	1.3.6.1.4.1.53087.1.13
'StatuteCountryName'	1.3.6.1.4.1.53087.3.2
'StatuteStateOrProvinceName'	1.3.6.1.4.1.53087.3.3
'StatuteLocalityName'	1.3.6.1.4.1.53087.3.4

Alias	OID
'StatuteCitation'	1.3.6.1.4.1.53087.3.5
'StatuteURL'	1.3.6.1.4.1.53087.3.6

## V2G certificate profiles

Entrust provides the following V2G (Vehicle-to-Grid) certificate profiles

- v2g-supply-equipment
- v2g-user-identity

These profiles support the following features.

- [V2G use cases](#)
- [V2G key usages and validity periods](#)
- [V2G certificate fields](#)
- [V2G certificate extensions](#)
- [V2G algorithm constraints](#)
- [V2G distinguished names](#)

### V2G use cases

All V2G profiles support the following use cases.

- ECS Enterprise UI
- CA Gateway API

### V2G key usages and validity periods

See below the Key Usage, Extended Key Usage (EKU), and certificate validity period each profile supports.

Profile	Key Usage	Extended Key Usage	Validity period
v2g-supply-equipment	Digital Signature, Key Agreement	TLS server authentication (1.3.6.1.5.5.7.3.1)	1 year
v2g-user-identity	Digital Signature, Non-Repudiation	—	2 year

### V2G certificate fields

All V2G profiles set the following certificate fields.

Field	Value
Issuer	The customer's subordinate issuing-CA
Subject	No constraint

## V2G certificate extensions

All V2G profiles set the following certificate extensions.


Extension	Critical	Value
AIA	No	Supplied if the customer enables OCSP when creating the CA
Authority Key Identifier	No	Matches subjectKeyIdentifier of the signing certificate
Basic Constraints	Yes	cA =False
CRL Distribution Points	No	Always present
Subject Alternative Name	No	No constraints
Subject Key Identifier	No	«The leftmost 160-bits of the SHA-256 hash of the value of the BIT STRING subjectPublicKey» as described in <a href="#">RFC 7093 section 2</a>

## V2G algorithm constraints

All V2G profiles support the following key and signature algorithms.

Key algorithm	Signature algorithm
ECDSA P-256	ecdsa-with-SHA256
ECDSA P-384	ecdsa-with-SHA384
ECDSA P-521	ecdsa-with-SHA512
RSA 2048	sha256WithRSAEncryption
RSA 3072	sha256WithRSAEncryption

Key algorithm	Signature algorithm
RSA 4096	sha512WithRSAEncryption

 NIST will deprecate some algorithms after Dec 31, 2030. See <https://nvlpubs.nist.gov/nistpubs/ir/2024/NIST.IR.8547.ipd.pdf>

## V2G distinguished names

Entrust has no restriction on Distinguished Names (DNs) per certificate profile. All certificate profiles support the following identifiers.

Alias	OID
'CN' 'CommonName'	2.5.4.3
'SN' 'SurName'	2.5.4.4
'SERIALNUMBER' 'DeviceSerialNumber'	2.5.4.5
'C' 'Country'	2.5.4.6
'L' 'Locality'	2.5.4.7
'ST' 'S' 'State'	2.5.4.8
'STREET' 'StreetAddress'	2.5.4.9
'O' 'Org' 'Organization'	2.5.4.10
'OU' 'OrganizationalUnit' 'OrganizationUnit' 'OrgUnit'	2.5.4.11
'T' 'Title'	2.5.4.12
'BUSINESSCATEGORY'	2.5.4.15
'POSTALCODE'	2.5.4.17
'givenName' 'G'	2.5.4.42

Alias	OID
'I' 'Initials'	2.5.4.43
'ORGANIZATIONIDENTIFIER'	2.5.4.97
'UID'	0.9.2342.19200300.100.1.1
'DC' 'DomainComponent'	0.9.2342.19200300.100.1.25
'Email' 'E'	1.2.840.113549.1.9.1
'unstructuredName'	1.2.840.113549.1.9.2
'unstructuredAddress'	1.2.840.113549.1.9.8
'JurisdictionOfIncorporationLocalityName'	1.3.6.1.4.1.311.60.2.1.1
'JurisdictionOfIncorporationStateOrProvinceName'	1.3.6.1.4.1.311.60.2.1.2
'JurisdictionOfIncorporationCountryName'	1.3.6.1.4.1.311.60.2.1.3
'TrademarkOfficeName'	1.3.6.1.4.1.53087.1.2
'TrademarkCountryOrRegionName'	1.3.6.1.4.1.53087.1.3
'TrademarkRegistration'	1.3.6.1.4.1.53087.1.4
'LegalEntityIdentifier'	1.3.6.1.4.1.53087.1.5
'WordMark'	1.3.6.1.4.1.53087.1.6
'MarkType'	1.3.6.1.4.1.53087.1.13
'StatuteCountryName'	1.3.6.1.4.1.53087.3.2
'StatuteStateOrProvinceName'	1.3.6.1.4.1.53087.3.3
'StatuteLocalityName'	1.3.6.1.4.1.53087.3.4



Alias	OID
'StatuteCitation'	1.3.6.1.4.1.53087.3.5
'StatuteURL'	1.3.6.1.4.1.53087.3.6