

# RPKI Engine

1.0

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## 1 RPKI Engine Reference Manual

This collection of Python modules implements a prototype of the RPKI Engine. This is a work in progress.

See <http://viewvc.hactrn.net/subvert-rpki.hactrn.net/> for

code, design documents, a text mirror of portions of APNIC's Wiki, etc.

The documentation you're reading is generated automatically by Doxygen from comments and documentation in [the code](#).

Besides the automatically-generated code documentation, this manual also includes documentation of the overall package:

- The [installation instructions](#)
- The [operation instructions](#)
- A description of the [left-right protocol](#)
- A description of the [publication protocol](#)
- A description of the [BPKI model](#) used to secure the up-down, left-right, and publication protocols
- A description of the several [SQL database schemas](#)
- Some suggestions for [further reading](#)

This work has been funded by [ARIN](#), in collaboration with the other Regional Internet Registries.

## 2 Namespace Documentation

### 2.1 Package `cross_certify`

#### Functions

- def [usage](#)

#### Variables

- tuple [cert](#) = [rpki.x509.X509](#)(POWpkix = [x](#))
- tuple [child](#) = [rpki.x509.X509](#)(Auto\_file = [a](#))
- tuple [f](#) = open([serial\\_file](#), "r")
- tuple [keypair](#) = [rpki.x509.RSA](#)(Auto\_file = [a](#))
- tuple [lifetime](#) = [rpki.sundial.timedelta](#)(days = 30)
- [notAfter](#) = [now](#)+[lifetime](#)
- tuple [now](#) = [rpki.sundial.now](#)()
- [output](#) = None
- tuple [parent](#) = [rpki.x509.X509](#)(Auto\_file = [a](#))
- tuple [serial](#) = [f.read](#)()
- [serial\\_file](#) = [a](#)
- tuple [x](#) = [POW.pkix.Certificate](#)()

### 2.1.1 Detailed Description

Cross-certification tool to issue a new certificate based on an old one that was issued by somebody else. The point of the exercise is to end up with a valid certificate in our own BPKI which has the same subject name and subject public key as the one we're replacing.

Much of this code lifted from `rpki.x509.X509.issue()`, but this is a sufficiently different purpose that it's probably not worth refactoring.

```
Usage: python cross_certify.py { -i | --in      } input_cert
                        { -c | --ca      } issuing_cert
                        { -k | --key     } issuing_cert_key
                        { -s | --serial } serial_filename
                        [ { -h | --help } ]
                        [ { -o | --out   } filename (default: stdout) ]
                        [ { -l | --lifetime } timedelta (default: 30 days) ]
```

```
$Id: cross_certify.py 1995 2008-07-15 17:38:45Z sra $
```

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### 2.1.2 Function Documentation

#### 2.1.2.1 `def cross_certify.usage (code)`

Definition at line 42 of file `cross_certify.py`.

### 2.1.3 Variable Documentation

#### 2.1.3.1 `tuple cross_certify.cert = rpki.x509.X509(POWpkix = x)`

Definition at line 96 of file `cross_certify.py`.

#### 2.1.3.2 `tuple cross_certify.child = rpki.x509.X509(Auto_file = a)`

Definition at line 55 of file `cross_certify.py`.



**2.1.3.3 tuple cross\_certify::f = open(serial\_file, "r")**

Definition at line 73 of file cross\_certify.py.

**2.1.3.4 tuple cross\_certify.keypair = rpki.x509.RSA(Auto\_file = a)**

Definition at line 61 of file cross\_certify.py.

**2.1.3.5 tuple cross\_certify::lifetime = rpki.sundial.timedelta(days = 30)**

Definition at line 47 of file cross\_certify.py.

**2.1.3.6 cross\_certify.notAfter = now+lifetime**

Definition at line 70 of file cross\_certify.py.

**2.1.3.7 tuple cross\_certify.now = rpki.sundial.now()**

Definition at line 69 of file cross\_certify.py.

**2.1.3.8 cross\_certify.output = None**

Definition at line 46 of file cross\_certify.py.

**2.1.3.9 tuple cross\_certify.parent = rpki.x509.X509(Auto\_file = a)**

Definition at line 59 of file cross\_certify.py.

**2.1.3.10 int cross\_certify::serial = f.read()**

Definition at line 74 of file cross\_certify.py.

**2.1.3.11 cross\_certify.serial\_file = a**

Definition at line 63 of file cross\_certify.py.

**2.1.3.12 tuple cross\_certify.x = POW.pkix.Certificate()**

Definition at line 80 of file cross\_certify.py.

## 2.2 Package irbe\_cli

### Classes

- class [bsc\\_elt](#)

- class `certificate_elt`
- class `child_elt`
- class `client_elt`
- class `cmd_elt_mixin`
- class `cmd_msg_mixin`
- class `config_elt`
- class `crl_elt`
- class `left_right_cms_msg`
- class `left_right_msg`
- class `left_right_sax_handler`
- class `manifest_elt`
- class `parent_elt`
- class `publication_cms_msg`
- class `publication_msg`
- class `publication_sax_handler`
- class `repository_elt`
- class `roa_elt`
- class `route_origin_elt`
- class `self_elt`
- class `UsageWrapper`

### Functions

- def `call_daemon`
- def `usage`

### Variables

- list `argv` = `sys.argv[1:]`
- tuple `cfg` = `rpki.config.parser(cfg_file, "irbe_cli")`
- string `cfg_file` = `"irbe.conf"`
- tuple `client_cert` = `rpki.x509.X509(Auto_file = cfg.get("rpkid-irbe-cert"))`
- tuple `client_key` = `rpki.x509.RSA( Auto_file = cfg.get("rpkid-irbe-key"))`
- `cms_class` = `left_right_cms_msg`,
- `pem_out` = `None`
- `q_msg` = `q_msg_left_right`
- tuple `q_msg_left_right` = `left_right_msg()`
- tuple `q_msg_publication` = `publication_msg()`
- list `q_pdu` = `left_right_msg.pdus[argv[0]]`
- tuple `server_ta`
- list `top_opts` = `["config=", "help", "pem_out=", "verbose"]`
- tuple `url` = `cfg.get("rpkid-url")`
- tuple `usage_fill` = `UsageWrapper(subsequent_indent = " " * 4)`
- `verbose` = `False`

### 2.2.1 Detailed Description

Command line IR back-end control program for rpkiid and pubd.

\$Id: irbe\_cli.py 1995 2008-07-15 17:38:45Z sra \$

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### 2.2.2 Function Documentation

#### 2.2.2.1 `def irbe_cli.call_daemon ( cms_class, client_key, client_cert, server_ta, url, q_msg )`

Definition at line 223 of file irbe\_cli.py.

#### 2.2.2.2 `def irbe_cli.usage ( code = 1 )`

Definition at line 206 of file irbe\_cli.py.

### 2.2.3 Variable Documentation

#### 2.2.3.1 `tuple irbe_cli::argv = sys.argv[1:]`

Definition at line 241 of file irbe\_cli.py.

#### 2.2.3.2 `tuple irbe_cli.cfg = rpki.config.parser(cfg_file, "irbe_cli")`

Definition at line 263 of file irbe\_cli.py.

#### 2.2.3.3 `irbe_cli.cfg_file = "irbe.conf"`

Definition at line 246 of file irbe\_cli.py.

#### 2.2.3.4 `tuple irbe_cli::client_cert = rpki.x509.X509(Auto_file = cfg.get("rpkiid-irbe-cert"))`

Definition at line 287 of file irbe\_cli.py.

**2.2.3.5 tuple irbe\_cli::client\_key = rpki.x509.RSA( Auto\_file = cfg.get("rpkid-irbe-key"))**

Definition at line 286 of file irbe\_cli.py.

**2.2.3.6 irbe\_cli.cms\_class = left\_right cms\_msg,**

Definition at line 285 of file irbe\_cli.py.

**2.2.3.7 irbe\_cli.pem\_out = None**

Definition at line 24 of file irbe\_cli.py.

**2.2.3.8 irbe\_cli.q\_msg = q\_msg\_left\_right**

Definition at line 274 of file irbe\_cli.py.

**2.2.3.9 tuple irbe\_cli.q\_msg\_left\_right = left\_right\_msg()**

Definition at line 265 of file irbe\_cli.py.

**2.2.3.10 tuple irbe\_cli.q\_msg\_publication = publication\_msg()**

Definition at line 268 of file irbe\_cli.py.

**2.2.3.11 list irbe\_cli::q\_pdu = left\_right\_msg.pdus[argv[0]]**

Definition at line 273 of file irbe\_cli.py.

**2.2.3.12 tuple irbe\_cli::server\_ta**

**Initial value:**

```
(rpki.x509.X509(Auto_file = cfg.get("rpkid-bpki-ta")),  
rpki.x509.X509(Auto_file = cfg.get("rpkid-cert")))
```

Definition at line 288 of file irbe\_cli.py.

**2.2.3.13 list irbe\_cli.top\_opts = ["config=", "help", "pem\_out=", "verbose"]**

Definition at line 204 of file irbe\_cli.py.

**2.2.3.14 tuple irbe\_cli::url = cfg.get("rpkid-url")**

Definition at line 290 of file irbe\_cli.py.

**2.2.3.15 tuple irbe\_cli.usage\_fill = UsageWrapper(subsequent\_indent = " " \* 4)**

Definition at line 33 of file irbe\_cli.py.

**2.2.3.16 irbe\_cli.verbose = False**

Definition at line 247 of file irbe\_cli.py.

**2.3 Package irdbd****Functions**

- def [handler](#)

**Variables**

- tuple [bpki\\_ta](#) = [rpki.x509.X509](#)(Auto\_file = cfg.get("bpki-ta"))
- tuple [cfg](#) = [rpki.config.parser](#)([cfg\\_file](#), "irdbd")
- string [cfg\\_file](#) = "irdbd.conf"
- tuple [client\\_ta](#) = ([bpki\\_ta](#), [rpkid\\_cert](#))
- tuple [cur](#) = db.cursor()
- tuple [db](#)
- tuple [handlers](#) = ((u.path, handler),)
- string [host](#) = "localhost"
- tuple [irdbd\\_cert](#) = [rpki.x509.X509](#)(Auto\_file = cfg.get("irdbd-cert"))
- tuple [irdbd\\_key](#) = [rpki.x509.RSA](#)( Auto\_file = cfg.get("irdbd-key"))
- int [port](#) = 443
- tuple [rpkid\\_cert](#) = [rpki.x509.X509](#)(Auto\_file = cfg.get("rpkid-cert"))
- [server\\_cert](#) = [irdbd\\_cert](#),
- tuple [startup\\_msg](#) = cfg.get("startup-message", "")
- tuple [u](#) = urlparse.urlparse(cfg.get("https-url"))

**2.3.1 Detailed Description**

IR database daemon.

Usage: python irdbd.py [ { -c | --config } configfile ] [ { -h | --help } ]

Default configuration file is irdbd.conf, override with --config option.

\$Id: irdbd.py 1880 2008-06-12 21:54:53Z sra \$

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### 2.3.2 Function Documentation

#### 2.3.2.1 `def irdbd.handler ( query, path )`

Definition at line 30 of file irdbd.py.

### 2.3.3 Variable Documentation

#### 2.3.3.1 `tuple irdbd.bpki_ta = rpki.x509.X509(Auto_file = cfg.get("bpki-ta"))`

Definition at line 114 of file irdbd.py.

#### 2.3.3.2 `tuple irdbd.cfg = rpki.config.parser(cfg_file, "irdbd")`

Definition at line 102 of file irdbd.py.

#### 2.3.3.3 `irdbd.cfg_file = "irdbd.conf"`

Definition at line 90 of file irdbd.py.

#### 2.3.3.4 `tuple irdbd.client_ta = (bpki_ta, rpkiid_cert)`

Definition at line 130 of file irdbd.py.

#### 2.3.3.5 `tuple irdbd.cur = db.cursor()`

Definition at line 112 of file irdbd.py.

#### 2.3.3.6 `tuple irdbd.db`

Initial value:

```
MySQLdb.connect(user = cfg.get("sql-username"),  
                 db   = cfg.get("sql-database"),  
                 passwd = cfg.get("sql-password"))
```

Definition at line 108 of file irdbd.py.

#### **2.3.3.7 tuple irdbd.handlers = ((u.path, handler),)**

Definition at line 133 of file irdbd.py.

#### **2.3.3.8 string irdbd.host = "localhost"**

Definition at line 131 of file irdbd.py.

#### **2.3.3.9 tuple irdbd.irdbd\_cert = rpki.x509.X509(Auto\_file = cfg.get("irdbd-cert"))**

Definition at line 116 of file irdbd.py.

#### **2.3.3.10 tuple irdbd.irdbd\_key = rpki.x509.RSA( Auto\_file = cfg.get("irdbd-key"))**

Definition at line 117 of file irdbd.py.

#### **2.3.3.11 int irdbd.port = 443**

Definition at line 132 of file irdbd.py.

#### **2.3.3.12 tuple irdbd.rpkid\_cert = rpki.x509.X509(Auto\_file = cfg.get("rpkid-cert"))**

Definition at line 115 of file irdbd.py.

#### **2.3.3.13 irdbd.server\_cert = irdbd\_cert,**

Definition at line 129 of file irdbd.py.

#### **2.3.3.14 tuple irdbd.startup\_msg = cfg.get("startup-message", "")**

Definition at line 104 of file irdbd.py.

#### **2.3.3.15 tuple irdbd.u = urlparse.urlparse(cfg.get("https-url"))**

Definition at line 119 of file irdbd.py.

## 2.4 Package pubd

### Classes

- class `pubd_context`

### Functions

- def `main`

### Variables

- string `cfg_file` = "pubd.conf"
- `profile` = False

#### 2.4.1 Detailed Description

RPKI publication engine.

```
Usage: python pubd.py [ { -c | --config } configfile ]
                        [ { -h | --help } ]
                        [ { -p | --profile } outputfile ]
```

Default configuration file is pubd.conf, override with --config option.

\$Id: pubd.py 1880 2008-06-12 21:54:53Z sra \$

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#### 2.4.2 Function Documentation

##### 2.4.2.1 def pubd.main ()

Definition at line 127 of file pubd.py.



### 2.4.3 Variable Documentation

#### 2.4.3.1 `pubd.cfg_file = "pubd.conf"`

Definition at line 112 of file `pubd.py`.

#### 2.4.3.2 `pubd.profile = False`

Definition at line 113 of file `pubd.py`.

## 2.5 Package rootd

### Classes

- class `cms_msg`
- class `issue_pdu`
- class `list_pdu`
- class `message_pdu`
- class `revoke_pdu`
- class `sax_handler`

### Functions

- def `compose_response`
- def `del_subject_cert`
- def `get_subject_cert`
- def `set_subject_cert`
- def `stash_subject_pkcs10`
- def `up_down_handler`

### Variables

- tuple `bpki_ta = rpki.x509.X509(Auto_file = cfg.get("bpki-ta"))`
- tuple `cfg = rpki.config.parser(cfg_file, "rootd")`
- string `cfg_file = "rootd.conf"`
- tuple `child_bpki_cert = rpki.x509.X509(Auto_file = cfg.get("child-bpki-cert"))`
- tuple `client_ta = (bpki_ta, child_bpki_cert)`
- `handlers = up_down_handler`
- `host = https_server_host,`
- tuple `https_server_host = cfg.get("server-host", "")`
- tuple `https_server_port = int(cfg.get("server-port"))`
- `port = https_server_port,`
- tuple `rootd_bpki_cert = rpki.x509.X509(Auto_file = cfg.get("rootd-bpki-cert"))`

- tuple `rootd_bpki_crl` = `rpki.x509.CRL`( `Auto_file` = `cfg.get("rootd-bpki-crl")`)
- tuple `rootd_bpki_key` = `rpki.x509.RSA`( `Auto_file` = `cfg.get("rootd-bpki-key")`)
- tuple `rpki_base_uri` = `cfg.get("rpki-base-uri", "rsync://" + rpki_class_name + ".invalid/")`
- tuple `rpki_class_name` = `cfg.get("rpki-class-name", "wombat")`
- tuple `rpki_root_cert` = `rpki.x509.X509`(`Auto_file` = `cfg.get("rpki-root-cert")`)
- tuple `rpki_root_cert_uri` = `cfg.get("rpki-root-cert-uri", rpki_base_uri + "Root.cer")`
- tuple `rpki_root_crl` = `cfg.get("rpki-root-crl", "Root.crl")`
- tuple `rpki_root_dir` = `cfg.get("rpki-root-dir")`
- tuple `rpki_root_key` = `rpki.x509.RSA`( `Auto_file` = `cfg.get("rpki-root-key")`)
- tuple `rpki_root_manifest` = `cfg.get("rpki-root-manifest", "Root.mnf")`
- tuple `rpki_subject_cert` = `cfg.get("rpki-subject-cert", "Subroot.cer")`
- tuple `rpki_subject_lifetime` = `rpki.sundial.timedelta`(`days` = 30)
- tuple `rpki_subject_pkcs10` = `cfg.get("rpki-subject-pkcs10", "")`
- `server_cert` = `rootd_bpki_cert`,

### 2.5.1 Detailed Description

Trivial RPKI up-down protocol root server, for testing. Not suitable for production use. Overrides a bunch of method definitions from the `rpki.*` classes in order to reuse as much code as possible.

Usage: `python rootd.py [ { -c | --config } configfile ] [ { -h | --help } ]`

Default configuration file is `rootd.conf`, override with `--config` option.

\$Id: rootd.py 1974 2008-07-04 23:45:58Z sra \$

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### 2.5.2 Function Documentation

#### 2.5.2.1 `def rootd.compose_response ( r_msg )`

Definition at line 62 of file `rootd.py`.

**2.5.2.2 def rootd.del\_subject\_cert ()**

Definition at line 50 of file rootd.py.

**2.5.2.3 def rootd.get\_subject\_cert ()**

Definition at line 34 of file rootd.py.

**2.5.2.4 def rootd.set\_subject\_cert ( cert)**

Definition at line 43 of file rootd.py.

**2.5.2.5 def rootd.stash\_subject\_pkcs10 ( pkcs10)**

Definition at line 55 of file rootd.py.

**2.5.2.6 def rootd.up\_down\_handler ( query, path)**

Definition at line 169 of file rootd.py.

**2.5.3 Variable Documentation****2.5.3.1 tuple rootd.bpki\_ta = rpki.x509.X509(Auto\_file = cfg.get("bpki-ta"))**

Definition at line 208 of file rootd.py.

**2.5.3.2 tuple rootd.cfg = rpki.config.parser(cfg\_file, "rootd")**

Definition at line 206 of file rootd.py.

**2.5.3.3 rootd.cfg\_file = "rootd.conf"**

Definition at line 194 of file rootd.py.

**2.5.3.4 tuple rootd.child\_bpki\_cert = rpki.x509.X509(Auto\_file = cfg.get("child-bpki-cert"))**

Definition at line 212 of file rootd.py.

**2.5.3.5 tuple rootd.client\_ta = (bpki\_ta, child\_bpki\_cert)**

Definition at line 233 of file rootd.py.

**2.5.3.6 rootd.handlers = up\_down\_handler)**

Definition at line 236 of file rootd.py.

**2.5.3.7 rootd.host = https\_server\_host,**

Definition at line 234 of file rootd.py.

**2.5.3.8 tuple rootd.https\_server\_host = cfg.get("server-host", "")**

Definition at line 214 of file rootd.py.

**2.5.3.9 tuple rootd.https\_server\_port = int(cfg.get("server-port"))**

Definition at line 215 of file rootd.py.

**2.5.3.10 rootd.port = https\_server\_port,**

Definition at line 235 of file rootd.py.

**2.5.3.11 tuple rootd.rootd\_bpki\_cert = rpki.x509.X509(Auto\_file =  
cfg.get("rootd-bpki-cert"))**

Definition at line 210 of file rootd.py.

**2.5.3.12 tuple rootd.rootd\_bpki\_crl = rpki.x509.CRL( Auto\_file =  
cfg.get("rootd-bpki-crl"))**

Definition at line 211 of file rootd.py.

**2.5.3.13 tuple rootd.rootd\_bpki\_key = rpki.x509.RSA( Auto\_file =  
cfg.get("rootd-bpki-key"))**

Definition at line 209 of file rootd.py.

**2.5.3.14 tuple rootd.rpki\_base\_uri = cfg.get("rpki-base-uri", "rsync://" + rpki\_  
class\_name + ".invalid/")**

Definition at line 220 of file rootd.py.

**2.5.3.15 tuple rootd.rpki\_class\_name = cfg.get("rpki-class-name", "wombat")**

Definition at line 217 of file rootd.py.

**2.5.3.16** `tuple rootd.rpki_root_cert = rpki.x509.X509(Auto_file = cfg.get("rpki-root-cert"))`

Definition at line 223 of file rootd.py.

**2.5.3.17** `tuple rootd.rpki_root_cert_uri = cfg.get("rpki-root-cert-uri", rpki_base_uri + "Root.cer")`

Definition at line 224 of file rootd.py.

**2.5.3.18** `tuple rootd.rpki_root_crl = cfg.get("rpki-root-crl", "Root.crl")`

Definition at line 227 of file rootd.py.

**2.5.3.19** `tuple rootd.rpki_root_dir = cfg.get("rpki-root-dir")`

Definition at line 219 of file rootd.py.

**2.5.3.20** `tuple rootd.rpki_root_key = rpki.x509.RSA( Auto_file = cfg.get("rpki-root-key"))`

Definition at line 222 of file rootd.py.

**2.5.3.21** `tuple rootd.rpki_root_manifest = cfg.get("rpki-root-manifest", "Root.mnf")`

Definition at line 226 of file rootd.py.

**2.5.3.22** `tuple rootd.rpki_subject_cert = cfg.get("rpki-subject-cert", "Sub-root.cer")`

Definition at line 228 of file rootd.py.

**2.5.3.23** `tuple rootd.rpki_subject_lifetime = rpki.sundial.timedelta(days = 30)`

Definition at line 32 of file rootd.py.

**2.5.3.24** `tuple rootd.rpki_subject_pkcs10 = cfg.get("rpki-subject-pkcs10", "")`

Definition at line 229 of file rootd.py.

**2.5.3.25** `rootd.server_cert = rootd_bpki_cert,`

Definition at line 232 of file rootd.py.

## 2.6 Package rpki

### Packages

- package [config](#)
- package [exceptions](#)
- package [https](#)
- package [ipaddrs](#)
- package [left\\_right](#)
- package [log](#)
- package [manifest](#)
- package [oids](#)
- package [publication](#)
- package [relaxng](#)
- package [resource\\_set](#)
- package [roa](#)
- package [rpki\\_engine](#)
- package [sql](#)
- package [sundial](#)
- package [up\\_down](#)
- package [x509](#)
- package [xml\\_utils](#)

## 2.7 Package rpki.config

### Classes

- class [parser](#)

### 2.7.1 Detailed Description

Configuration file parsing utilities, layered on top of stock Python ConfigParser module.

```
$Id: config.py 1873 2008-06-12 02:49:41Z sra $
```

```
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```

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## 2.8 Package rpki.exceptions

### Classes

- class [BadClassNameSyntax](#)
- class [BadContactURL](#)
- class [BadIRDBReply](#)
- class [BadIssueResponse](#)
- class [BadPKCS10](#)
- class [BadQuery](#)
- class [BadSender](#)
- class [BadStatusCode](#)
- class [BadURISyntax](#)
- class [BSCNotFound](#)
- class [ChildNotFound](#)
- class [ClassNameMismatch](#)
- class [CMSCRLNotSet](#)
- class [CMSVerificationFailed](#)
- class [DBConsistancyError](#)
- class [DERObjectConversionError](#)
- class [EmptyPEM](#)
- class [HTTPRequestFailed](#)
- class [MissingCMSCRL](#)
- class [MissingCMSEECert](#)
- class [MultipleTLSEECert](#)
- class [MustBePrefix](#)
- class [NoActiveCA](#)
- class [NotACertificateChain](#)
- class [NotFound](#)
- class [NotImplementedYet](#)
- class [NotInDatabase](#)
- class [ReceivedTLSCACert](#)
- class [RPKI\\_Exception](#)
- class [ServerShuttingDown](#)
- class [SKIMismatch](#)
- class [SubprocessError](#)
- class [TLSValidationError](#)
- class [UnexpectedCMSCerts](#)
- class [UnexpectedCMSCRLs](#)

- class [UnparsableCMSDER](#)
- class [UpstreamError](#)
- class [WrongContentType](#)

### 2.8.1 Detailed Description

Exception definitions for RPKI modules.

\$Id: exceptions.py 2000 2008-07-16 00:58:32Z sra \$

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## 2.9 Package rpki.https

### Classes

- class [Checker](#)
- class [httpsClient](#)
- class [httpsServer](#)
- class [requestHandler](#)

### Functions

- def [build\\_https\\_ta\\_cache](#)
- def [client](#)
- def [server](#)
- def [tlsite\\_certChain](#)

### Variables

- [debug\\_tls\\_certs](#) = False
- [disable\\_tls\\_certificate\\_validation\\_exceptions](#) = False
- string [rpki\\_content\\_type](#) = "application/x-rpki"



### 2.9.1 Detailed Description

HTTPS utilities, both client and server.

At the moment this only knows how to use the PEM certs in my subversion repository; generalizing it would not be hard, but the more general version should use SQL anyway.

```
$Id: https.py 1873 2008-06-12 02:49:41Z sra $
```

```
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```

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### 2.9.2 Function Documentation

#### 2.9.2.1 `def rpki.https.build_https_ta_cache ( certs )`

Build a dynamic TLS trust anchor cache.

Definition at line 45 of file https.py.

#### 2.9.2.2 `def rpki.https.client ( msg, client_key, client_cert, server_ta, url, timeout = 300 )`

Open client HTTPS connection, send a message, wait for response.

This function wraps most of what one needs to do to send a message over HTTPS and get a response. The certificate checking isn't quite up to snuff; it's better than with the other packages I've found, but doesn't appear to handle subjectAltName extensions (sigh).

Definition at line 152 of file https.py.

#### 2.9.2.3 `def rpki.https.server ( handlers, server_key, server_cert, port = 4433, host = "", client_ta = None, dynamic_https_trust_anchor = None, catch_signals = (signal.SIGINT, signal.SIGTERM) )`

Run an HTTPS server and wait (forever) for connections.

Definition at line 266 of file https.py.

#### 2.9.2.4 def rpki.https.tlsite\_certChain ( x509)

Utility function to construct tlsite certChains.

Definition at line 38 of file https.py.

### 2.9.3 Variable Documentation

#### 2.9.3.1 rpki::https.debug\_tls\_certs = False

Definition at line 34 of file https.py.

#### 2.9.3.2 rpki::https.disable\_tls\_certificate\_validation\_exceptions = False

Definition at line 31 of file https.py.

#### 2.9.3.3 string rpki::https.rpki\_content\_type = "application/x-rpki"

Definition at line 36 of file https.py.

## 2.10 Package rpki.ipaddrs

### Classes

- class [v4addr](#)
- class [v6addr](#)

### 2.10.1 Detailed Description

Classes to represent IP addresses.

Given some of the other operations we need to perform on them, it's most convenient to represent IP addresses as Python "long" values. The classes in this module just wrap suitable read/write syntax around the underlying "long" type.

These classes also supply a "bits" attribute for use by other code built on these classes; for the most part, IPv6 addresses really are just IPv4 addresses with more bits, so we supply the number of bits once, here, thus avoiding a lot of duplicate code elsewhere.

\$Id: ipaddrs.py 1873 2008-06-12 02:49:41Z sra \$

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## 2.11 Package rpki.left\_right

### Classes

- class [bsc\\_elt](#)
- class [child\\_elt](#)
- class [cms\\_msg](#)
- class [data\\_elt](#)
- class [left\\_right\\_namespace](#)
- class [list\\_resources\\_elt](#)
- class [msg](#)
- class [parent\\_elt](#)
- class [report\\_error\\_elt](#)
- class [repository\\_elt](#)
- class [route\\_origin\\_elt](#)
- class [sax\\_handler](#)
- class [self\\_elt](#)

### Variables

- [enforce\\_strict\\_up\\_down\\_xml\\_sender](#) = False

### 2.11.1 Detailed Description

RPKI "left-right" protocol.

```
$Id: left_right.py 2000 2008-07-16 00:58:32Z sra $
```

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### 2.11.2 Variable Documentation

#### 2.11.2.1 `rpki::left_right.enforce_strict_up_down_xml_sender = False`

Definition at line 26 of file `left_right.py`.

## 2.12 Package rpki.log

### Classes

- class `logger`

### Functions

- def `init`
- def `set_trace`
- def `trace`

### Variables

- tuple `debug = logger(syslog.LOG_DEBUG)`
- `enable_trace = False`  
*Whether call tracing is enabled.*
- tuple `error = logger(syslog.LOG_ERR)`
- tuple `info = logger(syslog.LOG_INFO)`
- tuple `note = logger(syslog.LOG_NOTICE)`
- tuple `warn = logger(syslog.LOG_WARNING)`

### 2.12.1 Detailed Description

Logging facilities for RPKI libraries.

\$Id: log.py 1873 2008-06-12 02:49:41Z sra \$

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### 2.12.2 Function Documentation

**2.12.2.1** `def rpki.log.init ( ident = "rpki", flags = syslog.LOG_PID | syslog.LOG_PERROR, facility = syslog.LOG_DAEMON)`

Initialize logging system.

Definition at line 27 of file log.py.

**2.12.2.2** `def rpki.log.set_trace ( trace)`

Enable or disable call tracing.

Definition at line 32 of file log.py.

**2.12.2.3** `def rpki.log.trace ()`

Execution trace -- where are we now, and whence came we here?

Definition at line 53 of file log.py.

### 2.12.3 Variable Documentation

**2.12.3.1** `tuple rpki::log.debug = logger(syslog.LOG_DEBUG)`

Definition at line 51 of file log.py.

**2.12.3.2** `rpki::log::enable_trace = False`

Whether call tracing is enabled.

Definition at line 25 of file log.py.

**2.12.3.3 tuple rpki::log.error = logger(syslog.LOG\_ERR)**

Definition at line 47 of file log.py.

**2.12.3.4 tuple rpki::log.info = logger(syslog.LOG\_INFO)**

Definition at line 50 of file log.py.

**2.12.3.5 tuple rpki::log.note = logger(syslog.LOG\_NOTICE)**

Definition at line 49 of file log.py.

**2.12.3.6 tuple rpki::log.warn = logger(syslog.LOG\_WARNING)**

Definition at line 48 of file log.py.

**2.13 Package rpki.manifest****Classes**

- class [FileAndHash](#)
- class [FilesAndHashes](#)
- class [Manifest](#)

**2.13.1 Detailed Description**

Signed manifests. This is just the ASN.1 encoder, the rest is in rpki.x509 with the rest of the DER\_object code.

Note that rpki.x509.SignedManifest implements the signed manifest; the structures here are just the payload of the CMS eContent field.

```
$Id: manifest.py 1873 2008-06-12 02:49:41Z sra $
```

```
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```

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## 2.14 Package rpki.oids

### Variables

- tuple `name2oid` = dict((v,k) for k,v in oid2name.items())  
*Mapping table of string names to OIDs.*
- dictionary `oid2name`  
*Mapping table of OIDs to conventional string names.*

### 2.14.1 Detailed Description

OID database.

```
$Id: oids.py 1898 2008-06-17 23:32:37Z sra $
```

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### 2.14.2 Variable Documentation

#### 2.14.2.1 `rpki::oids::name2oid = dict((v,k) for k,v in oid2name.items())`

Mapping table of string names to OIDs.

Definition at line 57 of file oids.py.

#### 2.14.2.2 `rpki::oids::oid2name`

**Initial value:**

```
{
  (1, 2, 840, 113549, 1, 1, 11)      : "sha256WithRSAEncryption",
  (1, 2, 840, 113549, 1, 1, 12)      : "sha384WithRSAEncryption",
  (1, 2, 840, 113549, 1, 1, 13)      : "sha512WithRSAEncryption",
  (1, 2, 840, 113549, 1, 7, 1)       : "id-data",
  (1, 2, 840, 113549, 1, 9, 16)      : "id-smime",
  (1, 2, 840, 113549, 1, 9, 16, 1)   : "id-ct",
```

```

(1, 2, 840, 113549, 1, 9, 16, 1, 24) : "id-ct-routeOriginAttestation",
(1, 2, 840, 113549, 1, 9, 16, 1, 26) : "id-ct-rpkiManifest",
(1, 2, 840, 113549, 1, 9, 16, 1, 28) : "id-ct-xml",
(1, 3, 6, 1, 5, 5, 7, 1, 1) : "authorityInfoAccess",
(1, 3, 6, 1, 5, 5, 7, 1, 11) : "subjectInfoAccess",
(1, 3, 6, 1, 5, 5, 7, 1, 7) : "sbgp-ipAddrBlock",
(1, 3, 6, 1, 5, 5, 7, 1, 8) : "sbgp-autonomousSysNum",
(1, 3, 6, 1, 5, 5, 7, 14, 2) : "id-cp-ipAddr-asNumber",
(1, 3, 6, 1, 5, 5, 7, 48, 2) : "id-ad-caIssuers",
(1, 3, 6, 1, 5, 5, 7, 48, 5) : "id-ad-caRepository",
(1, 3, 6, 1, 5, 5, 7, 48, 9) : "id-ad-signedObjectRepository",
(1, 3, 6, 1, 5, 5, 7, 48, 10) : "id-ad-rpkiManifest",
(1, 3, 6, 1, 5, 5, 7, 48, 11) : "id-ad-signedObject",
(2, 16, 840, 1, 101, 3, 4, 2, 1) : "id-sha256",
(2, 5, 29, 14) : "subjectKeyIdentifier",
(2, 5, 29, 15) : "keyUsage",
(2, 5, 29, 19) : "basicConstraints",
(2, 5, 29, 20) : "cRLNumber",
(2, 5, 29, 31) : "cRLDistributionPoints",
(2, 5, 29, 32) : "certificatePolicies",
(2, 5, 29, 35) : "authorityKeyIdentifier",
(2, 5, 4, 3) : "commonName",
}

```

Mapping table of OIDs to conventional string names.

Definition at line 23 of file oids.py.

## 2.15 Package rpki.publication

### Classes

- class [certificate\\_elt](#)
- class [client\\_elt](#)
- class [cms\\_msg](#)
- class [config\\_elt](#)
- class [control\\_elt](#)
- class [crl\\_elt](#)
- class [manifest\\_elt](#)
- class [msg](#)
- class [publication\\_namespace](#)
- class [publication\\_object\\_elt](#)
- class [report\\_error\\_elt](#)
- class [roa\\_elt](#)
- class [sax\\_handler](#)



### Variables

- tuple `obj2elt` = `dict((e.payload_type, e) for e in (certificate_elt, crt_elt, manifest_elt, roa_elt))`

*Map of data types to [publication](#) element wrapper types.*

#### 2.15.1 Detailed Description

RPKI "publication" protocol.

\$Id: publication.py 1914 2008-06-21 18:58:52Z sra \$

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#### 2.15.2 Variable Documentation

##### 2.15.2.1 `rpki::publication::obj2elt = dict((e.payload_type, e) for e in (certificate_elt, crt_elt, manifest_elt, roa_elt))`

Map of data types to [publication](#) element wrapper types.

Definition at line 232 of file publication.py.

## 2.16 Package rpki.relaxng

### Variables

- tuple `left_right`  
*Parsed RelaxNG [left\\_right](#) schema.*
- tuple `publication`  
*Parsed RelaxNG [publication](#) schema.*
- tuple `up_down`

*Parsed RelaxNG [up\\_down](#) schema.*

### 2.16.1 Variable Documentation

#### 2.16.1.1 rpki::relaxng::left\_right

Parsed RelaxNG [left\\_right](#) schema.

Definition at line 7 of file relaxng.py.

#### 2.16.1.2 rpki::relaxng::publication

Parsed RelaxNG [publication](#) schema.

Definition at line 1214 of file relaxng.py.

#### 2.16.1.3 rpki::relaxng::up\_down

Parsed RelaxNG [up\\_down](#) schema.

Definition at line 960 of file relaxng.py.

## 2.17 Package rpki.resource\_set

### Classes

- class [resource\\_bag](#)
- class [resource\\_range](#)
- class [resource\\_range\\_as](#)
- class [resource\\_range\\_ip](#)
- class [resource\\_range\\_ipv4](#)
- class [resource\\_range\\_ipv6](#)
- class [resource\\_set](#)
- class [resource\\_set\\_as](#)
- class [resource\\_set\\_ip](#)
- class [resource\\_set\\_ipv4](#)
- class [resource\\_set\\_ipv6](#)
- class [roa\\_prefix](#)
- class [roa\\_prefix\\_ipv4](#)
- class [roa\\_prefix\\_ipv6](#)
- class [roa\\_prefix\\_set](#)
- class [roa\\_prefix\\_set\\_ipv4](#)
- class [roa\\_prefix\\_set\\_ipv6](#)

## Functions

- def `_bs2long`
- def `_long2bs`
- def `_rsplit`
- def `test1`
- def `test2`

## Variables

- string `inherit_token` = "<inherit>"  
*Token used to indicate inheritance in read and print syntax.*

### 2.17.1 Detailed Description

Classes dealing with sets of resources.

The basic mechanics of a resource set are the same for any of the resources we handle (ASNs, IPv4 addresses, or IPv6 addresses), so we can provide the same operations on any of them, even though the underlying details vary.

We also provide some basic set operations (union, intersection, etc).

\$Id: resource\_set.py 1984 2008-07-08 08:00:36Z sra \$

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### 2.17.2 Function Documentation

#### 2.17.2.1 def `rpki.resource_set._bs2long (bs, addrlen, fill)` [private]

Utility function to convert a bitstring (POW.pkix tuple representation) into a Python long.

Definition at line 419 of file `resource_set.py`.

**2.17.2.2** `def rpki.resource_set._long2bs ( number, addrlen, prefixlen = None, strip = None) [private]`

Utility function to convert a Python long into a POW.pkix tuple bitstring. This is a bit complicated because it supports the fiendishly compact encoding used in RFC 3779.

Definition at line 430 of file resource\_set.py.

**2.17.2.3** `def rpki.resource_set._rsplit ( rset, that) [private]`

Utility function to split a resource range into two resource ranges.

Definition at line 148 of file resource\_set.py.

**2.17.2.4** `def rpki.resource_set.test1 ( t, s1, s2)`

Definition at line 733 of file resource\_set.py.

**2.17.2.5** `def rpki.resource_set.test2 ( t, s1, s2)`

Definition at line 766 of file resource\_set.py.

### 2.17.3 Variable Documentation

**2.17.3.1** `rpki::resource_set::inherit_token = "<inherit>"`

Token used to indicate inheritance in read and print syntax.

Definition at line 33 of file resource\_set.py.

## 2.18 Package rpki.roa

### Classes

- class [ROAIPAddress](#)
- class [ROAIPAddresses](#)
- class [ROAIPAddressFamilies](#)
- class [ROAIPAddressFamily](#)
- class [RouteOriginAttestation](#)

### 2.18.1 Detailed Description

ROA (Route Origin Authorization).

At the moment this is just the ASN.1 encoder.

This corresponds to draft-ietf-sidr-roa-format, which is a work in progress, so this may need updating later.

```
$Id: roa.py 1975 2008-07-07 14:49:00Z sra $
```

```
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```

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draft-ietf-sidr-roa-format-03 2.1.3.2 specifies:

```
RouteOriginAttestation ::= SEQUENCE {
    version [0] INTEGER DEFAULT 0,
    asID ASID,
    ipAddrBlocks SEQUENCE OF ROAIPAddressFamily }

ASID ::= INTEGER

ROAIPAddressFamily ::= SEQUENCE {
    addressFamily OCTET STRING (SIZE (2..3)),
    addresses SEQUENCE OF ROAIPAddress }

ROAIPAddress ::= SEQUENCE {
    address IPAddress,
    maxLength INTEGER OPTIONAL }

IPAddress ::= BIT STRING
```

## 2.19 Package rpki.rpki\_engine

### Classes

- class [ca\\_detail\\_obj](#)
- class [ca\\_obj](#)
- class [child\\_cert\\_obj](#)
- class [revoked\\_cert\\_obj](#)
- class [rpkid\\_context](#)

### 2.19.1 Detailed Description

Global context for rpkiid.

\$Id: rpki\_engine.py 2000 2008-07-16 00:58:32Z sra \$

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## 2.20 Package rpki.sql

### Classes

- class [session](#)
- class [sql\\_persistent](#)
- class [template](#)

### 2.20.1 Detailed Description

SQL interface code.

\$Id: sql.py 1979 2008-07-08 06:07:47Z sra \$

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## 2.21 Package rpki.sundial

### Classes

- class [datetime](#)
- class [timedelta](#)

### Functions

- def [now](#)
- def [test](#)

#### 2.21.1 Detailed Description

Unified RPKI date/time handling, based on the standard Python datetime module.

Module name chosen to sidestep a nightmare of import-related errors that occur with the more obvious module names.

\$Id: sundial.py 1915 2008-06-21 19:35:54Z sra \$

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#### 2.21.2 Function Documentation

##### 2.21.2.1 def rpki.sundial.now ()

Get current timestamp.

Definition at line 26 of file sundial.py.

##### 2.21.2.2 def rpki.sundial.test ( t )

Definition at line 182 of file sundial.py.

## 2.22 Package rpki.up\_down

### Classes

- class [base\\_elt](#)
- class [certificate\\_elt](#)
- class [class\\_elt](#)
- class [class\\_response\\_syntax](#)
- class [cms\\_msg](#)
- class [error\\_response\\_pdu](#)
- class [issue\\_pdu](#)
- class [issue\\_response\\_pdu](#)
- class [list\\_pdu](#)
- class [list\\_response\\_pdu](#)
- class [message\\_pdu](#)
- class [multi\\_uri](#)
- class [revoke\\_pdu](#)
- class [revoke\\_response\\_pdu](#)
- class [revoke\\_syntax](#)
- class [sax\\_handler](#)

### Variables

- dictionary [nsmap](#) = { None : [xmlns](#) }
- string [xmlns](#) = "http://www.apnic.net/specs/rescerts/up-down/"

### 2.22.1 Detailed Description

RPKI "up-down" protocol.

```
$Id: up_down.py 2000 2008-07-16 00:58:32Z sra $
```

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### 2.22.2 Variable Documentation

#### 2.22.2.1 dictionary `rpki::up_down.nsmap = { None : xmlns }`

Definition at line 26 of file `up_down.py`.

#### 2.22.2.2 string `rpki::up_down.xmlns = "http://www.apnic.net/specs/rescerts/up-down/"`

Definition at line 24 of file `up_down.py`.

## 2.23 Package rpki.x509

### Classes

- class [CMS\\_object](#)
- class [CRL](#)
- class [DER\\_CMS\\_object](#)
- class [DER\\_object](#)
- class [PEM\\_converter](#)
- class [PKCS10](#)
- class [ROA](#)
- class [RSA](#)
- class [RSAPublic](#)
- class [SignedManifest](#)
- class [X509](#)
- class [XML\\_CMS\\_object](#)

### Functions

- def [calculate\\_SKI](#)
- def [POWify\\_OID](#)

### 2.23.1 Detailed Description

One X.509 implementation to rule them all...

...and in the darkness hide the twisty maze of partially overlapping X.509 support packages in Python.

There are several existing packages, none of which do quite what I need, due to age, lack of documentation, specialization, or lack of foresight on somebody's part (perhaps mine). This module attempts to bring together the functionality I need in a way that hides at least some of the nasty details. This involves a lot of format conversion.

```
$Id: x509.py 1916 2008-06-21 19:44:45Z sra $
```

```
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```

### 2.23.2 Function Documentation

#### 2.23.2.1 `def rpki.x509.calculate_SKI ( public_key_der )`

Calculate the SKI value given the DER representation of a public key, which requires first peeling the ASN.1 wrapper off the key.

Definition at line 33 of file x509.py.

#### 2.23.2.2 `def rpki.x509.POWify_OID ( oid )`

Utility function to convert tuple form of an OID to the dotted-decimal string form that POW uses.

Definition at line 574 of file x509.py.

## 2.24 Package rpki.xml\_utils

### Classes

- class [base\\_elt](#)
- class [data\\_elt](#)
- class [msg](#)
- class [sax\\_handler](#)

### 2.24.1 Detailed Description

XML utilities.

```
$Id: xml_utils.py 1873 2008-06-12 02:49:41Z sra $

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```

## 2.25 Package rpkiid

### Functions

- def `main`

### Variables

- string `cfg_file` = "rpkiid.conf"
- `profile` = None

### 2.25.1 Detailed Description

RPKI engine daemon. This is still very much a work in progress.

```
Usage: python rpkiid.py [ { -c | --config } configfile ]
                        [ { -h | --help } ]
                        [ { -p | --profile } outputfile ]
```

Default configuration file is rpkiid.conf, override with --config option.

```
$Id: rpkiid.py 1880 2008-06-12 21:54:53Z sra $

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```

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### 2.25.2 Function Documentation

#### 2.25.2.1 `def rpkiid.main ()`

Definition at line 52 of file `rpkiid.py`.

### 2.25.3 Variable Documentation

#### 2.25.3.1 `rpkiid.cfg_file = "rpkiid.conf"`

Definition at line 37 of file `rpkiid.py`.

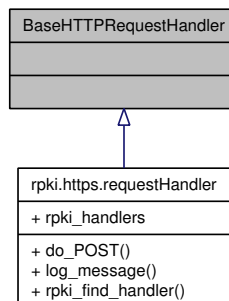
#### 2.25.3.2 `rpkiid.profile = None`

Definition at line 38 of file `rpkiid.py`.

## 3 Class Documentation

### 3.1 BaseHTTPRequestHandler Class Reference

Inheritance diagram for BaseHTTPRequestHandler:

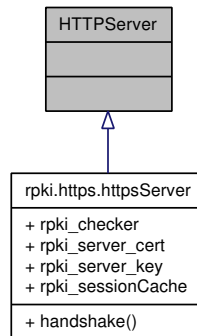


The documentation for this class was generated from the following file:

- [https.py \(1873\)](#)

## 3.2 HTTPServer Class Reference

Inheritance diagram for HTTPServer:

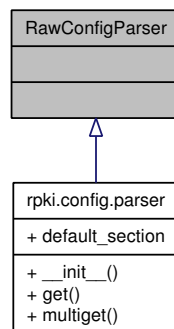


The documentation for this class was generated from the following file:

- [https.py \(1873\)](#)

## 3.3 RawConfigParser Class Reference

Inheritance diagram for RawConfigParser:

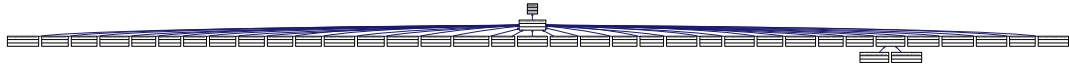


The documentation for this class was generated from the following file:

- [config.py \(1873\)](#)

### 3.4 Exception Class Reference

Inheritance diagram for Exception:



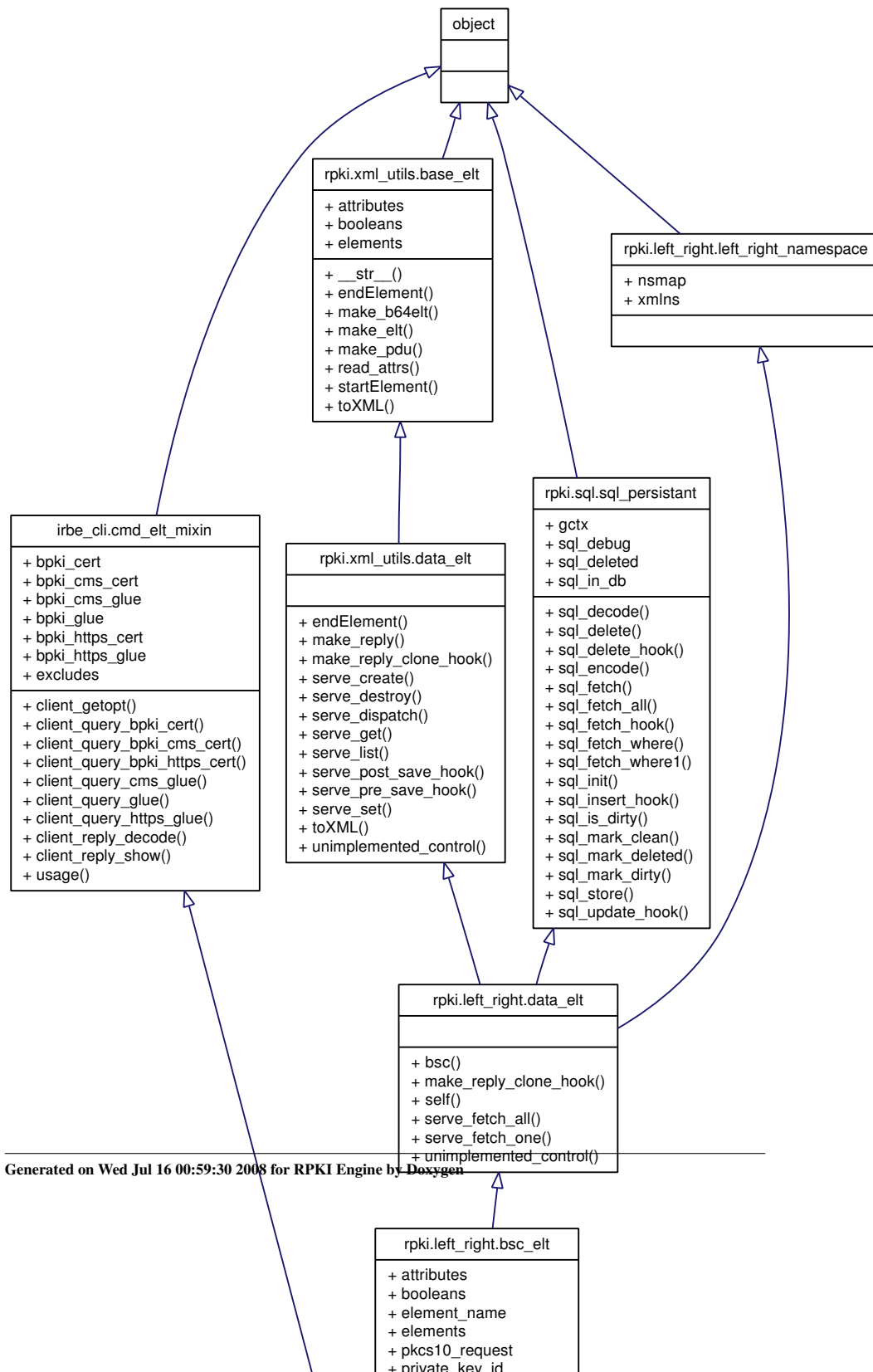
The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)



### 3.5 irbe\_cli.bsc\_elt Class Reference

Inheritance diagram for irbe\_cli.bsc\_elt:





### Public Member Functions

- def [client\\_query\\_signing\\_cert](#)
- def [client\\_query\\_signing\\_cert\\_crl](#)
- def [client\\_reply\\_decode](#)

### Public Attributes

- [signing\\_cert](#)
- [signing\\_cert\\_crl](#)

### Static Public Attributes

- tuple [excludes](#) = ("pkcs10\_request",)  
*XML attributes and elements that should not be allowed as command line arguments.*

#### 3.5.1 Detailed Description

Definition at line 117 of file `irbe_cli.py`.

#### 3.5.2 Member Function Documentation

##### 3.5.2.1 def `irbe_cli.bsc_elt.client_query_signing_cert (self, arg)`

`--signing_cert option.`

Definition at line 121 of file `irbe_cli.py`.

##### 3.5.2.2 def `irbe_cli.bsc_elt.client_query_signing_cert_crl (self, arg)`

`--signing_cert_crl option.`

Definition at line 125 of file `irbe_cli.py`.

##### 3.5.2.3 def `irbe_cli.bsc_elt.client_reply_decode (self)`

Reimplemented from [irbe\\_cli.cmd\\_elt\\_mixin](#).

Definition at line 129 of file `irbe_cli.py`.

### 3.5.3 Member Data Documentation

#### 3.5.3.1 `tuple irbe_cli.bsc_elt.excludes = ("pkcs10_request",)` `[static]`

XML attributes and elements that should not be allowed as command line arguments.

At the moment the only such is the `bsc.pkcs10_request` sub-element, but writing this generally is no harder than handling that one special case.

Reimplemented from [irbe\\_cli.cmd\\_elt\\_mixin](#).

Definition at line 119 of file `irbe_cli.py`.

#### 3.5.3.2 `irbe_cli.bsc_elt.signing_cert`

Reimplemented from [rpki.left\\_right.bsc\\_elt](#).

Definition at line 123 of file `irbe_cli.py`.

#### 3.5.3.3 `irbe_cli.bsc_elt.signing_cert_crl`

Reimplemented from [rpki.left\\_right.bsc\\_elt](#).

Definition at line 127 of file `irbe_cli.py`.

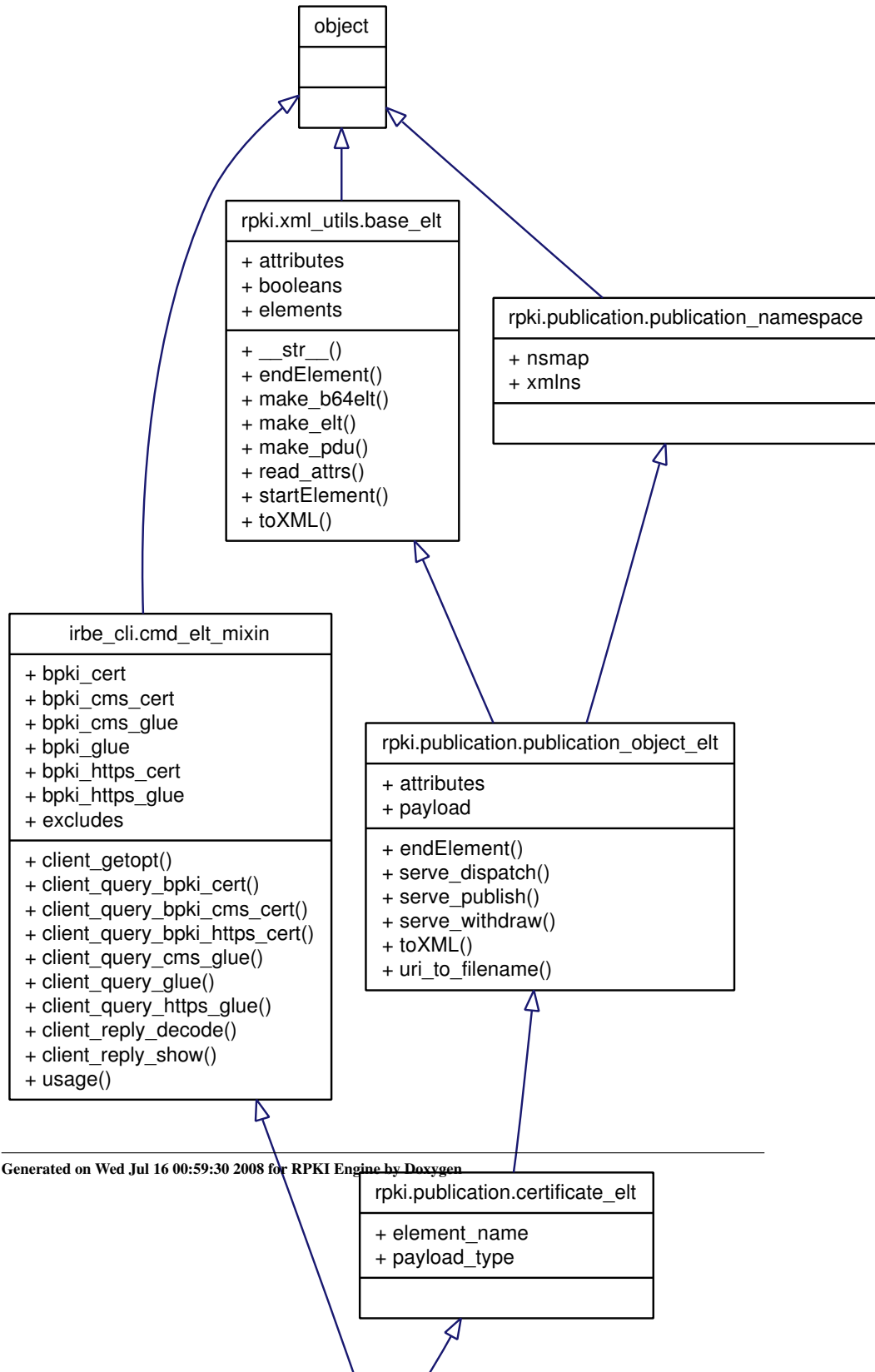
The documentation for this class was generated from the following file:

- [irbe\\_cli.py \(1995\)](#)



### 3.6 irbe\_cli.certificate\_elt Class Reference

Inheritance diagram for irbe\_cli.certificate\_elt:



**3.6.1 Detailed Description**

Definition at line 180 of file irbe\_cli.py.

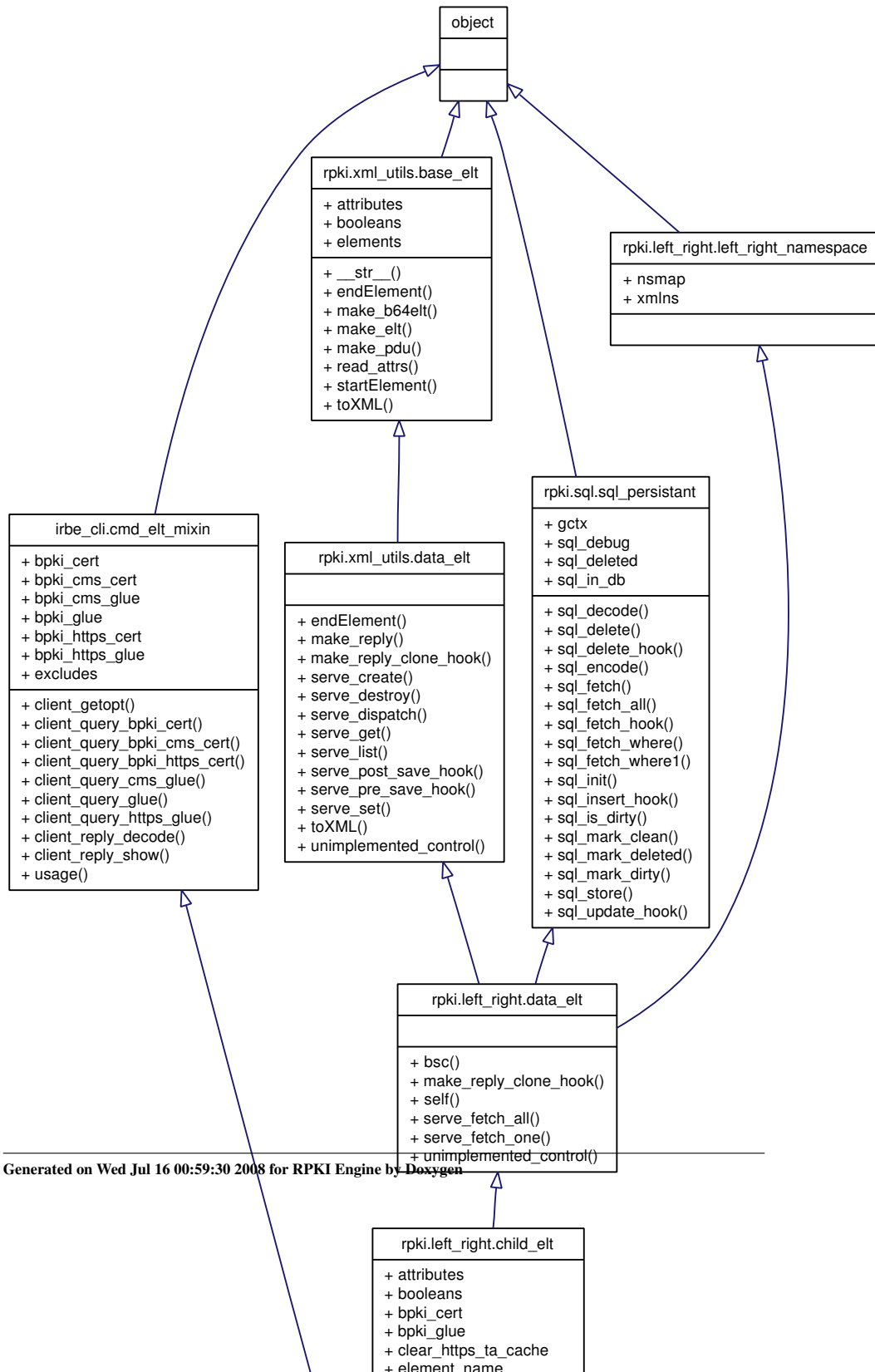
The documentation for this class was generated from the following file:

- [irbe\\_cli.py \(1995\)](#)



### 3.7 irbe\_cli.child\_elt Class Reference

Inheritance diagram for irbe\_cli.child\_elt:



**3.7.1 Detailed Description**

Definition at line 139 of file irbe\_cli.py.

The documentation for this class was generated from the following file:

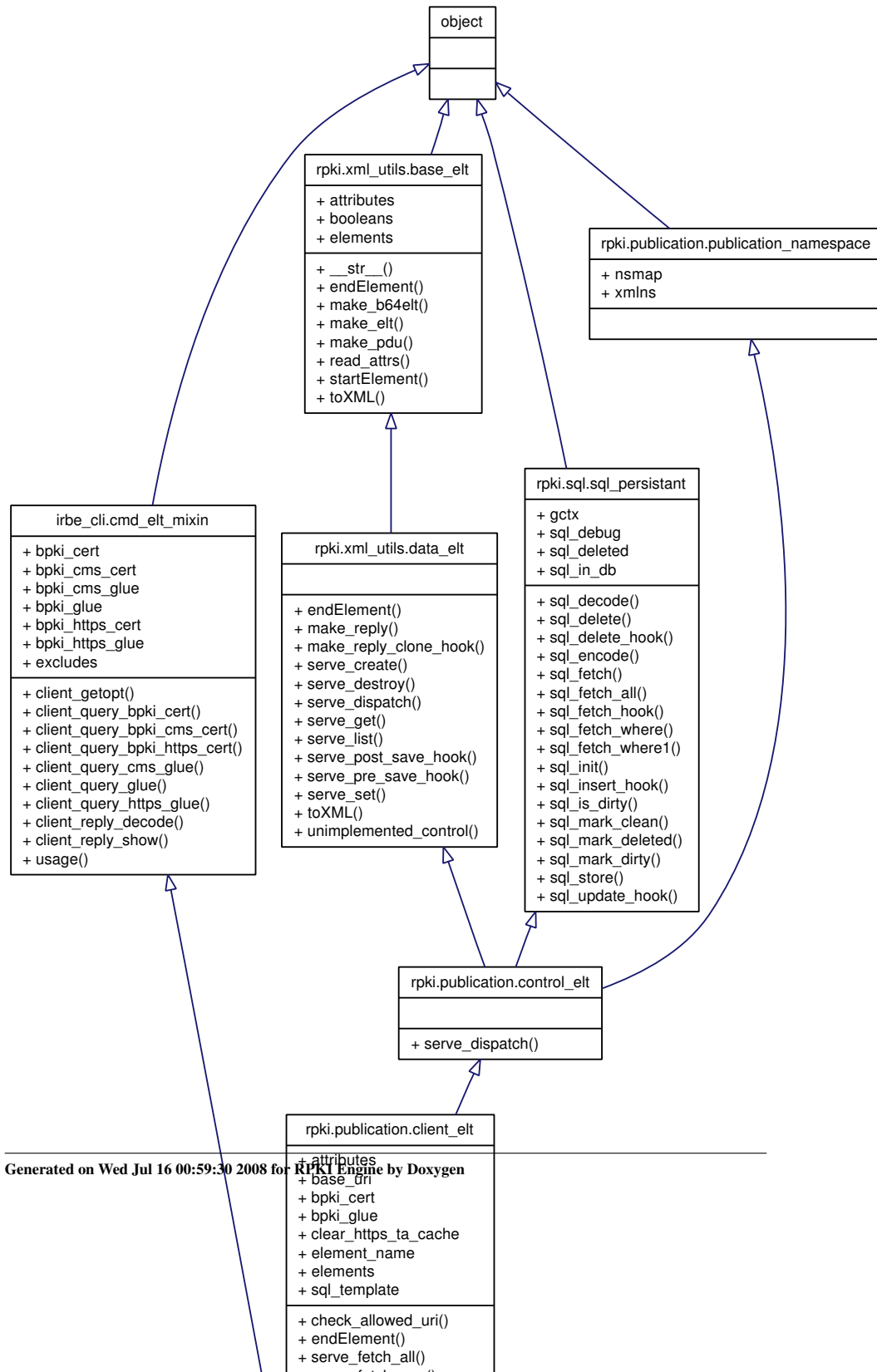
- [irbe\\_cli.py \(1995\)](#)





## 3.8 irbe\_cli.client\_elt Class Reference

Inheritance diagram for irbe\_cli.client\_elt:



### 3.8.1 Detailed Description

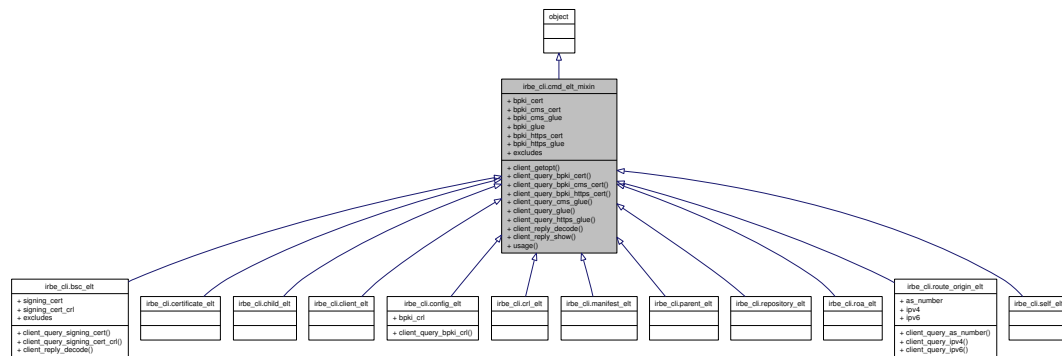
Definition at line 177 of file `irbe_cli.py`.

The documentation for this class was generated from the following file:

- [irbe\\_cli.py \(1995\)](#)

## 3.9 irbe\_cli.cmd\_elt\_mixin Class Reference

Inheritance diagram for `irbe_cli.cmd_elt_mixin`:



### Public Member Functions

- def [client\\_getopt](#)
- def [client\\_query\\_bpk\\_i\\_cert](#)
- def [client\\_query\\_bpk\\_i\\_cms\\_cert](#)
- def [client\\_query\\_bpk\\_i\\_https\\_cert](#)
- def [client\\_query\\_cms\\_glue](#)
- def [client\\_query\\_glue](#)
- def [client\\_query\\_https\\_glue](#)
- def [client\\_reply\\_decode](#)
- def [client\\_reply\\_show](#)
- def [usage](#)

### Public Attributes

- [bpk\\_i\\_cert](#)
- [bpk\\_i\\_cms\\_cert](#)
- [bpk\\_i\\_cms\\_glue](#)

- [bpki\\_glue](#)
- [bpki\\_https\\_cert](#)
- [bpki\\_https\\_glue](#)

### Static Public Attributes

- tuple `excludes` = ()  
*XML attributes and elements that should not be allowed as command line arguments.*

### 3.9.1 Detailed Description

Protocol mix-in for command line client element PDUs.

Definition at line 35 of file `irbe_cli.py`.

### 3.9.2 Member Function Documentation

#### 3.9.2.1 `def irbe_cli.cmd_elt_mixin.client_getopt ( self, argv)`

Parse options for this class.

Definition at line 55 of file `irbe_cli.py`.

#### 3.9.2.2 `def irbe_cli.cmd_elt_mixin.client_query_bpki_cert ( self, arg)`

Special handler for `--bpki_cert` option.

Definition at line 70 of file `irbe_cli.py`.

#### 3.9.2.3 `def irbe_cli.cmd_elt_mixin.client_query_bpki_cms_cert ( self, arg)`

Special handler for `--bpki_cms_cert` option.

Definition at line 78 of file `irbe_cli.py`.

#### 3.9.2.4 `def irbe_cli.cmd_elt_mixin.client_query_bpki_https_cert ( self, arg)`

Special handler for `--bpki_https_cert` option.

Definition at line 86 of file `irbe_cli.py`.

**3.9.2.5 def irbe\_cli.cmd\_elt\_mixin.client\_query\_cms\_glue ( self, arg)**

Special handler for --bpki\_cms\_glue option.

Definition at line 82 of file irbe\_cli.py.

**3.9.2.6 def irbe\_cli.cmd\_elt\_mixin.client\_query\_glue ( self, arg)**

Special handler for --bpki\_glue option.

Definition at line 74 of file irbe\_cli.py.

**3.9.2.7 def irbe\_cli.cmd\_elt\_mixin.client\_query\_https\_glue ( self, arg)**

Special handler for --bpki\_https\_glue option.

Definition at line 90 of file irbe\_cli.py.

**3.9.2.8 def irbe\_cli.cmd\_elt\_mixin.client\_reply\_decode ( self)**

Reimplemented in [irbe\\_cli.bsc\\_elt](#).

Definition at line 94 of file irbe\_cli.py.

**3.9.2.9 def irbe\_cli.cmd\_elt\_mixin.client\_reply\_show ( self)**

Definition at line 97 of file irbe\_cli.py.

**3.9.2.10 def irbe\_cli.cmd\_elt\_mixin.usage ( cls)**

Generate usage message for this PDU.

Definition at line 46 of file irbe\_cli.py.

**3.9.3 Member Data Documentation****3.9.3.1 irbe\_cli.cmd\_elt\_mixin.bpki\_cert**

Definition at line 72 of file irbe\_cli.py.

**3.9.3.2 irbe\_cli.cmd\_elt\_mixin.bpki\_cms\_cert**

Definition at line 80 of file irbe\_cli.py.

### 3.9.3.3 `irbe_cli.cmd_elt_mixin.bpkc_cms_glue`

Definition at line 84 of file `irbe_cli.py`.

### 3.9.3.4 `irbe_cli.cmd_elt_mixin.bpkc_https_glue`

Definition at line 76 of file `irbe_cli.py`.

### 3.9.3.5 `irbe_cli.cmd_elt_mixin.bpkc_https_cert`

Definition at line 88 of file `irbe_cli.py`.

### 3.9.3.6 `irbe_cli.cmd_elt_mixin.bpkc_https_glue`

Definition at line 92 of file `irbe_cli.py`.

### 3.9.3.7 `irbe_cli.cmd_elt_mixin::excludes = ()` `[static]`

XML attributes and elements that should not be allowed as command line arguments.

At the moment the only such is the `bsc.pkcs10_request` sub-element, but writing this generally is no harder than handling that one special case.

Reimplemented in [irbe\\_cli.bsc\\_elt](#).

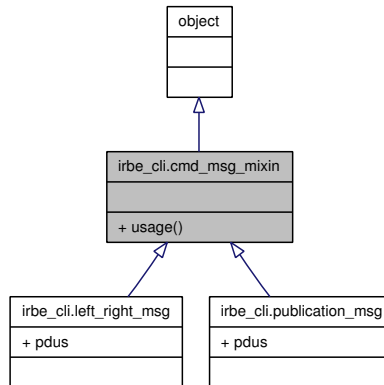
Definition at line 43 of file `irbe_cli.py`.

The documentation for this class was generated from the following file:

- [irbe\\_cli.py](#) (1995)

### 3.10 irbe\_cli.cmd\_msg\_mixin Class Reference

Inheritance diagram for irbe\_cli.cmd\_msg\_mixin:



#### Public Member Functions

- def [usage](#)

#### 3.10.1 Detailed Description

Protocol mix-in for command line client message PDUs.

Definition at line 103 of file irbe\_cli.py.

#### 3.10.2 Member Function Documentation

##### 3.10.2.1 def irbe\_cli.cmd\_msg\_mixin.usage ( cls )

Generate usage message for this PDU.

Definition at line 107 of file irbe\_cli.py.

The documentation for this class was generated from the following file:

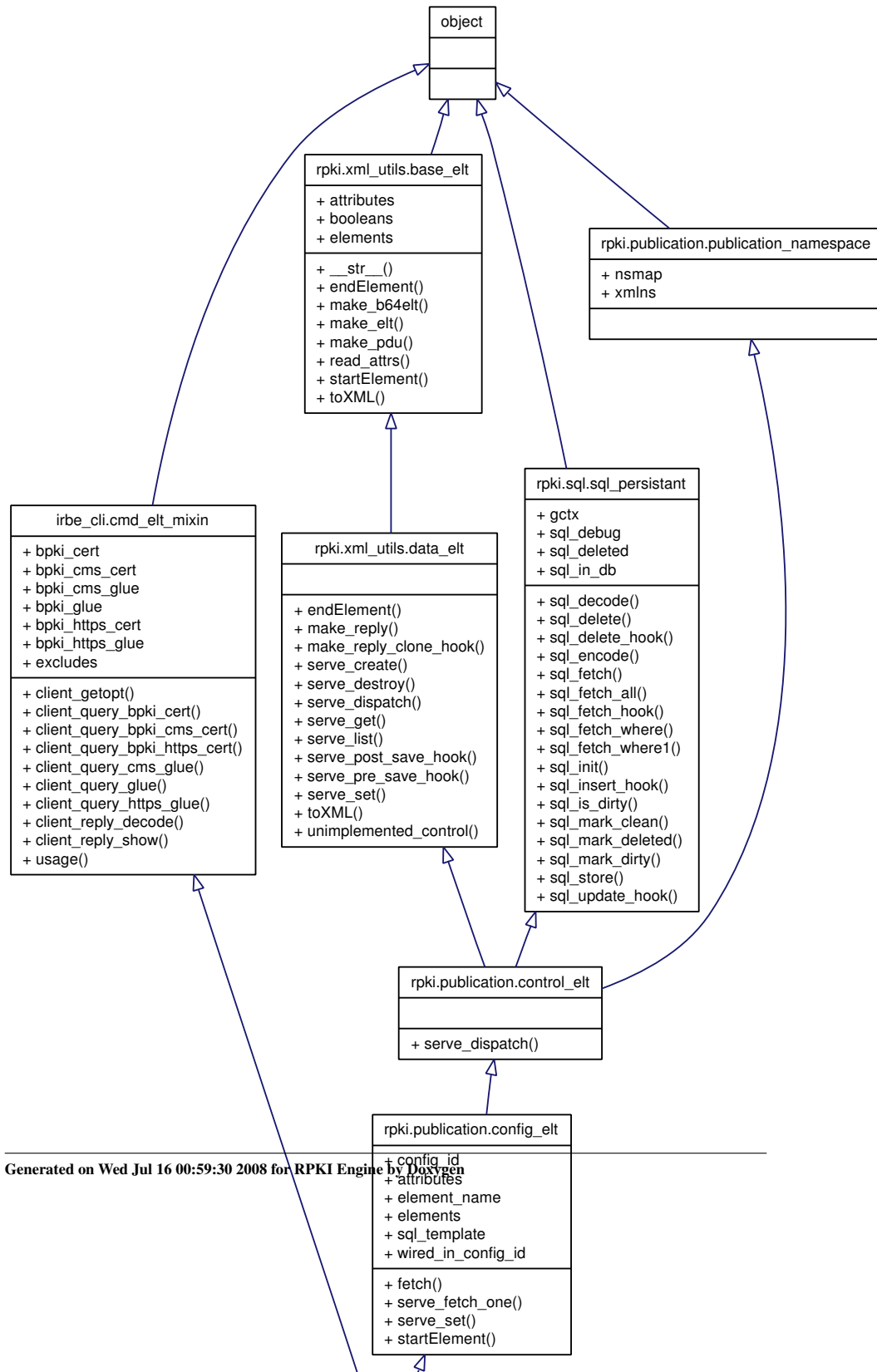
- [irbe\\_cli.py](#) (1995)





## 3.11 irbe\_cli.config\_elt Class Reference

Inheritance diagram for irbe\_cli.config\_elt:



## Public Member Functions

- def `client_query_bpki_crl`

## Public Attributes

- `bpki_crl`

### 3.11.1 Detailed Description

Definition at line 171 of file `irbe_cli.py`.

### 3.11.2 Member Function Documentation

#### 3.11.2.1 `def irbe_cli.config_elt.client_query_bpki_crl (self, arg)`

Special handler for `--bpki_crl` option.

Definition at line 173 of file `irbe_cli.py`.

### 3.11.3 Member Data Documentation

#### 3.11.3.1 `irbe_cli.config_elt.bpki_crl`

Definition at line 175 of file `irbe_cli.py`.

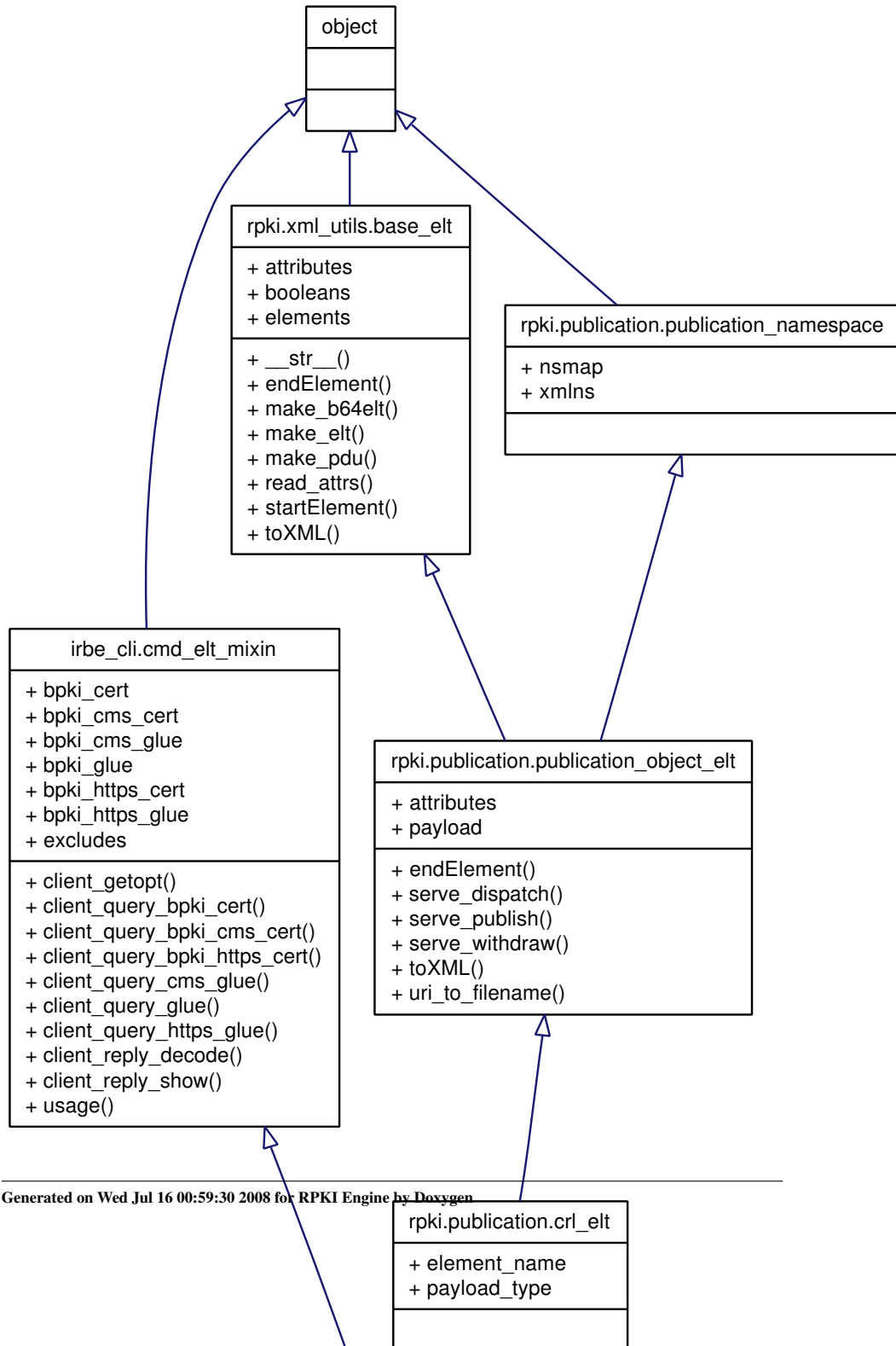
The documentation for this class was generated from the following file:

- `irbe_cli.py` (1995)



### 3.12 irbe\_cli.crl\_elt Class Reference

Inheritance diagram for irbe\_cli.crl\_elt:



**3.12.1 Detailed Description**

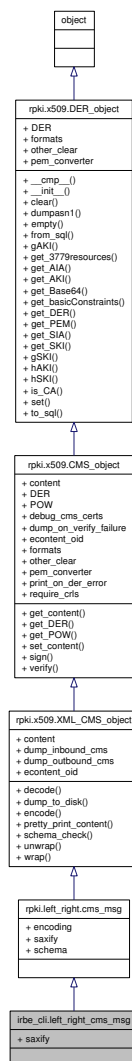
Definition at line 183 of file irbe\_cli.py.

The documentation for this class was generated from the following file:

- [irbe\\_cli.py \(1995\)](#)

### 3.13 irbe\_cli.left\_right\_cms\_msg Class Reference

Inheritance diagram for irbe\_cli.left\_right\_cms\_msg:



#### Static Public Attributes

- `saxify` = `left_right_sax_handler.saxify`

### 3.13.1 Detailed Description

Definition at line 166 of file `irbe_cli.py`.

### 3.13.2 Member Data Documentation

#### 3.13.2.1 `irbe_cli.left_right_cms_msg.saxify` = `left_right_sax_handler.saxify` [static]

Reimplemented from [rpki.left\\_right.cms\\_msg](#).

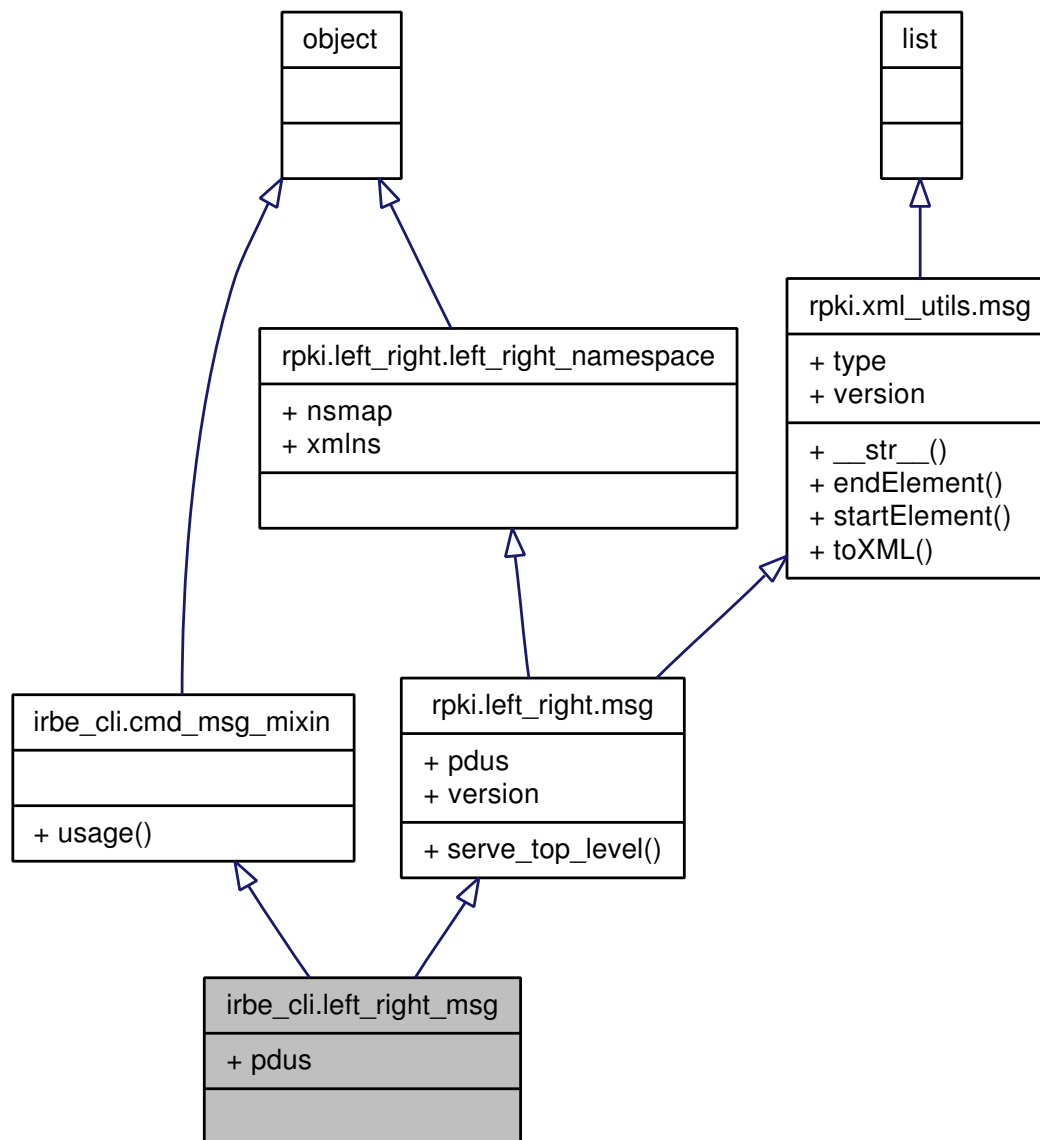
Definition at line 167 of file `irbe_cli.py`.

The documentation for this class was generated from the following file:

- [irbe\\_cli.py \(1995\)](#)

### 3.14 irbe\_cli.left\_right\_msg Class Reference

Inheritance diagram for irbe\_cli.left\_right\_msg:



#### Static Public Attributes

- tuple [pdus](#)



*Dispatch table of PDUs for this protocol.*

### 3.14.1 Detailed Description

Definition at line 159 of file irbe\_cli.py.

### 3.14.2 Member Data Documentation

#### 3.14.2.1 tuple irbe\_cli.left\_right\_msg.pdus [static]

**Initial value:**

```
dict((x.element_name, x)
      for x in (self_elt, bsc_elt, parent_elt, child_elt, repository_elt, route_origin_elt))
```

Dispatch table of PDUs for this protocol.

Reimplemented from [rpki.left\\_right.msg](#).

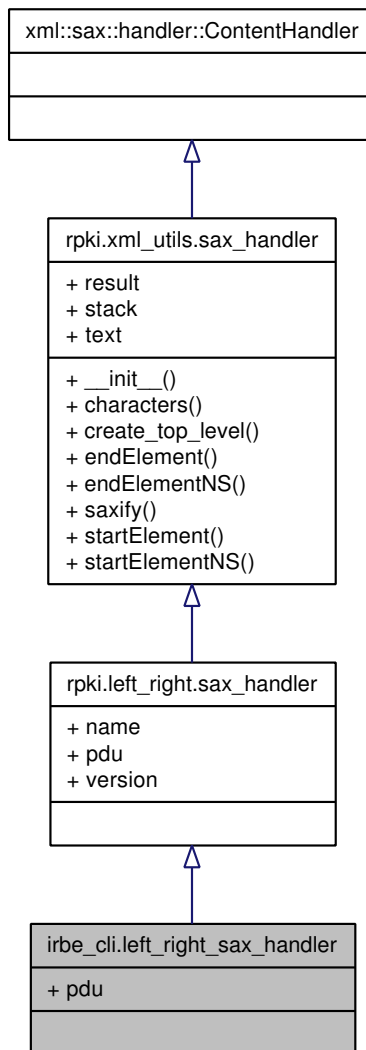
Definition at line 160 of file irbe\_cli.py.

The documentation for this class was generated from the following file:

- [irbe\\_cli.py](#) (1995)

### 3.15 irbe\_cli.left\_right\_sax\_handler Class Reference

Inheritance diagram for irbe\_cli.left\_right\_sax\_handler:



#### Static Public Attributes

- `pdu = left_right_msg`

### 3.15.1 Detailed Description

Definition at line 163 of file `irbe_cli.py`.

### 3.15.2 Member Data Documentation

#### 3.15.2.1 `irbe_cli.left_right_sax_handler.pdu = left_right_msg` [static]

Reimplemented from [rpki.left\\_right.sax\\_handler](#).

Definition at line 164 of file `irbe_cli.py`.

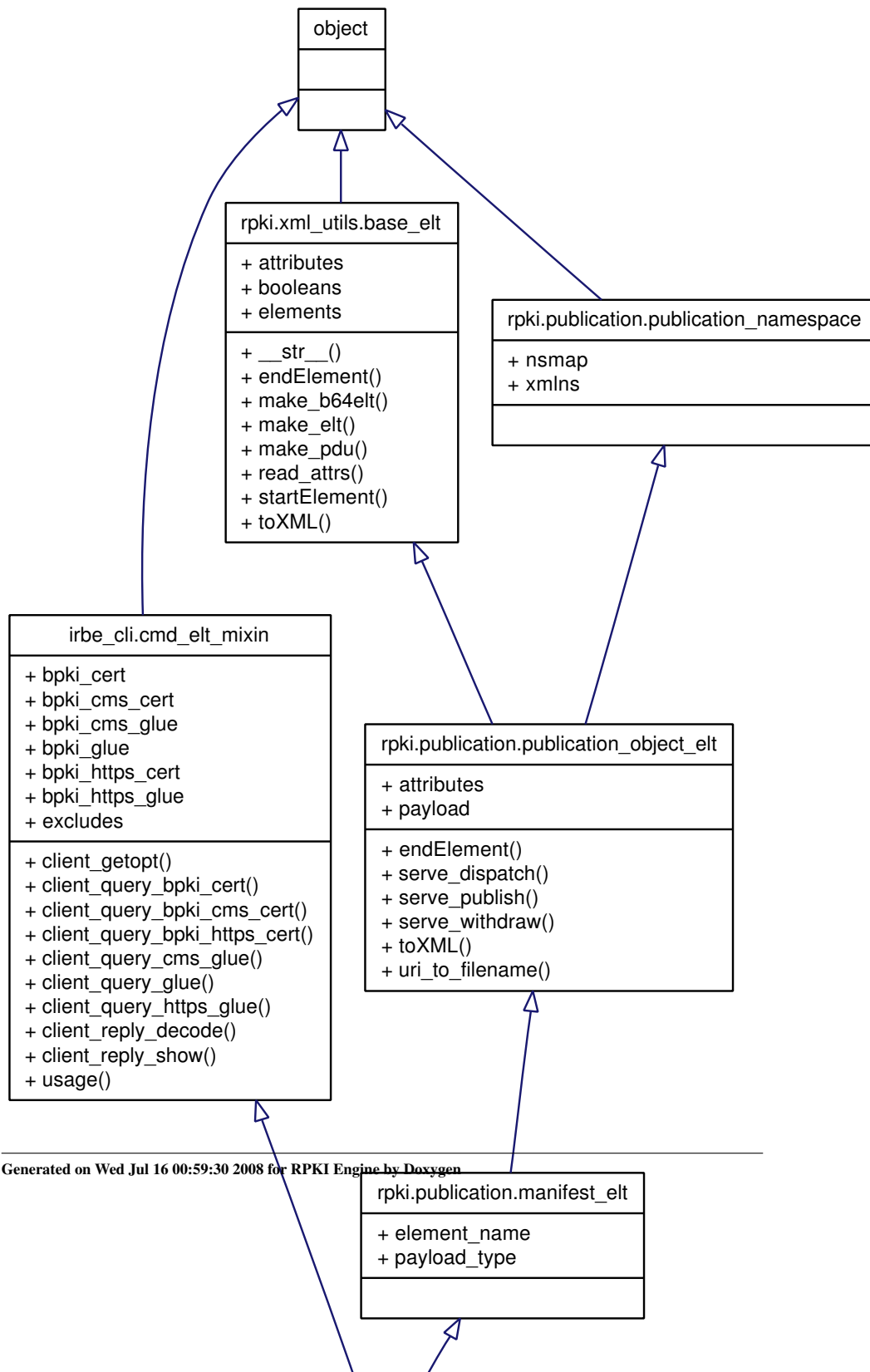
The documentation for this class was generated from the following file:

- [irbe\\_cli.py \(1995\)](#)



## 3.16 irbe\_cli.manifest\_elt Class Reference

Inheritance diagram for irbe\_cli.manifest\_elt:



**3.16.1 Detailed Description**

Definition at line 186 of file irbe\_cli.py.

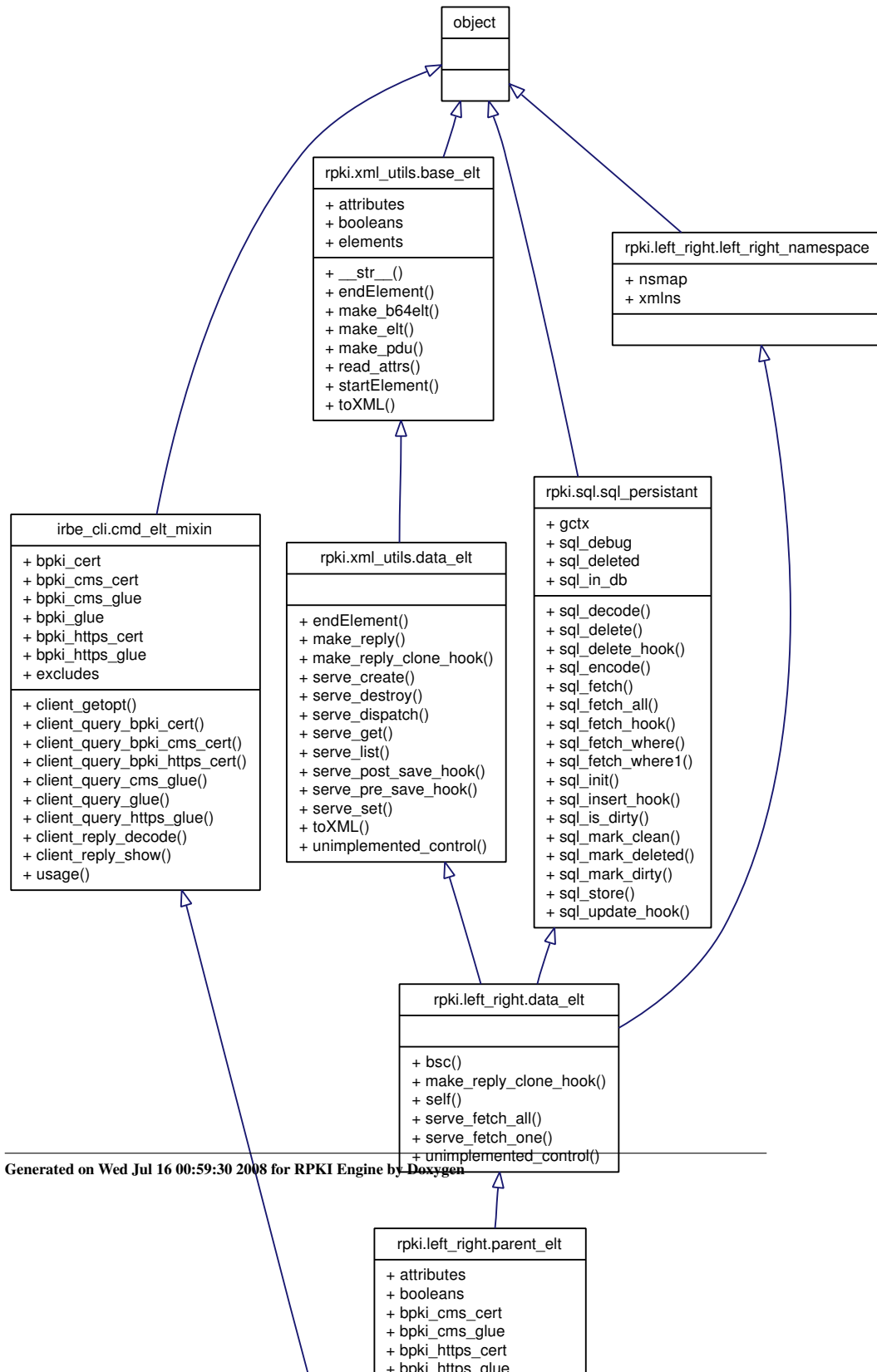
The documentation for this class was generated from the following file:

- [irbe\\_cli.py \(1995\)](#)



## 3.17 irbe\_cli.parent\_elt Class Reference

Inheritance diagram for irbe\_cli.parent\_elt:





**3.17.1 Detailed Description**

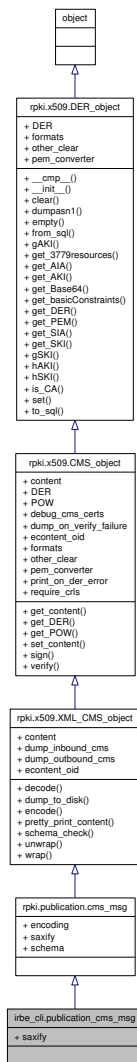
Definition at line 136 of file irbe\_cli.py.

The documentation for this class was generated from the following file:

- [irbe\\_cli.py \(1995\)](#)

### 3.18 irbe\_cli.publication\_cms\_msg Class Reference

Inheritance diagram for irbe\_cli.publication\_cms\_msg:



#### Static Public Attributes

- `saxify` = `publication_sax_handler.saxify`

### 3.18.1 Detailed Description

Definition at line 199 of file `irbe_cli.py`.

### 3.18.2 Member Data Documentation

#### 3.18.2.1 `irbe_cli.publication_cms_msg.saxify = publication_sax_handler.saxify` [static]

Reimplemented from [rpki.publication\\_cms\\_msg](#).

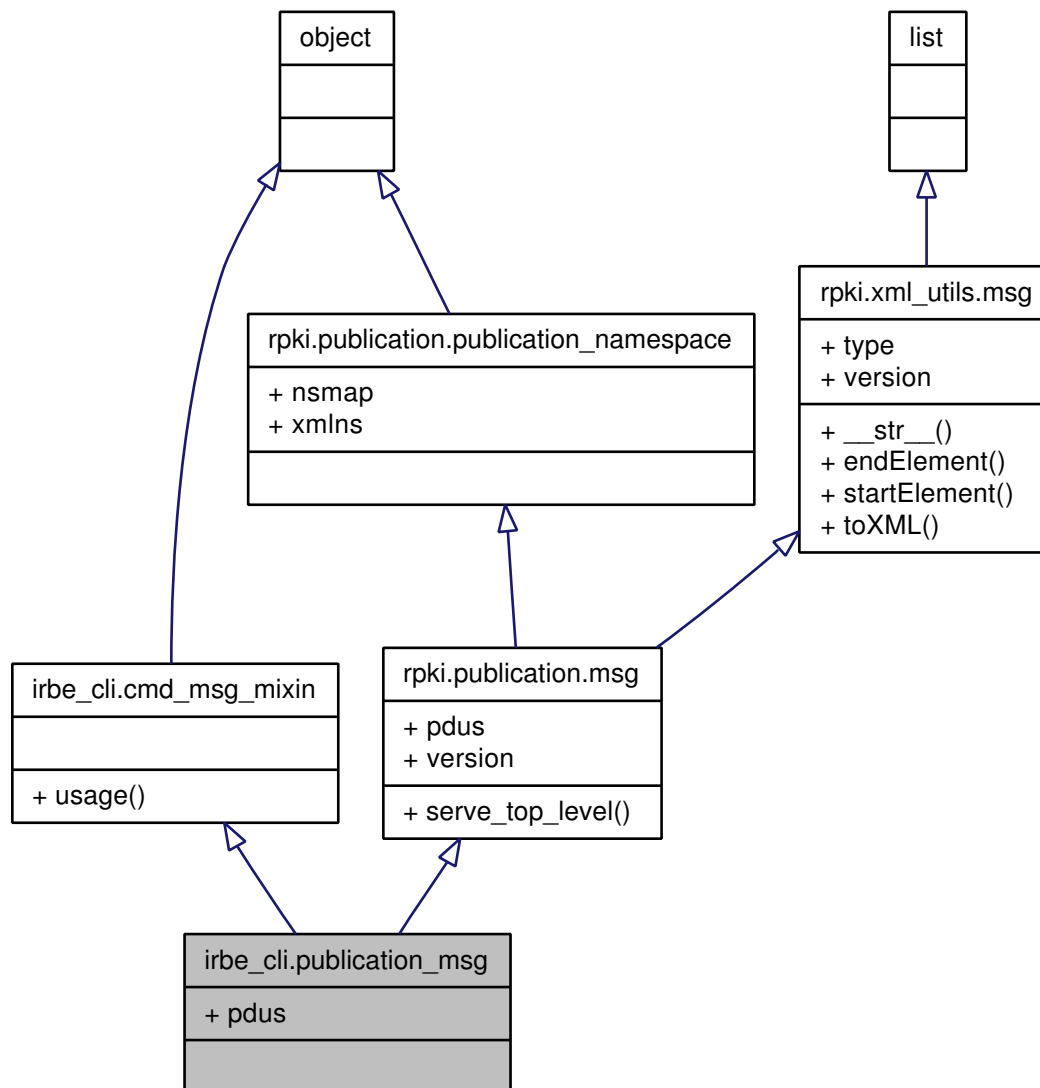
Definition at line 200 of file `irbe_cli.py`.

The documentation for this class was generated from the following file:

- [irbe\\_cli.py \(1995\)](#)

### 3.19 irbe\_cli.publication\_msg Class Reference

Inheritance diagram for irbe\_cli.publication\_msg:



#### Static Public Attributes

- tuple `pdus`  
*Dispatch table of PDUs for this protocol.*

### 3.19.1 Detailed Description

Definition at line 192 of file irbe\_cli.py.

### 3.19.2 Member Data Documentation

#### 3.19.2.1 tuple irbe\_cli.publication\_msg.pdus [static]

**Initial value:**

```
dict((x.element_name, x)
      for x in (config_elt, client_elt, certificate_elt, crl_elt, manifest_elt, roa_elt))
```

Dispatch table of PDUs for this protocol.

Reimplemented from [rpki.publication.msg](#).

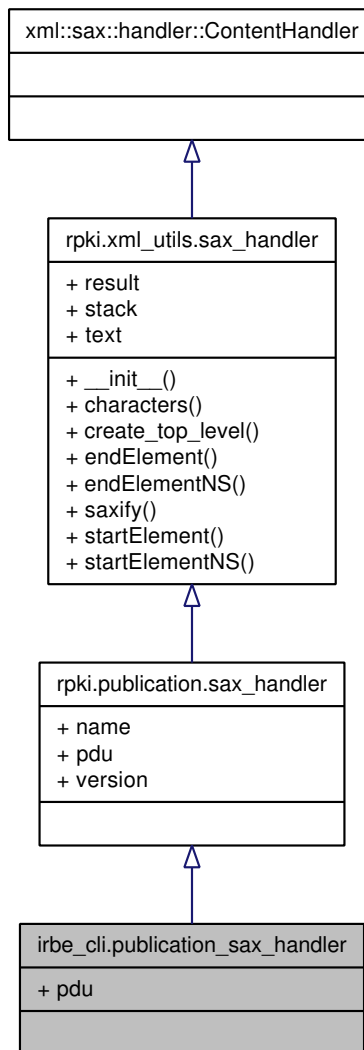
Definition at line 193 of file irbe\_cli.py.

The documentation for this class was generated from the following file:

- [irbe\\_cli.py \(1995\)](#)

### 3.20 irbe\_cli.publication\_sax\_handler Class Reference

Inheritance diagram for irbe\_cli.publication\_sax\_handler:



#### Static Public Attributes

- `pdu = publication_msg`

### 3.20.1 Detailed Description

Definition at line 196 of file `irbe_cli.py`.

### 3.20.2 Member Data Documentation

#### 3.20.2.1 `irbe_cli.publication_sax_handler.pdu = publication_msg` `[static]`

Reimplemented from [rpki.publication.sax\\_handler](#).

Definition at line 197 of file `irbe_cli.py`.

The documentation for this class was generated from the following file:

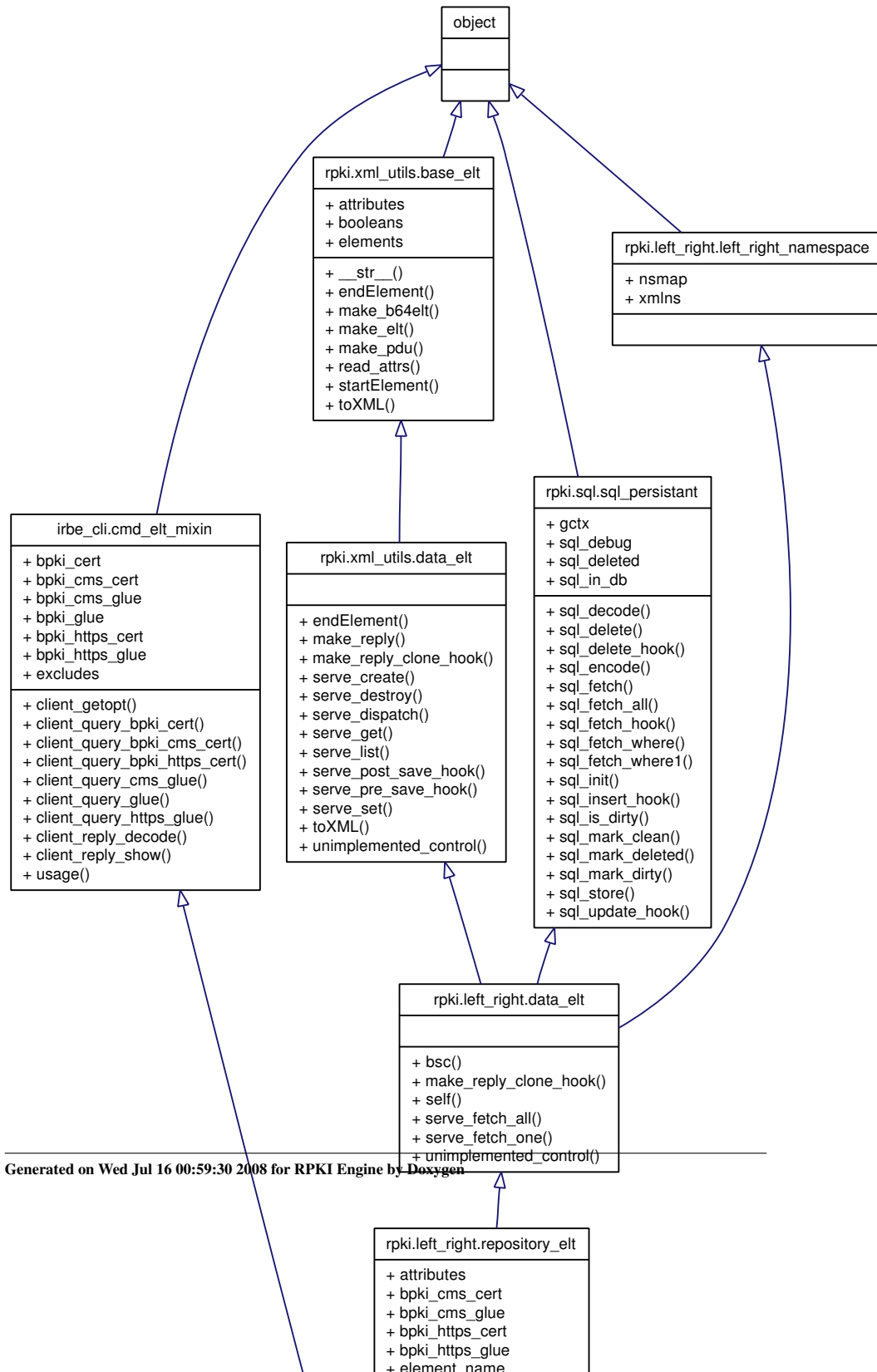
- [irbe\\_cli.py](#) (1995)





### 3.21 irbe\_cli.repository\_elt Class Reference

Inheritance diagram for irbe\_cli.repository\_elt:



**3.21.1 Detailed Description**

Definition at line 142 of file irbe\_cli.py.

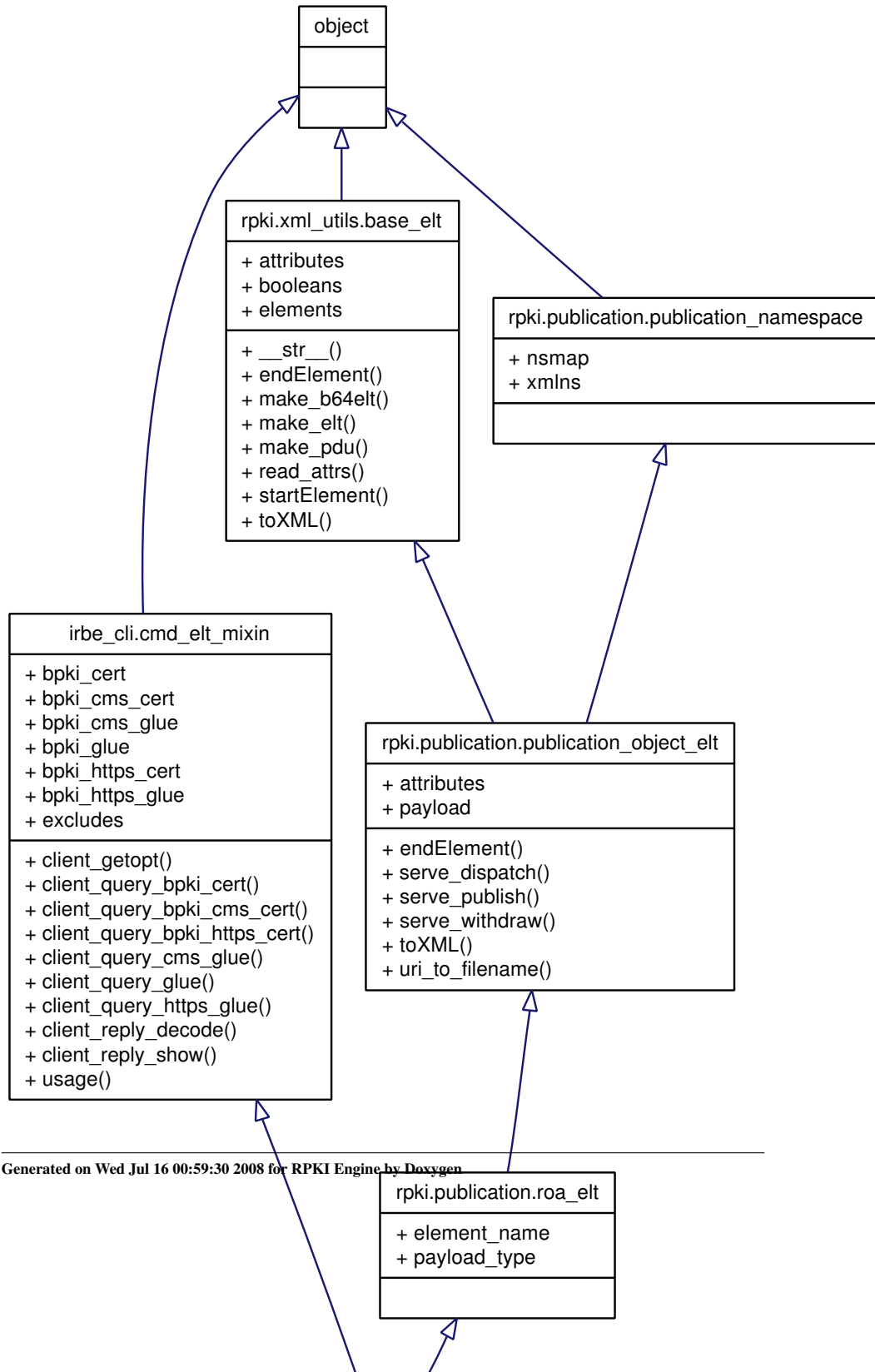
The documentation for this class was generated from the following file:

- [irbe\\_cli.py \(1995\)](#)



### 3.22 irbe\_cli.roa\_elt Class Reference

Inheritance diagram for irbe\_cli.roa\_elt:



**3.22.1 Detailed Description**

Definition at line 189 of file irbe\_cli.py.

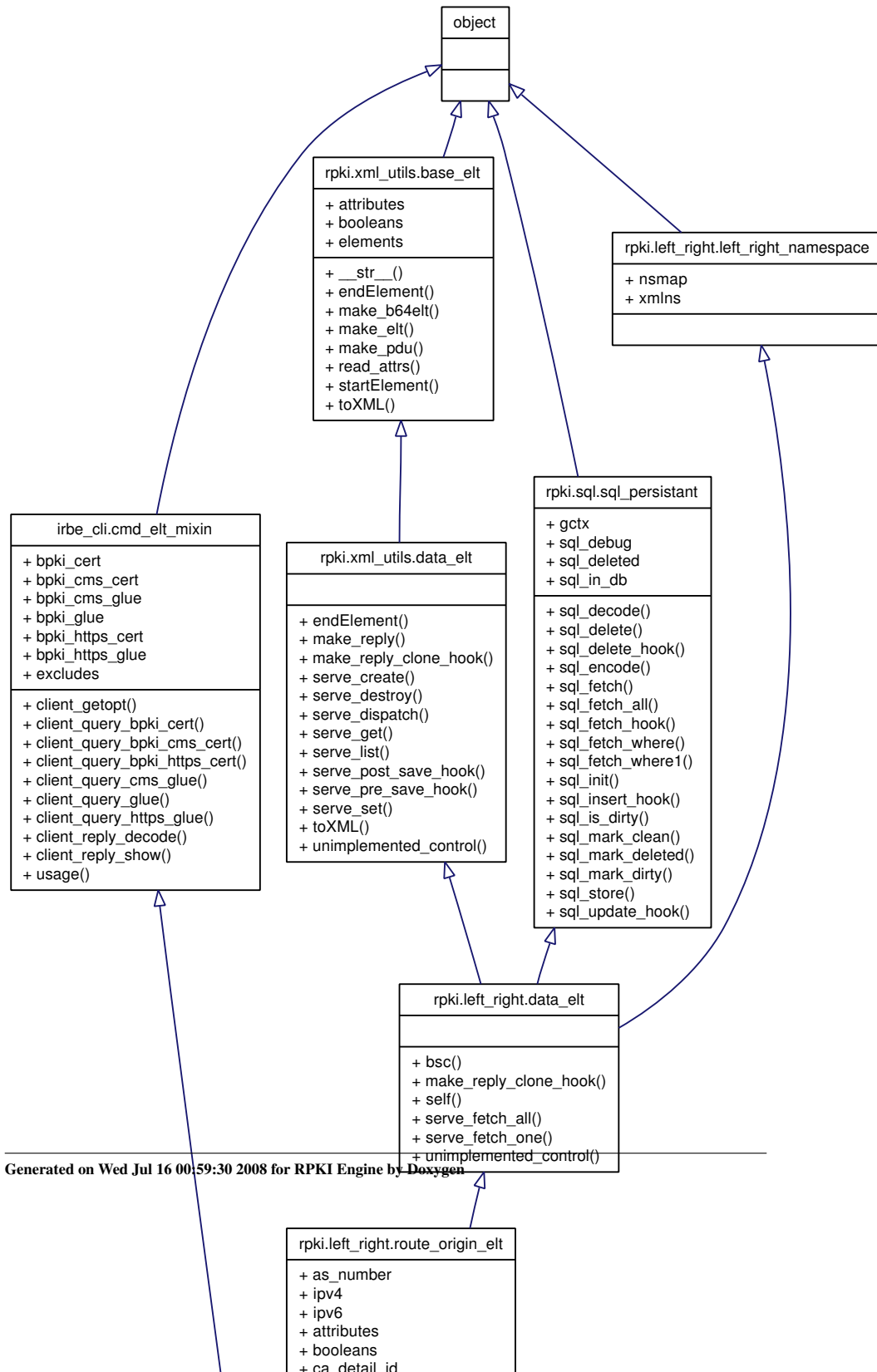
The documentation for this class was generated from the following file:

- [irbe\\_cli.py \(1995\)](#)



## 3.23 irbe\_cli.route\_origin\_elt Class Reference

Inheritance diagram for irbe\_cli.route\_origin\_elt:



### Public Member Functions

- def [client\\_query\\_as\\_number](#)
- def [client\\_query\\_ipv4](#)
- def [client\\_query\\_ipv6](#)

### Public Attributes

- [as\\_number](#)
- [ipv4](#)
- [ipv6](#)

#### 3.23.1 Detailed Description

Definition at line 145 of file `irbe_cli.py`.

#### 3.23.2 Member Function Documentation

##### 3.23.2.1 def `irbe_cli.route_origin_elt.client_query_as_number ( self, arg )`

Handle autonomous sequence numbers.

Definition at line 147 of file `irbe_cli.py`.

##### 3.23.2.2 def `irbe_cli.route_origin_elt.client_query_ipv4 ( self, arg )`

Handle IPv4 addresses.

Definition at line 151 of file `irbe_cli.py`.

##### 3.23.2.3 def `irbe_cli.route_origin_elt.client_query_ipv6 ( self, arg )`

Handle IPv6 addresses.

Definition at line 155 of file `irbe_cli.py`.

#### 3.23.3 Member Data Documentation

##### 3.23.3.1 `irbe_cli.route_origin_elt.as_number`

Reimplemented from [rpki.left\\_right.route\\_origin\\_elt](#).

Definition at line 149 of file `irbe_cli.py`.



### 3.23.3.2 irbe\_cli.route\_origin\_elt.ipv4

Reimplemented from [rpki.left\\_right.route\\_origin\\_elt](#).

Definition at line 153 of file irbe\_cli.py.

### 3.23.3.3 irbe\_cli.route\_origin\_elt.ipv6

Reimplemented from [rpki.left\\_right.route\\_origin\\_elt](#).

Definition at line 157 of file irbe\_cli.py.

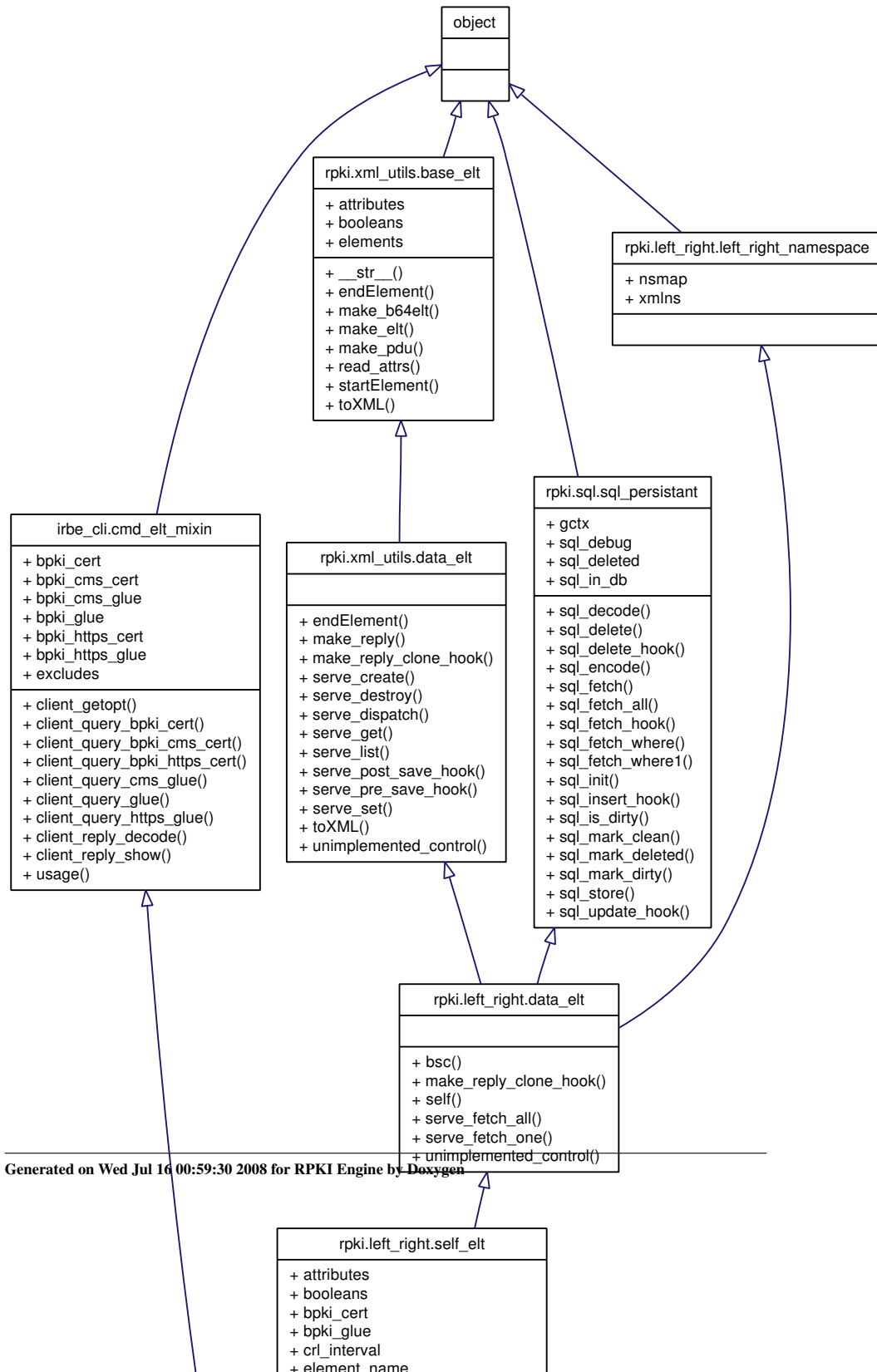
The documentation for this class was generated from the following file:

- [irbe\\_cli.py \(1995\)](#)



### 3.24 irbe\_cli.self\_elt Class Reference

Inheritance diagram for irbe\_cli.self\_elt:



### 3.24.1 Detailed Description

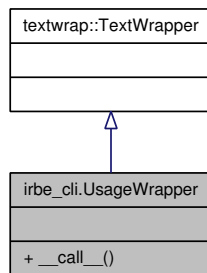
Definition at line 114 of file irbe\_cli.py.

The documentation for this class was generated from the following file:

- [irbe\\_cli.py \(1995\)](#)

## 3.25 irbe\_cli.UsageWrapper Class Reference

Inheritance diagram for irbe\_cli.UsageWrapper:



### Public Member Functions

- `def __call__`

### 3.25.1 Detailed Description

Call interface around Python `textwrap.Textwrapper` class.

Definition at line 26 of file irbe\_cli.py.

### 3.25.2 Member Function Documentation

#### 3.25.2.1 `def irbe_cli.UsageWrapper.__call__(self, args)`

Format arguments, with `TextWrapper` indentation.

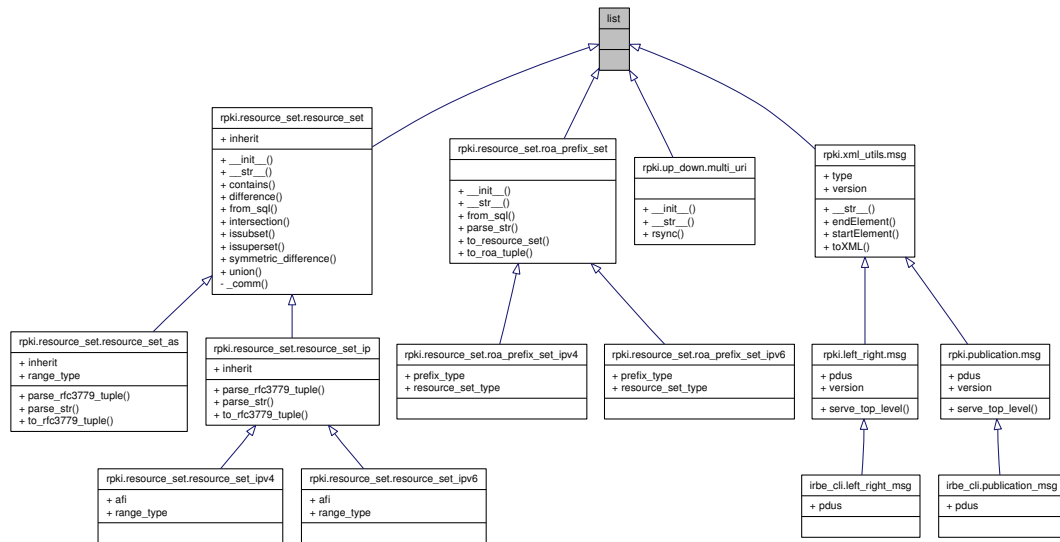
Definition at line 29 of file irbe\_cli.py.

The documentation for this class was generated from the following file:

- [irbe\\_cli.py \(1995\)](#)

## 3.26 list Class Reference

Inheritance diagram for list:

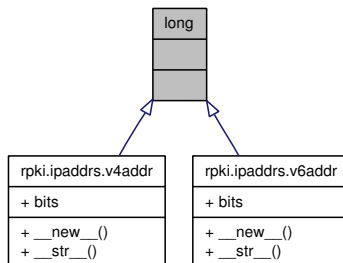


The documentation for this class was generated from the following file:

- [resource\\_set.py \(1984\)](#)

## 3.27 long Class Reference

Inheritance diagram for long:

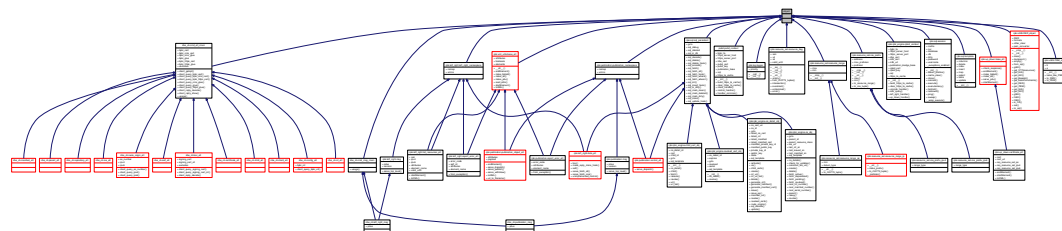


The documentation for this class was generated from the following file:

- [ipaddrs.py \(1873\)](#)

### 3.28 object Class Reference

Inheritance diagram for object:

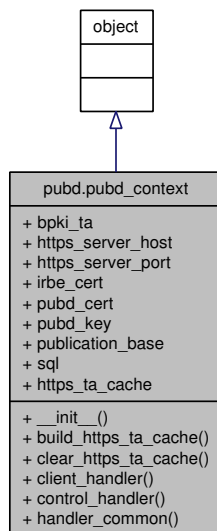


The documentation for this class was generated from the following file:

- [x509.py \(1916\)](#)

### 3.29 pubd.pubd\_context Class Reference

Inheritance diagram for pubd.pubd\_context:



#### Public Member Functions

- [def \\_\\_init\\_\\_](#)

- def [build\\_https\\_ta\\_cache](#)
- def [clear\\_https\\_ta\\_cache](#)
- def [client\\_handler](#)
- def [control\\_handler](#)
- def [handler\\_common](#)

#### Public Attributes

- [bpki\\_ta](#)
- [https\\_server\\_host](#)
- [https\\_server\\_port](#)
- [irbe\\_cert](#)
- [pubd\\_cert](#)
- [pubd\\_key](#)
- [publication\\_base](#)
- [sql](#)

#### Static Public Attributes

- [https\\_ta\\_cache](#) = None  
*HTTPS trust anchor cache, to avoid regenerating it for every TLS connection.*

### 3.29.1 Detailed Description

A container for various pubd parameters.

Definition at line 32 of file pubd.py.

### 3.29.2 Member Function Documentation

#### 3.29.2.1 def pubd.pubd\_context.\_\_init\_\_ ( self, cfg)

Definition at line 35 of file pubd.py.

#### 3.29.2.2 def pubd.pubd\_context.build\_https\_ta\_cache ( self)

Build dynamic TLS trust anchors.

Definition at line 97 of file pubd.py.

**3.29.2.3 def pubd.pubd\_context.clear\_https\_ta\_cache ( self)**

Clear dynamic TLS trust anchors.

Definition at line 90 of file pubd.py.

**3.29.2.4 def pubd.pubd\_context.client\_handler ( self, query, path)**

Process one PDU from a client.

Definition at line 67 of file pubd.py.

**3.29.2.5 def pubd.pubd\_context.control\_handler ( self, query, path)**

Process one PDU from the IRBE.

Definition at line 57 of file pubd.py.

**3.29.2.6 def pubd.pubd\_context.handler\_common ( self, query, client, certs, crt = None)**

Common PDU handler code.

Definition at line 49 of file pubd.py.

**3.29.3 Member Data Documentation****3.29.3.1 pubd.pubd\_context.bpki\_ta**

Definition at line 39 of file pubd.py.

**3.29.3.2 pubd.pubd\_context.https\_server\_host**

Definition at line 44 of file pubd.py.

**3.29.3.3 pubd.pubd\_context.https\_server\_port**

Definition at line 45 of file pubd.py.

**3.29.3.4 pubd.pubd\_context.https\_ta\_cache = None [static]**

HTTPS trust anchor cache, to avoid regenerating it for every TLS connection.

Definition at line 88 of file pubd.py.



**3.29.3.5 pubd.pubd\_context.irbe\_cert**

Definition at line 40 of file pubd.py.

**3.29.3.6 pubd.pubd\_context.pubd\_cert**

Definition at line 41 of file pubd.py.

**3.29.3.7 pubd.pubd\_context.pubd\_key**

Definition at line 42 of file pubd.py.

**3.29.3.8 pubd.pubd\_context.publication\_base**

Definition at line 47 of file pubd.py.

**3.29.3.9 pubd.pubd\_context.sql**

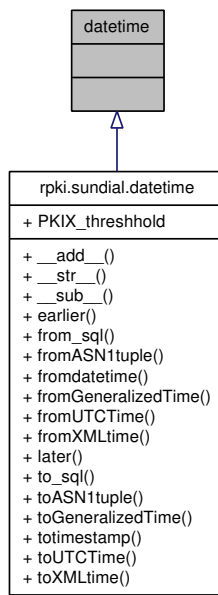
Definition at line 37 of file pubd.py.

The documentation for this class was generated from the following file:

- [pubd.py \(1880\)](#)

### 3.30 datetime Class Reference

Inheritance diagram for datetime:

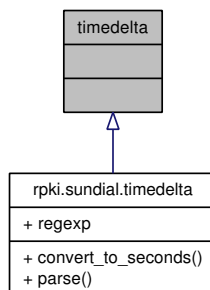


The documentation for this class was generated from the following file:

- [sundial.py \(1915\)](#)

### 3.31 timedelta Class Reference

Inheritance diagram for timedelta:

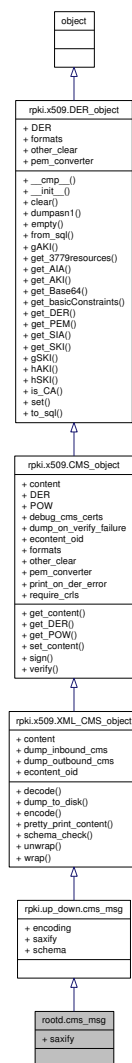


The documentation for this class was generated from the following file:

- [sundial.py \(1915\)](#)

### 3.32 rootd.cms\_msg Class Reference

Inheritance diagram for rootd.cms\_msg:



### Static Public Attributes

- [saxify](#) = sax\_handler.saxify

#### 3.32.1 Detailed Description

Definition at line 166 of file rootd.py.

#### 3.32.2 Member Data Documentation

##### 3.32.2.1 rootd.cms\_msg.saxify = sax\_handler.saxify [static]

Reimplemented from [rpki.up\\_down.cms\\_msg](#).

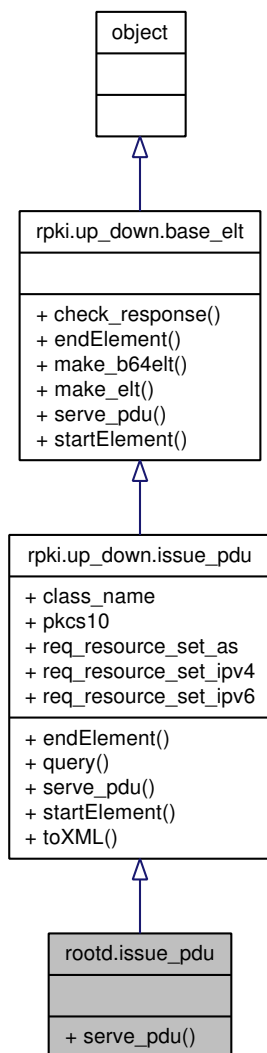
Definition at line 167 of file rootd.py.

The documentation for this class was generated from the following file:

- [rootd.py](#) (1974)

### 3.33 rootd.issue\_pdu Class Reference

Inheritance diagram for rootd.issue\_pdu:



#### Public Member Functions

- def [serve\\_pdu](#)

### 3.33.1 Detailed Description

Definition at line 80 of file rootd.py.

### 3.33.2 Member Function Documentation

#### 3.33.2.1 def rootd.issue\_pdu.serve\_pdu ( *self*, *q\_msg*, *r\_msg*, *child*)

Serve one issue request PDU.

Reimplemented from [rpki.up\\_down.issue\\_pdu](#).

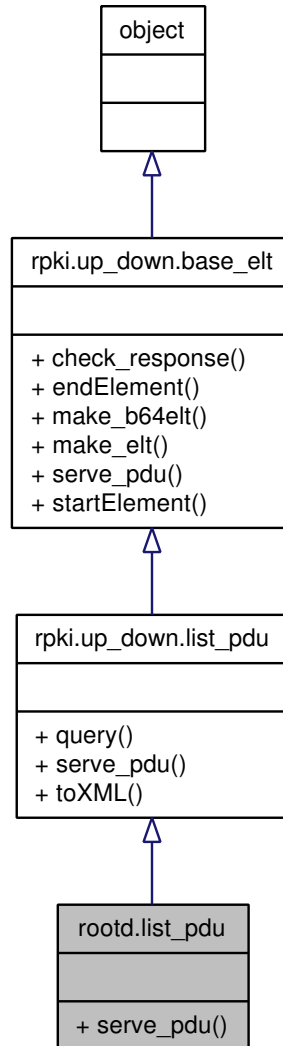
Definition at line 81 of file rootd.py.

The documentation for this class was generated from the following file:

- [rootd.py](#) (1974)

### 3.34 rootd.list\_pdu Class Reference

Inheritance diagram for rootd.list\_pdu:



#### Public Member Functions

- def [serve\\_pdu](#)

### 3.34.1 Detailed Description

Definition at line 75 of file rootd.py.

### 3.34.2 Member Function Documentation

#### 3.34.2.1 def rootd.list\_pdu.serve\_pdu (*self*, *q\_msg*, *r\_msg*, *child*)

Serve one "list" PDU.

Reimplemented from [rpki.up\\_down.list\\_pdu](#).

Definition at line 76 of file rootd.py.

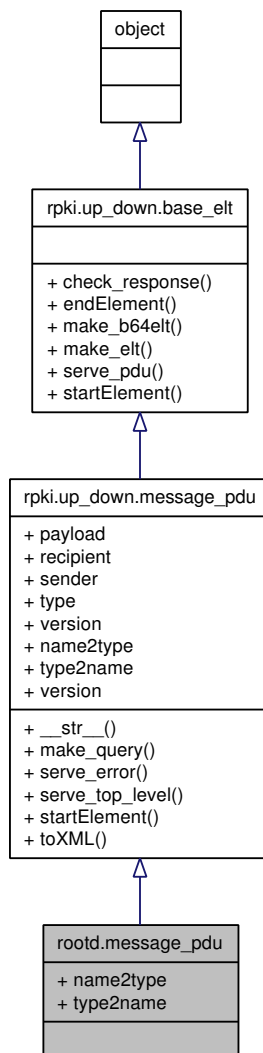
The documentation for this class was generated from the following file:

- [rootd.py](#) (1974)



### 3.35 rootd.message\_pdu Class Reference

Inheritance diagram for rootd.message\_pdu:



#### Static Public Attributes

- dictionary `name2type`
- tuple `type2name` = `dict((v,k) for k,v in name2type.items())`

### 3.35.1 Detailed Description

Definition at line 152 of file rootd.py.

### 3.35.2 Member Data Documentation

#### 3.35.2.1 dictionary rootd.message\_pdu.name2type [static]

Initial value:

```
{
    "list"           : list_pdu,
    "list_response"  : rpki.up_down.list_response_pdu,
    "issue"          : issue_pdu,
    "issue_response" : rpki.up_down.issue_response_pdu,
    "revoke"         : revoke_pdu,
    "revoke_response": rpki.up_down.revoke_response_pdu,
    "error_response" : rpki.up_down.error_response_pdu }
```

Reimplemented from [rpki.up\\_down.message\\_pdu](#).

Definition at line 153 of file rootd.py.

#### 3.35.2.2 tuple rootd.message\_pdu.type2name = dict((v,k) for k,v in name2type.items()) [static]

Reimplemented from [rpki.up\\_down.message\\_pdu](#).

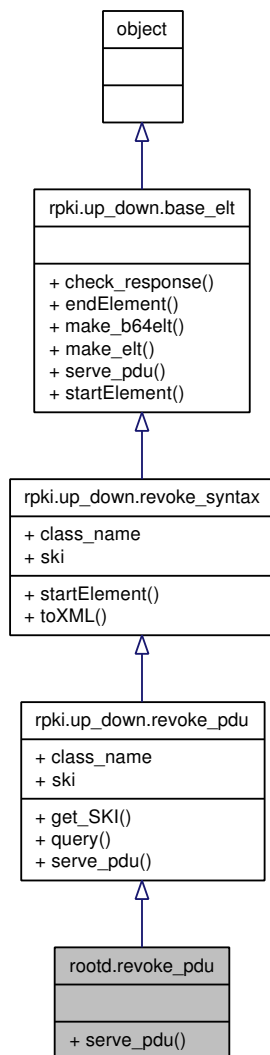
Definition at line 161 of file rootd.py.

The documentation for this class was generated from the following file:

- [rootd.py \(1974\)](#)

### 3.36 rootd.revoke\_pdu Class Reference

Inheritance diagram for rootd.revoke\_pdu:



#### Public Member Functions

- def [serve\\_pdu](#)

### 3.36.1 Detailed Description

Definition at line 142 of file rootd.py.

### 3.36.2 Member Function Documentation

#### 3.36.2.1 def rootd.revoke\_pdu.serve\_pdu (*self*, *q\_msg*, *r\_msg*, *child*)

Serve one revoke request PDU.

Reimplemented from [rpki.up\\_down.revoke\\_pdu](#).

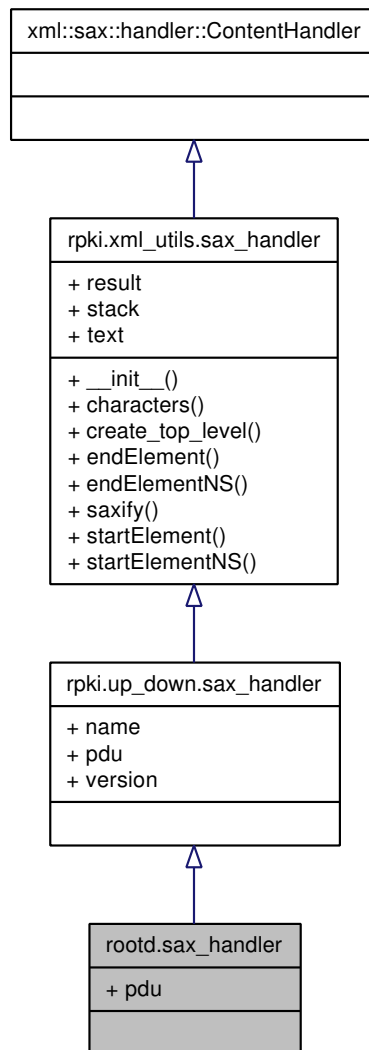
Definition at line 143 of file rootd.py.

The documentation for this class was generated from the following file:

- [rootd.py](#) (1974)

### 3.37 rootd.sax\_handler Class Reference

Inheritance diagram for rootd.sax\_handler:



#### Static Public Attributes

- `pdu` = `message_pdu`

### 3.37.1 Detailed Description

Definition at line 163 of file rootd.py.

### 3.37.2 Member Data Documentation

#### 3.37.2.1 rootd.sax\_handler.pdu = message\_pdu [static]

Reimplemented from [rpki.up\\_down.sax\\_handler](#).

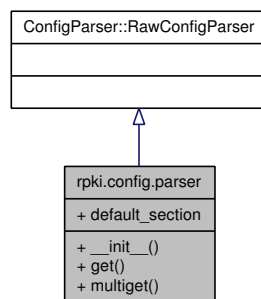
Definition at line 164 of file rootd.py.

The documentation for this class was generated from the following file:

- [rootd.py](#) (1974)

## 3.38 rpki.config.parser Class Reference

Inheritance diagram for rpki.config.parser:



### Public Member Functions

- def [\\_\\_init\\_\\_](#)
- def [get](#)
- def [multiget](#)

### Public Attributes

- [default\\_section](#)

### 3.38.1 Detailed Description

Definition at line 23 of file config.py.

### 3.38.2 Member Function Documentation

#### 3.38.2.1 def rpki.config.parser.\_\_init\_\_ ( *self*, *file* = None, *section* = None)

Initialize this parser.

Definition at line 25 of file config.py.

#### 3.38.2.2 def rpki.config.parser.get ( *self*, *option*, *default* = None, *section* = None)

Get an option, perhaps with a default value.

Definition at line 49 of file config.py.

#### 3.38.2.3 def rpki.config.parser.multiget ( *self*, *option*, *section* = None)

Parse OpenSSL-style foo.0, foo.1, ... subscripted options.

Returns a list of values matching the specified option name.

Definition at line 32 of file config.py.

### 3.38.3 Member Data Documentation

#### 3.38.3.1 rpki.config.parser.default\_section

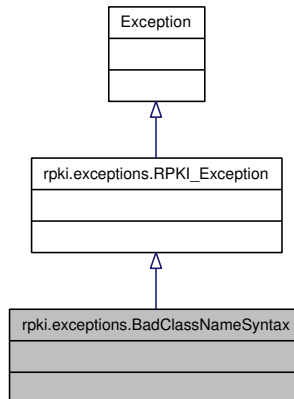
Definition at line 30 of file config.py.

The documentation for this class was generated from the following file:

- [config.py \(1873\)](#)

### 3.39 rpki.exceptions.BadClassNameSyntax Class Reference

Inheritance diagram for rpki.exceptions.BadClassNameSyntax:



#### 3.39.1 Detailed Description

Illegal syntax for a class\_name.

Definition at line 53 of file exceptions.py.

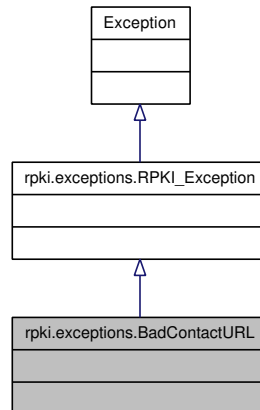
The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)



### 3.40 rpki.exceptions.BadContactURL Class Reference

Inheritance diagram for rpki.exceptions.BadContactURL:



#### 3.40.1 Detailed Description

Error trying to parse up-down protocol contact URL.

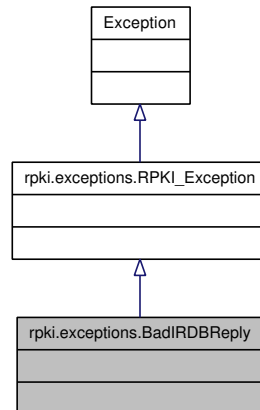
Definition at line 50 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.41 rpki.exceptions.BadIRDBReply Class Reference

Inheritance diagram for rpki.exceptions.BadIRDBReply:



#### 3.41.1 Detailed Description

Unexpected reply to IRDB query.

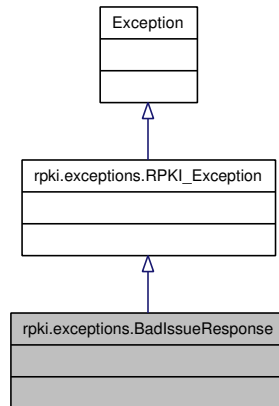
Definition at line 86 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.42 rpki.exceptions.BadIssueResponse Class Reference

Inheritance diagram for rpki.exceptions.BadIssueResponse:



#### 3.42.1 Detailed Description

`issue_response` PDU with wrong number of classes or certificates.

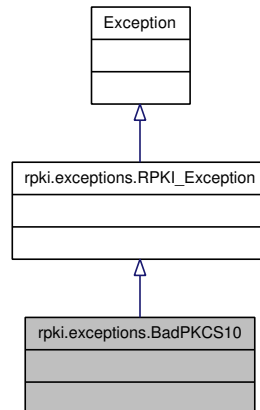
Definition at line 56 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.43 rpki.exceptions.BadPKCS10 Class Reference

Inheritance diagram for rpki.exceptions.BadPKCS10:



#### 3.43.1 Detailed Description

Bad PKCS #10 object.

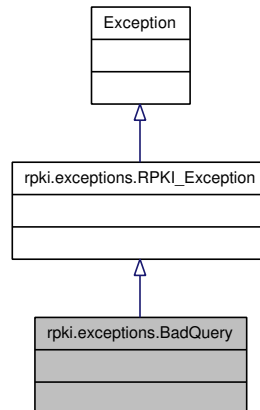
Definition at line 62 of file exceptions.py.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.44 rpki.exceptions.BadQuery Class Reference

Inheritance diagram for rpki.exceptions.BadQuery:



#### 3.44.1 Detailed Description

Unexpected protocol query.

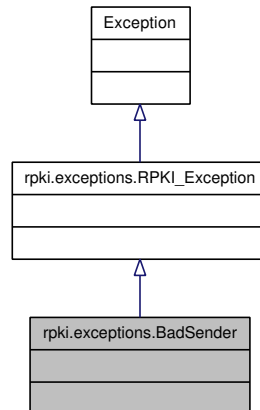
Definition at line 32 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.45 rpki.exceptions.BadSender Class Reference

Inheritance diagram for rpki.exceptions.BadSender:



#### 3.45.1 Detailed Description

Unexpected XML sender value.

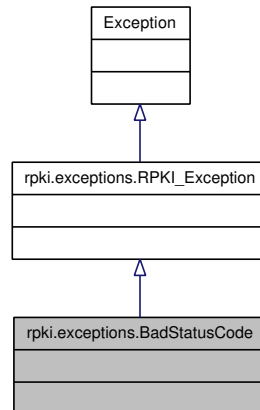
Definition at line 74 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.46 rpki.exceptions.BadStatusCode Class Reference

Inheritance diagram for rpki.exceptions.BadStatusCode:



#### 3.46.1 Detailed Description

Unrecognized protocol status code.

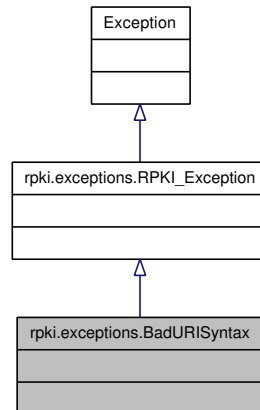
Definition at line 29 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.47 rpki.exceptions.BadURISyntax Class Reference

Inheritance diagram for rpki.exceptions.BadURISyntax:



#### 3.47.1 Detailed Description

Illegal syntax for a URI.

Definition at line 26 of file `exceptions.py`.

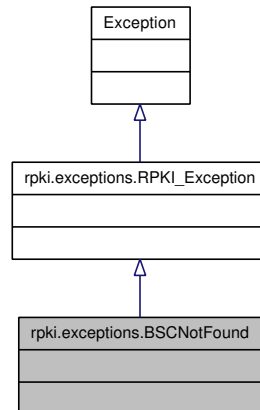
The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)



### 3.48 rpki.exceptions.BSCNotFound Class Reference

Inheritance diagram for rpki.exceptions.BSCNotFound:



#### 3.48.1 Detailed Description

Could not find specified BSC in database.

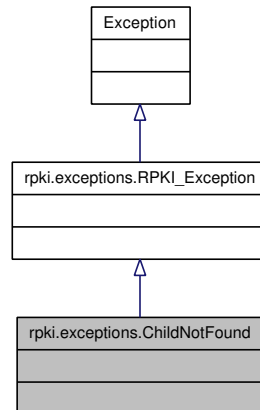
Definition at line 71 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.49 rpki.exceptions.ChildNotFound Class Reference

Inheritance diagram for rpki.exceptions.ChildNotFound:



#### 3.49.1 Detailed Description

Could not find specified child in database.

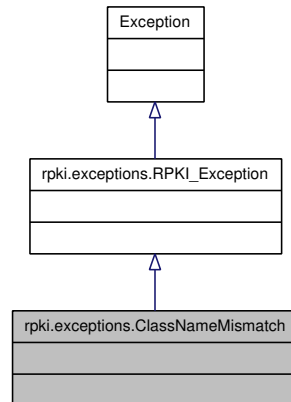
Definition at line 68 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.50 rpki.exceptions.ClassNameMismatch Class Reference

Inheritance diagram for rpki.exceptions.ClassNameMismatch:



#### 3.50.1 Detailed Description

`class_name` does not match child context.

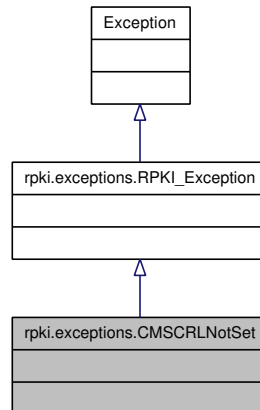
Definition at line 77 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.51 rpki.exceptions.CMSCRLNotSet Class Reference

Inheritance diagram for rpki.exceptions.CMSCRLNotSet:



#### 3.51.1 Detailed Description

CMS CRL has not been configured.

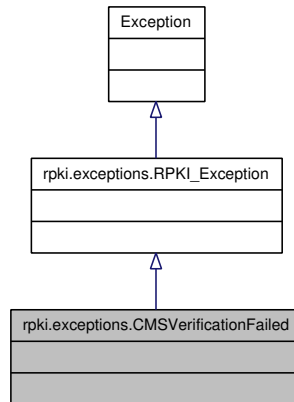
Definition at line 125 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.52 rpki.exceptions.CMSVerificationFailed Class Reference

Inheritance diagram for rpki.exceptions.CMSVerificationFailed:



#### 3.52.1 Detailed Description

Verification of a CMS message failed.

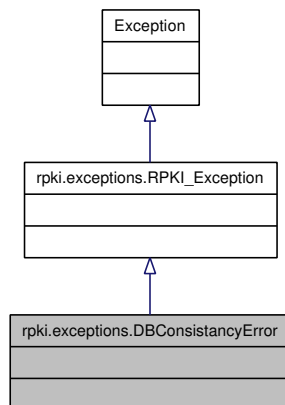
Definition at line 38 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.53 rpki.exceptions.DBConsistencyError Class Reference

Inheritance diagram for rpki.exceptions.DBConsistencyError:



#### 3.53.1 Detailed Description

Found multiple matches for a database query that shouldn't ever return that.

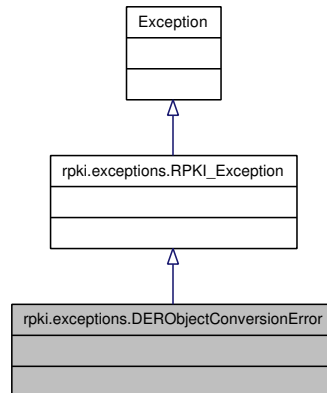
Definition at line 35 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.54 rpki.exceptions.DERObjectConversionError Class Reference

Inheritance diagram for rpki.exceptions.DERObjectConversionError:



#### 3.54.1 Detailed Description

Error trying to convert a DER-based object from one representation to another.

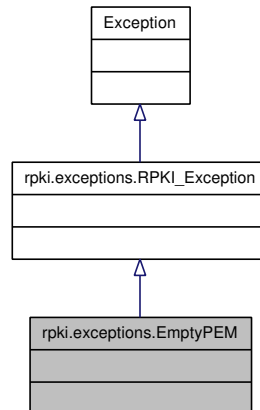
Definition at line 44 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.55 rpki.exceptions.EmptyPEM Class Reference

Inheritance diagram for rpki.exceptions.EmptyPEM:



#### 3.55.1 Detailed Description

Couldn't find PEM block to convert.

Definition at line 107 of file `exceptions.py`.

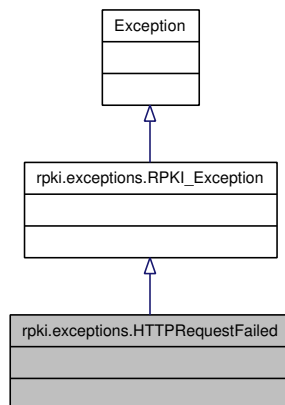
The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)



### 3.56 rpki.exceptions.HTTPRequestFailed Class Reference

Inheritance diagram for rpki.exceptions.HTTPRequestFailed:



#### 3.56.1 Detailed Description

HTTP request failed.

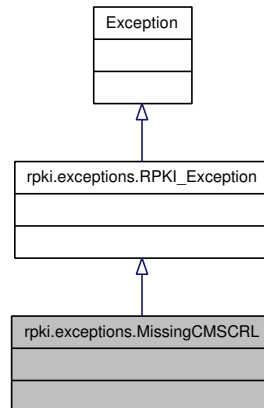
Definition at line 41 of file exceptions.py.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.57 rpki.exceptions.MissingCMSCRL Class Reference

Inheritance diagram for rpki.exceptions.MissingCMSCRL:



#### 3.57.1 Detailed Description

Didn't receive CMS CRL when expecting one.

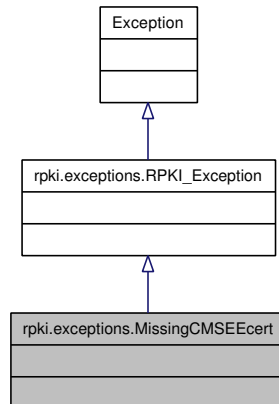
Definition at line 119 of file exceptions.py.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.58 rpki.exceptions.MissingCMSEECert Class Reference

Inheritance diagram for rpki.exceptions.MissingCMSEECert:



#### 3.58.1 Detailed Description

Didn't receive CMS EE cert when expecting one.

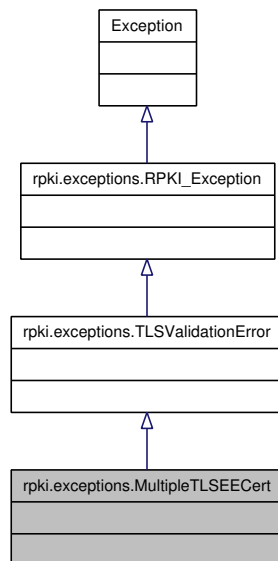
Definition at line 116 of file exceptions.py.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.59 rpki.exceptions.MultipleTLSEECert Class Reference

Inheritance diagram for rpki.exceptions.MultipleTLSEECert:



#### 3.59.1 Detailed Description

Received more than one TLS EE certificate.

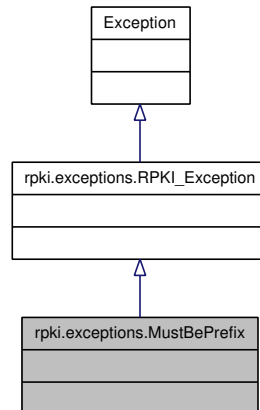
Definition at line 98 of file exceptions.py.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

## 3.60 rpki.exceptions.MustBePrefix Class Reference

Inheritance diagram for rpki.exceptions.MustBePrefix:



### 3.60.1 Detailed Description

Resource range cannot be expressed as a prefix.

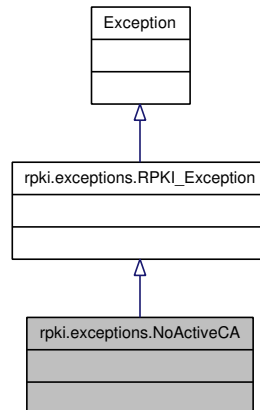
Definition at line 92 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.61 rpki.exceptions.NoActiveCA Class Reference

Inheritance diagram for rpki.exceptions.NoActiveCA:



#### 3.61.1 Detailed Description

No active ca\_detail for specified class.

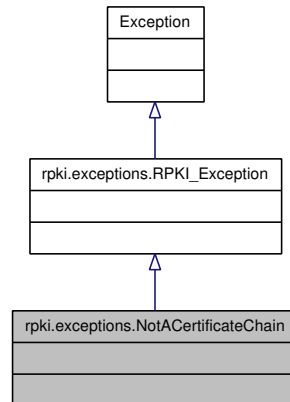
Definition at line 131 of file exceptions.py.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.62 rpki.exceptions.NotACertificateChain Class Reference

Inheritance diagram for rpki.exceptions.NotACertificateChain:



#### 3.62.1 Detailed Description

Certificates don't form a proper chain.

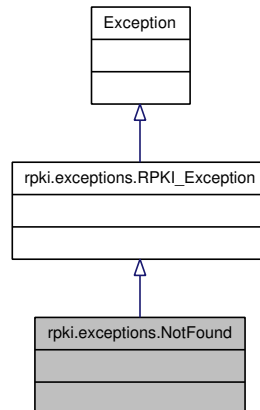
Definition at line 47 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.63 rpki.exceptions.NotFound Class Reference

Inheritance diagram for rpki.exceptions.NotFound:



#### 3.63.1 Detailed Description

Object not found in database.

Definition at line 89 of file `exceptions.py`.

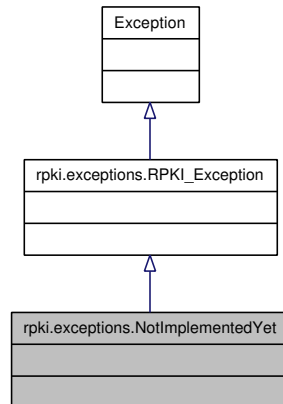
The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)



### 3.64 rpki.exceptions.NotImplementedYet Class Reference

Inheritance diagram for rpki.exceptions.NotImplementedYet:



#### 3.64.1 Detailed Description

Internal error -- not implemented yet.

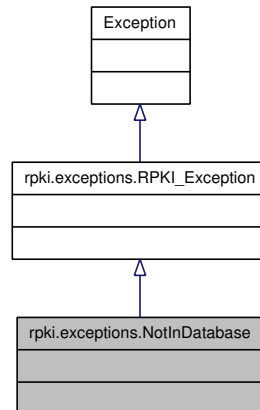
Definition at line 59 of file exceptions.py.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.65 rpki.exceptions.NotInDatabase Class Reference

Inheritance diagram for rpki.exceptions.NotInDatabase:



#### 3.65.1 Detailed Description

Lookup failed for an object expected to be in the database.

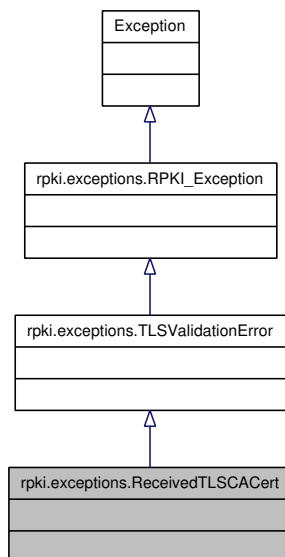
Definition at line 23 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.66 rpki.exceptions.ReceivedTLSCACert Class Reference

Inheritance diagram for rpki.exceptions.ReceivedTLSCACert:



#### 3.66.1 Detailed Description

Received CA certificate via TLS.

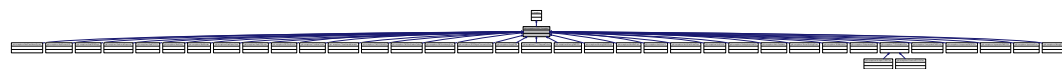
Definition at line 101 of file exceptions.py.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.67 rpki.exceptions.RPKI\_Exception Class Reference

Inheritance diagram for rpki.exceptions.RPKI\_Exception:



#### 3.67.1 Detailed Description

Base class for RPKI exceptions.

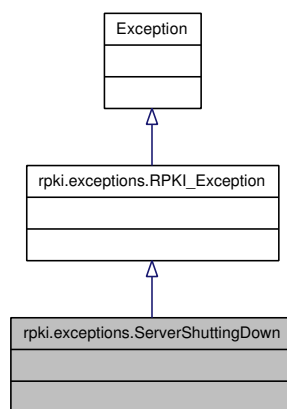
Definition at line 20 of file exceptions.py.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.68 rpki.exceptions.ServerShuttingDown Class Reference

Inheritance diagram for rpki.exceptions.ServerShuttingDown:



#### 3.68.1 Detailed Description

`Server is shutting down.`

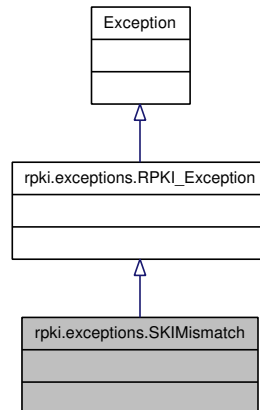
Definition at line 128 of file exceptions.py.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.69 rpki.exceptions.SKIMismatch Class Reference

Inheritance diagram for rpki.exceptions.SKIMismatch:



#### 3.69.1 Detailed Description

SKI value in response does not match request.

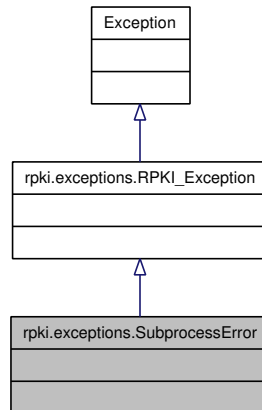
Definition at line 80 of file exceptions.py.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.70 rpki.exceptions.SubprocessError Class Reference

Inheritance diagram for rpki.exceptions.SubprocessError:



#### 3.70.1 Detailed Description

Subprocess returned unexpected error.

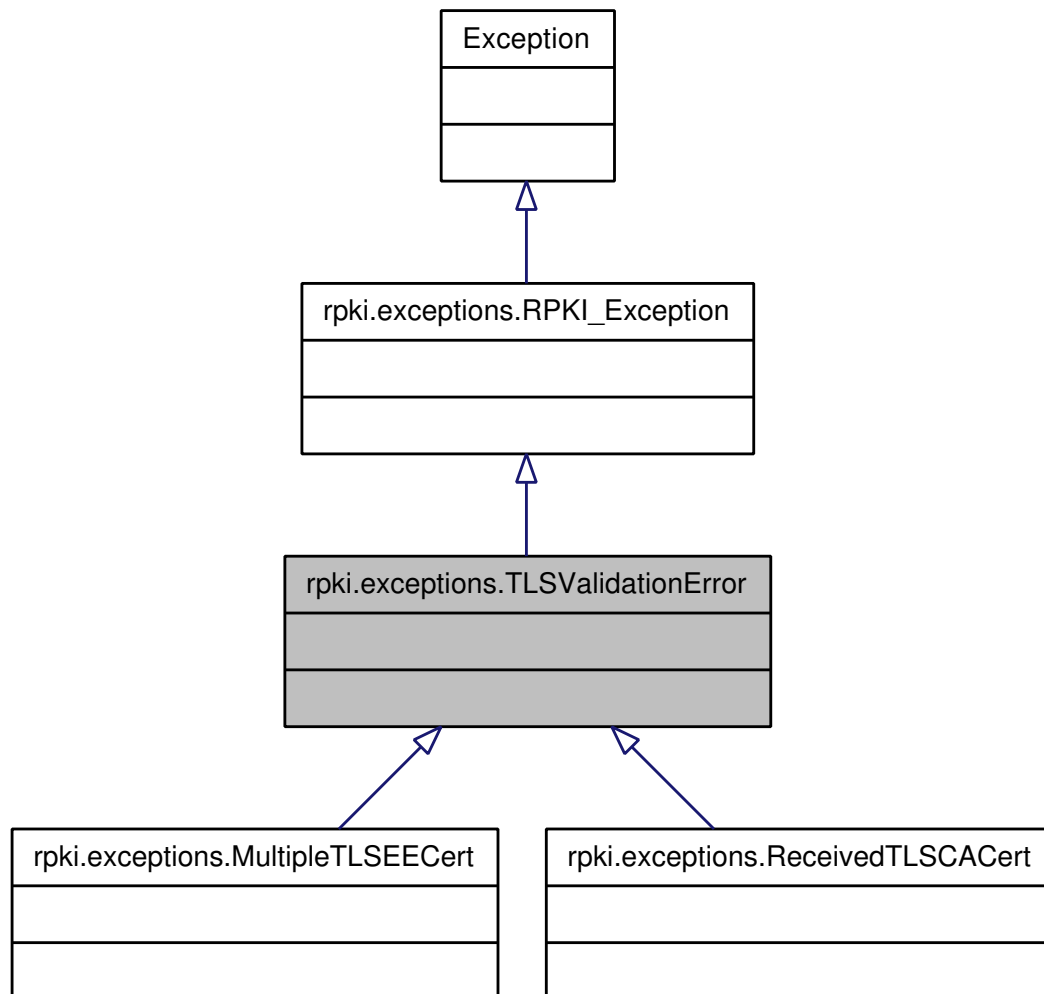
Definition at line 83 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.71 rpki.exceptions.TLSValidationError Class Reference

Inheritance diagram for rpki.exceptions.TLSValidationError:



#### 3.71.1 Detailed Description

TLS certificate validation error.

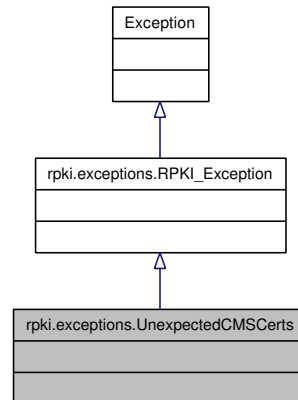
Definition at line 95 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.72 rpki.exceptions.UnexpectedCMSCerts Class Reference

Inheritance diagram for rpki.exceptions.UnexpectedCMSCerts:



#### 3.72.1 Detailed Description

Received CMS certs when not expecting any.

Definition at line 110 of file exceptions.py.

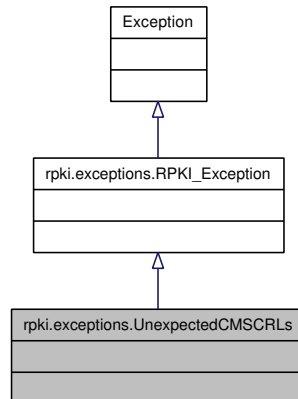
The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)



### 3.73 rpki.exceptions.UnexpectedCMSCRLs Class Reference

Inheritance diagram for rpki.exceptions.UnexpectedCMSCRLs:



#### 3.73.1 Detailed Description

Received CMS CRLs when not expecting any.

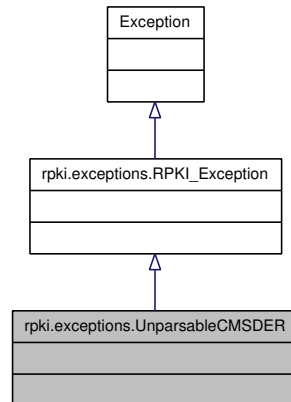
Definition at line 113 of file exceptions.py.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.74 rpki.exceptions.UnparsableCMSDER Class Reference

Inheritance diagram for rpki.exceptions.UnparsableCMSDER:



#### 3.74.1 Detailed Description

Alleged CMS DER wasn't parsable.

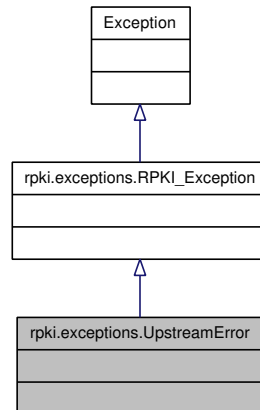
Definition at line 122 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.75 rpki.exceptions.UpstreamError Class Reference

Inheritance diagram for rpki.exceptions.UpstreamError:



#### 3.75.1 Detailed Description

Received an error from upstream.

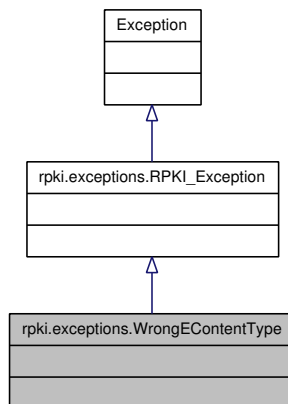
Definition at line 65 of file `exceptions.py`.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.76 rpki.exceptions.WrongEContentType Class Reference

Inheritance diagram for rpki.exceptions.WrongEContentType:



#### 3.76.1 Detailed Description

Received wrong CMS eContentType.

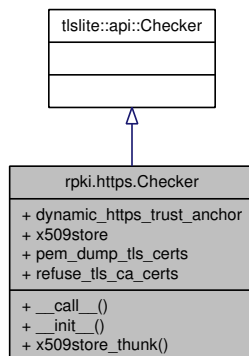
Definition at line 104 of file exceptions.py.

The documentation for this class was generated from the following file:

- [exceptions.py \(2000\)](#)

### 3.77 rpki.https.Checker Class Reference

Inheritance diagram for rpki.https.Checker:



### Public Member Functions

- `def __call__`
- `def __init__`
- `def x509store_thunk`

### Public Attributes

- `dynamic_https_trust_anchor`
- `x509store`

### Static Public Attributes

- `pem_dump_tls_certs = False`  
*Vile debugging hack.*
- `refuse_tls_ca_certs = False`  
*Raise an exception upon receiving CA certificates via TLS rather than just quietly ignoring them.*

#### 3.77.1 Detailed Description

Derived class to handle X.509 client certificate checking.

Definition at line 55 of file https.py.

#### 3.77.2 Member Function Documentation

##### 3.77.2.1 `def rpki.https.Checker.__call__(self, tlsConnection)`

POW/OpenSSL-based certificate checker.

Given our BPKI model, we're only interested in the TLS EE certificates.

Definition at line 95 of file https.py.

##### 3.77.2.2 `def rpki.https.Checker.__init__(self, trust_anchor = None, dynamic_https_trust_anchor = None)`

Initialize our modified certificate checker.

Definition at line 69 of file https.py.

### 3.77.2.3 def rpki.https.Checker.x509store\_thunk ( self)

Definition at line 89 of file https.py.

## 3.77.3 Member Data Documentation

### 3.77.3.1 rpki.https.Checker.dynamic\_https\_trust\_anchor

Definition at line 72 of file https.py.

### 3.77.3.2 rpki.https.Checker::pem\_dump\_tls\_certs = False [static]

Vile debugging hack.

Definition at line 67 of file https.py.

### 3.77.3.3 rpki.https.Checker::refuse\_tls\_ca\_certs = False [static]

Raise an exception upon receiving CA certificates via TLS rather than just quietly ignoring them.

Definition at line 62 of file https.py.

### 3.77.3.4 rpki.https.Checker.x509store

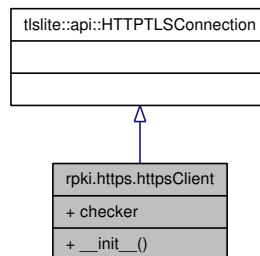
Definition at line 77 of file https.py.

The documentation for this class was generated from the following file:

- [https.py \(1873\)](#)

## 3.78 rpki.https.httpsClient Class Reference

Inheritance diagram for rpki.https.httpsClient:



## Public Member Functions

- [def \\_\\_init\\_\\_](#)

## Public Attributes

- [checker](#)

### 3.78.1 Detailed Description

Derived class to let us replace the default Checker.

Definition at line 138 of file https.py.

### 3.78.2 Member Function Documentation

**3.78.2.1** `def rpki.https.httpsClient.__init__(self, host, port = None, client_cert = None, client_key = None, server_ta = None, settings = None)`

Create a new httpsClient.

Definition at line 141 of file https.py.

### 3.78.3 Member Data Documentation

#### 3.78.3.1 rpki.https.httpsClient.checker

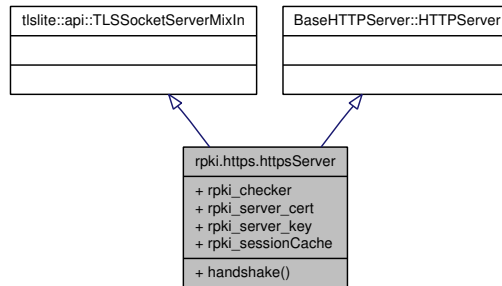
Definition at line 148 of file https.py.

The documentation for this class was generated from the following file:

- [https.py \(1873\)](#)

## 3.79 rpki.https.httpsServer Class Reference

Inheritance diagram for rpki.https.httpsServer:



### Public Member Functions

- def [handshake](#)

### Static Public Attributes

- [rpki\\_checker](#) = None
- [rpki\\_server\\_cert](#) = None
- [rpki\\_server\\_key](#) = None
- [rpki\\_sessionCache](#) = None

### 3.79.1 Detailed Description

Derived type to handle TLS aspects of HTTPS.

Definition at line 235 of file https.py.

### 3.79.2 Member Function Documentation

#### 3.79.2.1 def rpki.https.httpsServer.handshake ( *self*, *tlsConnection* )

TLS handshake handler.

Definition at line 243 of file https.py.



### 3.79.3 Member Data Documentation

#### 3.79.3.1 rpki.https.httpsServer.rpki\_checker = None [static]

Definition at line 241 of file https.py.

#### 3.79.3.2 rpki.https.httpsServer.rpki\_server\_cert = None [static]

Definition at line 240 of file https.py.

#### 3.79.3.3 rpki.https.httpsServer.rpki\_server\_key = None [static]

Definition at line 239 of file https.py.

#### 3.79.3.4 rpki.https.httpsServer.rpki\_sessionCache = None [static]

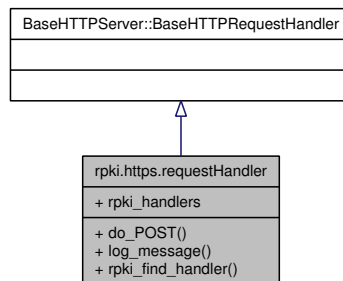
Definition at line 238 of file https.py.

The documentation for this class was generated from the following file:

- [https.py \(1873\)](#)

## 3.80 rpki.https.requestHandler Class Reference

Inheritance diagram for rpki.https.requestHandler:



### Public Member Functions

- def [do\\_POST](#)
- def [log\\_message](#)
- def [rpki\\_find\\_handler](#)

### Static Public Attributes

- `rpki_handlers` = None

#### 3.80.1 Detailed Description

Derived type to supply POST handler and override logging.

Definition at line 196 of file `https.py`.

#### 3.80.2 Member Function Documentation

##### 3.80.2.1 `def rpki.https.requestHandler.do_POST ( self )`

POST handler.

Definition at line 208 of file `https.py`.

##### 3.80.2.2 `def rpki.https.requestHandler.log_message ( self, format, args )`

Redirect HTTP server logging into our own logging system.

Definition at line 228 of file `https.py`.

##### 3.80.2.3 `def rpki.https.requestHandler.rpki_find_handler ( self )`

Helper method to search `self.rpki_handlers`.

Definition at line 201 of file `https.py`.

#### 3.80.3 Member Data Documentation

##### 3.80.3.1 `rpki.https.requestHandler.rpki_handlers = None` [static]

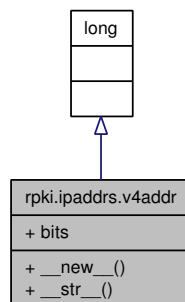
Definition at line 199 of file `https.py`.

The documentation for this class was generated from the following file:

- [https.py \(1873\)](#)

## 3.81 rpki.ipaddrs.v4addr Class Reference

Inheritance diagram for rpki.ipaddrs.v4addr:



### Public Member Functions

- def [\\_\\_new\\_\\_](#)
- def [\\_\\_str\\_\\_](#)

### Static Public Attributes

- int [bits](#) = 32

#### 3.81.1 Detailed Description

IPv4 address.

Derived from long, but supports IPv4 print syntax.

Definition at line 32 of file ipaddrs.py.

#### 3.81.2 Member Function Documentation

##### 3.81.2.1 def rpki.ipaddrs.v4addr.\_\_new\_\_(cls, x)

Construct a v4addr object.

Definition at line 40 of file ipaddrs.py.

### 3.81.2.2 def rpki.ipaddrs.v4addr.\_\_str\_\_(self)

Convert a v4addr object to string format.

Definition at line 48 of file ipaddrs.py.

## 3.81.3 Member Data Documentation

### 3.81.3.1 int rpki.ipaddrs.v4addr.bits = 32 [static]

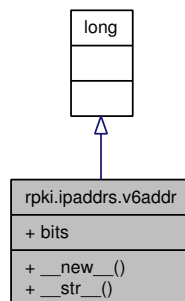
Definition at line 38 of file ipaddrs.py.

The documentation for this class was generated from the following file:

- [ipaddrs.py \(1873\)](#)

## 3.82 rpki.ipaddrs.v6addr Class Reference

Inheritance diagram for rpki.ipaddrs.v6addr:



### Public Member Functions

- [def \\_\\_new\\_\\_](#)
- [def \\_\\_str\\_\\_](#)

### Static Public Attributes

- [int bits = 128](#)

### 3.82.1 Detailed Description

IPv6 address.

Derived from long, but supports IPv6 print syntax.

Definition at line 52 of file ipaddrs.py.

### 3.82.2 Member Function Documentation

#### 3.82.2.1 def rpki.ipaddrs.v6addr.\_\_new\_\_ (cls, x)

Construct a v6addr object.

Definition at line 60 of file ipaddrs.py.

#### 3.82.2.2 def rpki.ipaddrs.v6addr.\_\_str\_\_ (self)

Convert a v6addr object to string format.

Definition at line 67 of file ipaddrs.py.

### 3.82.3 Member Data Documentation

#### 3.82.3.1 int rpki.ipaddrs.v6addr.bits = 128 [static]

Definition at line 58 of file ipaddrs.py.

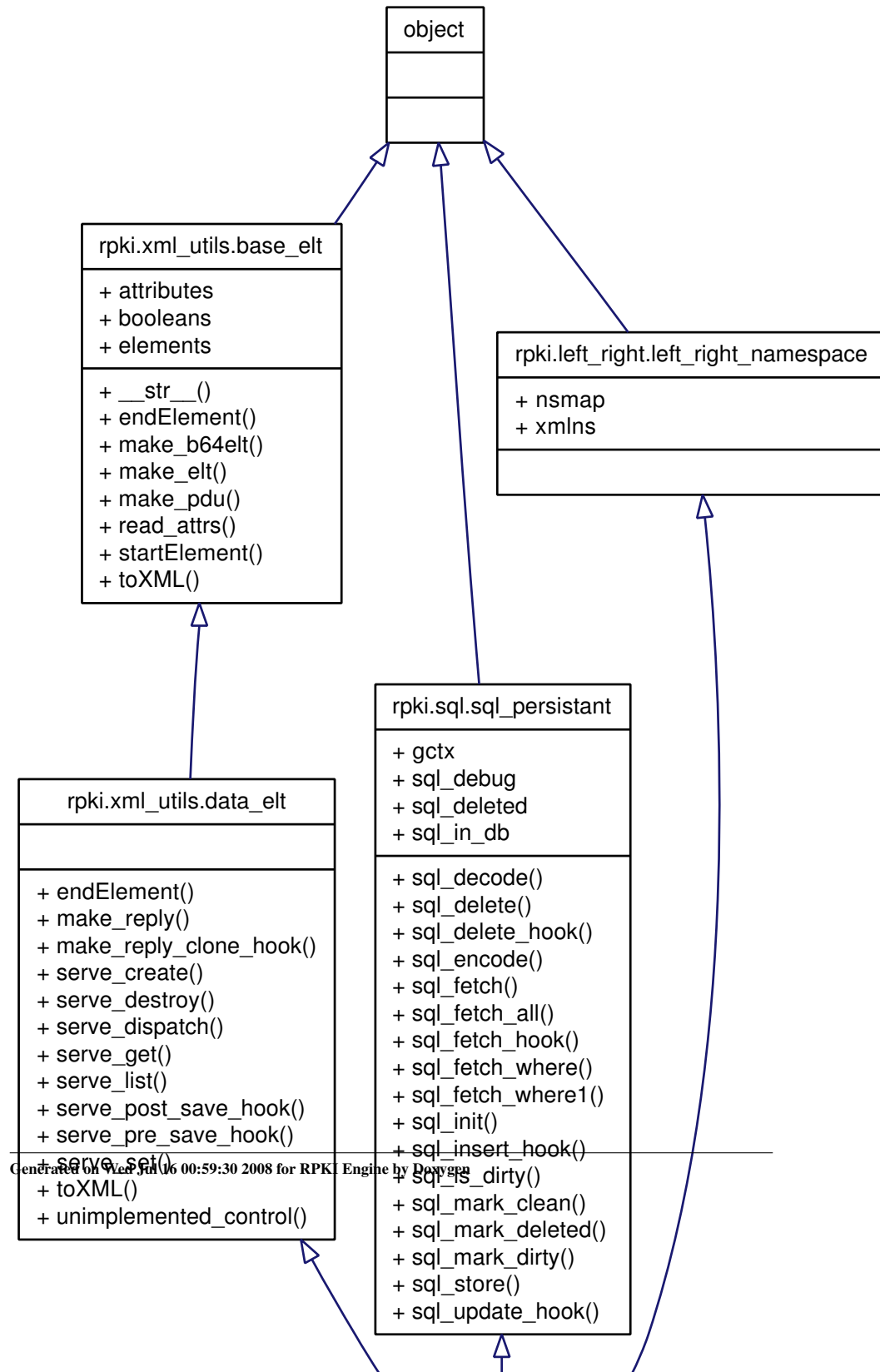
The documentation for this class was generated from the following file:

- [ipaddrs.py \(1873\)](#)



## 3.83 rpki.left\_right.bsc\_elt Class Reference

Inheritance diagram for rpki.left\_right.bsc\_elt:



### Public Member Functions

- def [children](#)
- def [parents](#)
- def [repositories](#)
- def [serve\\_pre\\_save\\_hook](#)

### Static Public Attributes

- tuple [attributes](#) = ("action", "tag", "self\_id", "bsc\_id", "key\_type", "hash\_alg", "key\_length")  
*XML attributes for this element.*
- tuple [booleans](#) = ("generate\_keypair",)  
*Boolean attributes (value "yes" or "no") for this element.*
- string [element\\_name](#) = "bsc"
- tuple [elements](#) = ("signing\_cert", "[signing\\_cert\\_crl](#)", "[pkcs10\\_request](#)")  
*XML elements contained by this element.*
- [pkcs10\\_request](#) = None
- [private\\_key\\_id](#) = None
- [signing\\_cert](#) = None
- [signing\\_cert\\_crl](#) = None
- tuple [sql\\_template](#)

#### 3.83.1 Detailed Description

<bsc/> (Business Signing Context) element.

Definition at line 235 of file left\_right.py.

#### 3.83.2 Member Function Documentation

##### 3.83.2.1 def rpki.left\_right.bsc\_elt.children (self)

Fetch all child objects that link to this BSC object.

Definition at line 262 of file left\_right.py.



### 3.83.2.2 def rpki.left\_right.bsc\_elt.parents ( self)

Fetch all parent objects that link to this BSC object.

Definition at line 258 of file left\_right.py.

### 3.83.2.3 def rpki.left\_right.bsc\_elt.repositories ( self)

Fetch all repository objects that link to this BSC object.

Definition at line 254 of file left\_right.py.

### 3.83.2.4 def rpki.left\_right.bsc\_elt.serve\_pre\_save\_hook ( self, q\_pdu, r\_pdu)

Extra server actions for bsc\_elt -- handle key generation.  
For now this only allows RSA with SHA-256.

Reimplemented from [rpki.xml\\_utils.data\\_elt](#).

Definition at line 266 of file left\_right.py.

## 3.83.3 Member Data Documentation

### 3.83.3.1 tuple rpki.left\_right.bsc\_elt.attributes = ("action", "tag", "self\_id", "bsc\_id", "key\_type", "hash\_alg", "key\_length") [static]

XML attributes for this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 239 of file left\_right.py.

### 3.83.3.2 tuple rpki.left\_right.bsc\_elt.booleans = ("generate\_keypair",) [static]

Boolean attributes (value "yes" or "no") for this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 241 of file left\_right.py.

### 3.83.3.3 string rpki.left\_right.bsc\_elt.element\_name = "bsc" [static]

Definition at line 238 of file left\_right.py.

**3.83.3.4 tuple rpki.left\_right.bsc\_elt.elements = ("signing\_cert", "signing\_cert\_crl", "pkcs10\_request") [static]**

XML elements contained by this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 240 of file left\_right.py.

**3.83.3.5 rpki.left\_right.bsc\_elt.pkcs10\_request = None [static]**

Definition at line 250 of file left\_right.py.

**3.83.3.6 rpki.left\_right.bsc\_elt.private\_key\_id = None [static]**

Definition at line 249 of file left\_right.py.

**3.83.3.7 rpki.left\_right.bsc\_elt.signing\_cert = None [static]**

Reimplemented in [irbe\\_cli.bsc\\_elt](#).

Definition at line 251 of file left\_right.py.

**3.83.3.8 rpki.left\_right.bsc\_elt.signing\_cert\_crl = None [static]**

Reimplemented in [irbe\\_cli.bsc\\_elt](#).

Definition at line 252 of file left\_right.py.

**3.83.3.9 tuple rpki.left\_right.bsc\_elt.sql\_template [static]**

**Initial value:**

```
rpki.sql.template("bsc", "bsc_id", "self_id", "hash_alg",
                  ("private_key_id", rpki.x509.RSA),
                  ("pkcs10_request", rpki.x509.PKCS10),
                  ("signing_cert", rpki.x509.X509),
                  ("signing_cert_crl", rpki.x509.CRL))
```

Definition at line 243 of file left\_right.py.

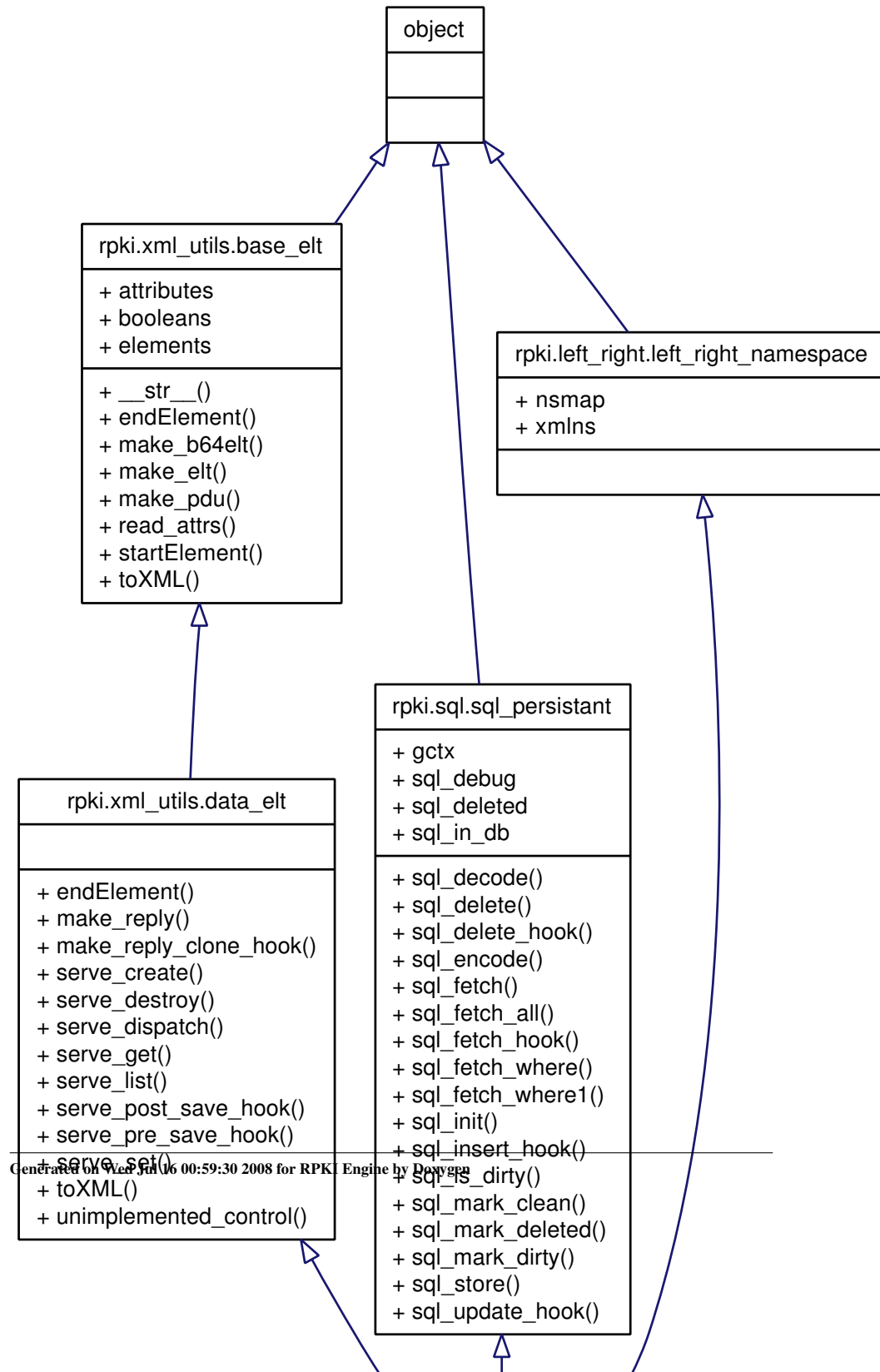
The documentation for this class was generated from the following file:

- [left\\_right.py \(2000\)](#)



### 3.84 rpki.left\_right.child\_elt Class Reference

Inheritance diagram for rpki.left\_right.child\_elt:



### Public Member Functions

- def [ca\\_from\\_class\\_name](#)
- def [child\\_certs](#)
- def [endElement](#)
- def [parents](#)
- def [serve\\_post\\_save\\_hook](#)
- def [serve\\_up\\_down](#)

### Static Public Attributes

- tuple [attributes](#) = ("action", "tag", "self\_id", "child\_id", "bsc\_id")  
*XML attributes for this element.*
- tuple [booleans](#) = ("reissue", )  
*Boolean attributes (value "yes" or "no") for this element.*
- [bpki\\_cert](#) = None
- [bpki\\_glue](#) = None
- [clear\\_https\\_ta\\_cache](#) = False
- string [element\\_name](#) = "child"
- tuple [elements](#) = ("bpki\_cert", "bpki\_glue")  
*XML elements contained by this element.*
- tuple [sql\\_template](#)

#### 3.84.1 Detailed Description

<child/> element.

Definition at line 366 of file left\_right.py.

#### 3.84.2 Member Function Documentation

##### 3.84.2.1 def rpki.left\_right.child\_elt.ca\_from\_class\_name ( self, class\_name )

Fetch the CA corresponding to an up-down class\_name.

Definition at line 390 of file left\_right.py.

### 3.84.2.2 def rpki.left\_right.child\_elt.child\_certs ( self, ca\_detail = None, ski = None, unique = False)

Fetch all child\_cert objects that link to this child object.

Definition at line 382 of file left\_right.py.

### 3.84.2.3 def rpki.left\_right.child\_elt.endElement ( self, stack, name, text)

Handle subelements of <child/> element. These require special handling because modifying them invalidates the HTTPS trust anchor cache.

Reimplemented from [rpki.xml\\_utils.data\\_elt](#).

Definition at line 407 of file left\_right.py.

### 3.84.2.4 def rpki.left\_right.child\_elt.parents ( self)

Fetch all parent objects that link to self object to which this child object links.

Definition at line 386 of file left\_right.py.

### 3.84.2.5 def rpki.left\_right.child\_elt.serve\_post\_save\_hook ( self, q\_pdu, r\_pdu)

Extra server actions for child\_elt.

Reimplemented from [rpki.xml\\_utils.data\\_elt](#).

Definition at line 400 of file left\_right.py.

### 3.84.2.6 def rpki.left\_right.child\_elt.serve\_up\_down ( self, query)

Outer layer of server handling for one up-down PDU from this child.

Definition at line 416 of file left\_right.py.

## 3.84.3 Member Data Documentation

### 3.84.3.1 tuple rpki.left\_right.child\_elt.attributes = ("action", "tag", "self\_id", "child\_id", "bsc\_id") [static]

XML attributes for this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 370 of file left\_right.py.

**3.84.3.2** `tuple rpki.left_right.child_elt.booleans = ("reissue",)` [static]

Boolean attributes (value "yes" or "no") for this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 372 of file `left_right.py`.

**3.84.3.3** `rpki.left_right.child_elt.bpki_cert = None` [static]

Definition at line 378 of file `left_right.py`.

**3.84.3.4** `rpki.left_right.child_elt.bpki_glue = None` [static]

Definition at line 379 of file `left_right.py`.

**3.84.3.5** `rpki.left_right.child_elt.clear_https_ta_cache = False` [static]

Definition at line 380 of file `left_right.py`.

**3.84.3.6** `string rpki.left_right.child_elt.element_name = "child"` [static]

Definition at line 369 of file `left_right.py`.

**3.84.3.7** `tuple rpki.left_right.child_elt.elements = ("bpki_cert", "bpki_glue")`  
[static]

XML elements contained by this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 371 of file `left_right.py`.

**3.84.3.8** `tuple rpki.left_right.child_elt.sql_template` [static]

**Initial value:**

```
rpki.sql.template("child", "child_id", "self_id", "bsc_id",
                  ("bpki_cert", rpki.x509.X509),
                  ("bpki_glue", rpki.x509.X509))
```

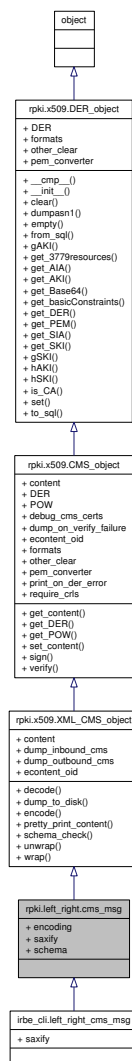
Definition at line 374 of file `left_right.py`.

The documentation for this class was generated from the following file:

- [left\\_right.py](#) (2000)

### 3.85 rpki.left\_right.cms\_msg Class Reference

Inheritance diagram for rpki.left\_right.cms\_msg:



#### Static Public Attributes

- string `encoding` = "us-ascii"
- `saxify` = `sax_handler.saxify`
- `schema` = `rpki.relaxng.left_right`



### 3.85.1 Detailed Description

Class to hold a CMS-signed left-right PDU.

Definition at line 820 of file left\_right.py.

### 3.85.2 Member Data Documentation

#### 3.85.2.1 string rpki.left\_right.cms\_msg.encoding = "us-ascii" [static]

Definition at line 823 of file left\_right.py.

#### 3.85.2.2 rpki.left\_right.cms\_msg.saxify = sax\_handler.saxify [static]

Reimplemented in [irbe\\_cli.left\\_right cms\\_msg](#).

Definition at line 825 of file left\_right.py.

#### 3.85.2.3 rpki.left\_right.cms\_msg.schema = rpki.relaxng.left\_right [static]

Definition at line 824 of file left\_right.py.

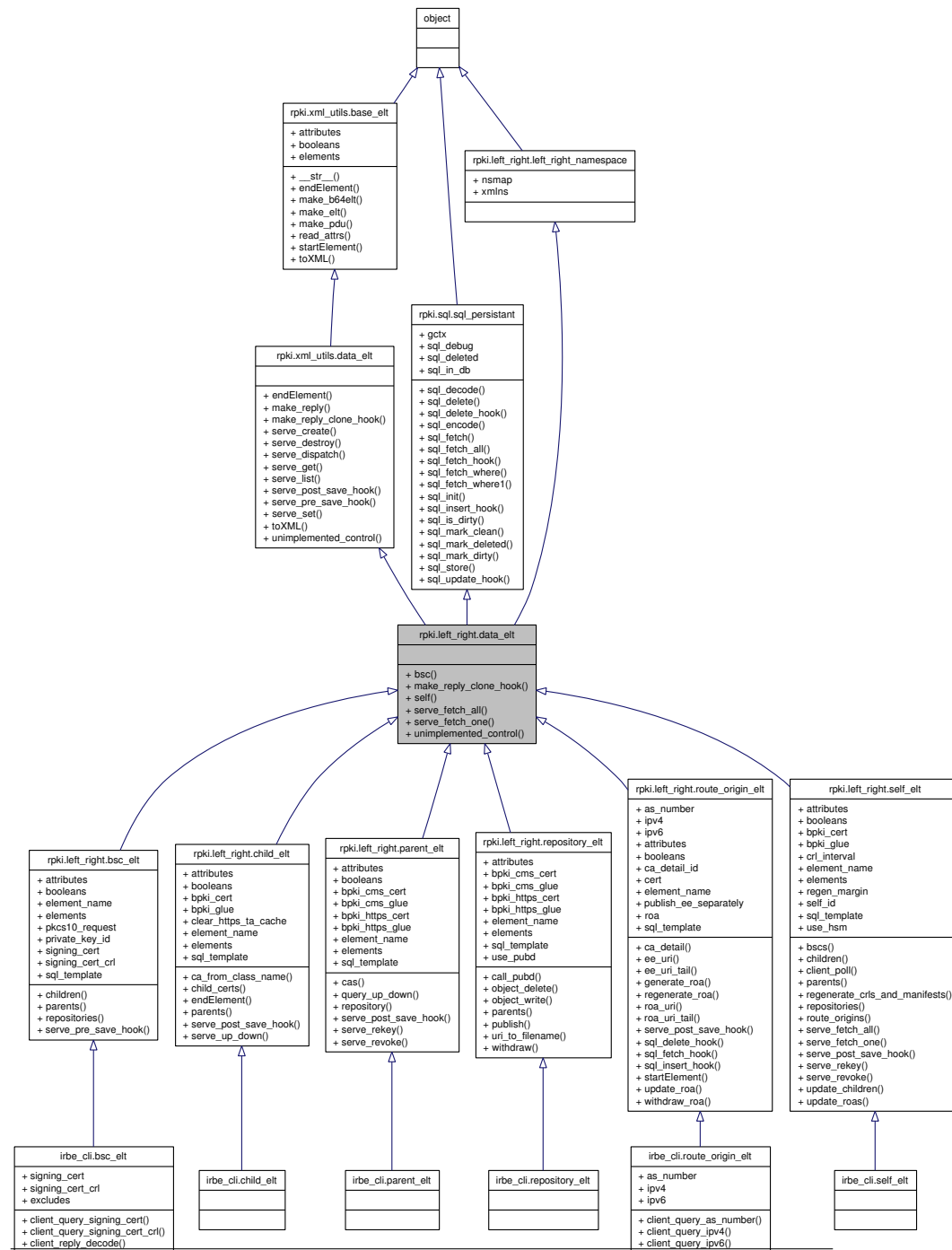
The documentation for this class was generated from the following file:

- [left\\_right.py](#) (2000)



## 3.86 rpki.left\_right.data\_elt Class Reference

Inheritance diagram for rpki.left\_right.data\_elt:



Generated on Wed Jul 16 00:59:30 2008 for RPKI Engine by Doxygen

## Public Member Functions

- def [bsc](#)
- def [make\\_reply\\_clone\\_hook](#)
- def [self](#)
- def [serve\\_fetch\\_all](#)
- def [serve\\_fetch\\_one](#)
- def [unimplemented\\_control](#)

### 3.86.1 Detailed Description

Virtual class for top-level left-right protocol data elements.

Definition at line 34 of file `left_right.py`.

### 3.86.2 Member Function Documentation

#### 3.86.2.1 def rpki.left\_right.data\_elt.bsc ( self)

Return BSC object to which this object links.

Definition at line 41 of file `left_right.py`.

#### 3.86.2.2 def rpki.left\_right.data\_elt.make\_reply\_clone\_hook ( self, r\_pdu)

Set `self_id` when cloning.

Reimplemented from [rpki.xml\\_utils.data\\_elt](#).

Definition at line 45 of file `left_right.py`.

#### 3.86.2.3 def rpki.left\_right.data\_elt.self ( this)

Fetch self object to which this object links.

Definition at line 37 of file `left_right.py`.

#### 3.86.2.4 def rpki.left\_right.data\_elt.serve\_fetch\_all ( self)

Find the objects on which a list method should operate.

Reimplemented in [rpki.left\\_right.self\\_elt](#).

Definition at line 60 of file `left_right.py`.

### 3.86.2.5 def rpki.left\_right.data\_elt.serve\_fetch\_one ( self)

Find the object on which a get, set, or destroy method should operate.

Reimplemented in [rpki.left\\_right.self\\_elt](#).

Definition at line 49 of file left\_right.py.

### 3.86.2.6 def rpki.left\_right.data\_elt.unimplemented\_control ( self, controls)

Uniform handling for unimplemented control operations.

Reimplemented from [rpki.xml\\_utils.data\\_elt](#).

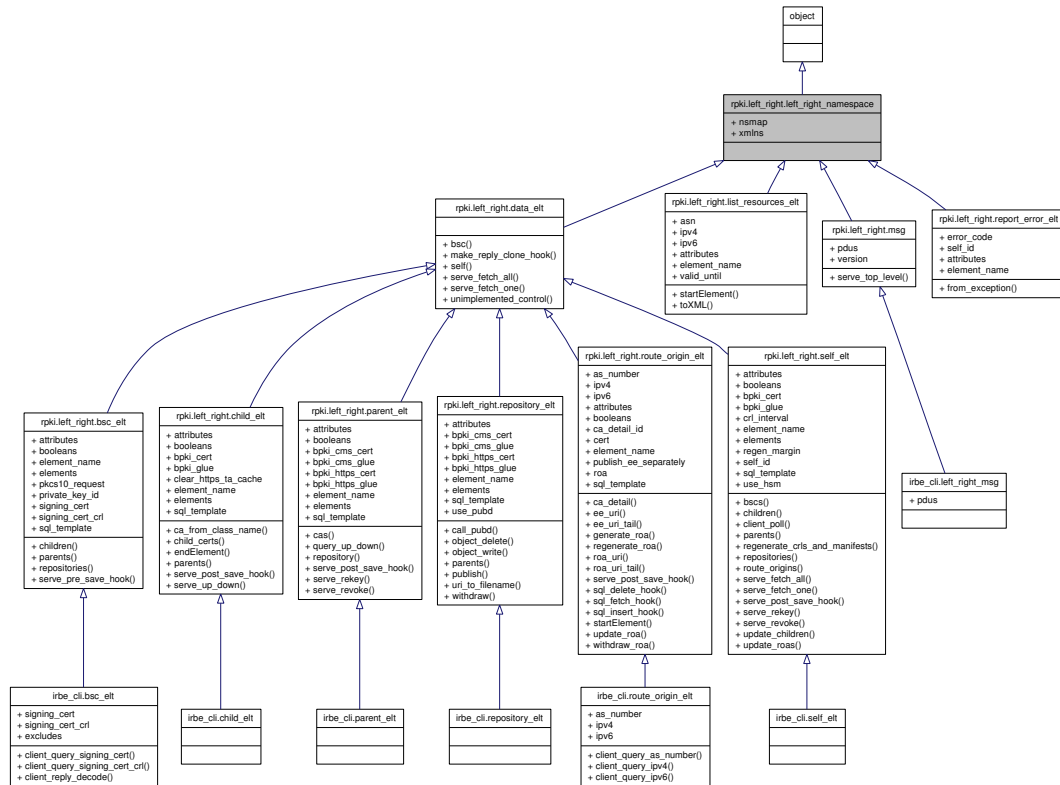
Definition at line 64 of file left\_right.py.

The documentation for this class was generated from the following file:

- [left\\_right.py](#) (2000)

### 3.87 rpki.left\_right.left\_right\_namespace Class Reference

Inheritance diagram for rpki.left\_right.left\_right\_namespace:



#### Static Public Attributes

- dictionary `nsmap` = { `None` : `xmlns` }
- string `xmlns` = "http://www.hactrn.net/uris/rpki/left-right-spec/"

#### 3.87.1 Detailed Description

XML namespace parameters for left-right protocol.

Definition at line 28 of file `left_right.py`.

### 3.87.2 Member Data Documentation

**3.87.2.1 dictionary** `rpki.left_right.left_right_namespace.nsmap` = { `None` : `xmlns` } `[static]`

Definition at line 32 of file `left_right.py`.

**3.87.2.2 string** `rpki.left_right.left_right_namespace.xmlns` = `"http://www.hactrn.net/uris/rpki/left-right-spec/"` `[static]`

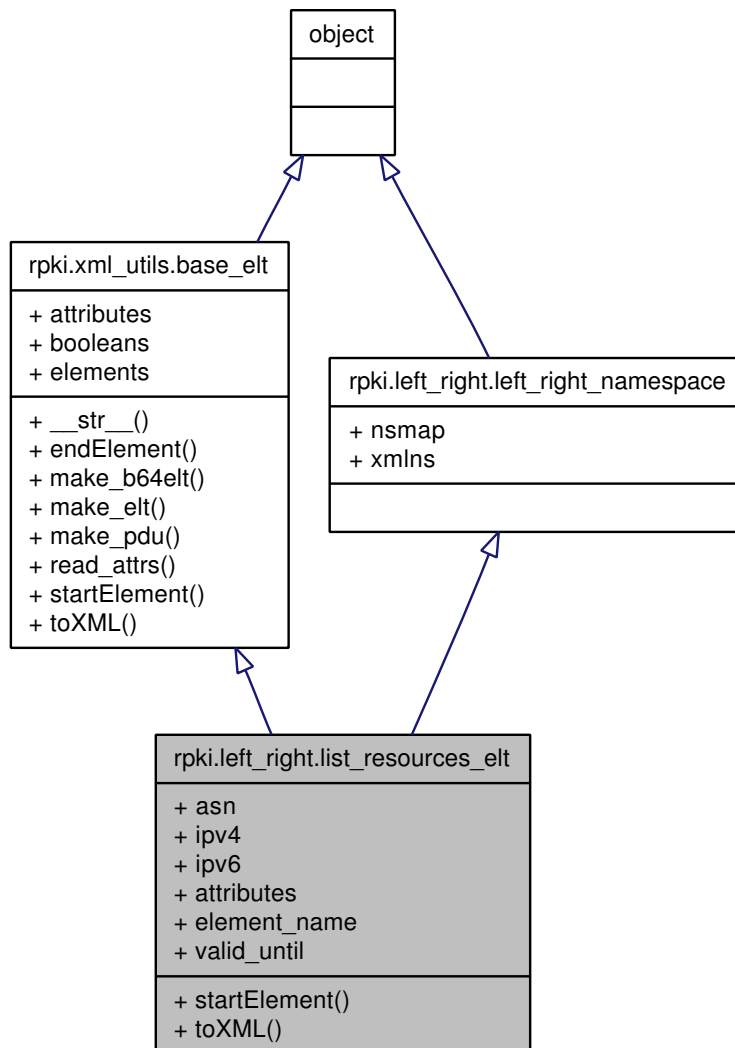
Definition at line 31 of file `left_right.py`.

The documentation for this class was generated from the following file:

- [left\\_right.py \(2000\)](#)

### 3.88 rpki.left\_right.list\_resources\_elt Class Reference

Inheritance diagram for rpki.left\_right.list\_resources\_elt:



#### Public Member Functions

- def [startElement](#)
- def [toXML](#)



### Public Attributes

- [asn](#)
- [ipv4](#)
- [ipv6](#)

### Static Public Attributes

- tuple [attributes](#) = ("self\_id", "tag", "child\_id", "valid\_until", "asn", "ipv4", "ipv6", "subject\_name")  
*XML attributes for this element.*
- string [element\\_name](#) = "list\_resources"
- [valid\\_until](#) = None

#### 3.88.1 Detailed Description

<list\_resources/> element.

Definition at line 746 of file left\_right.py.

#### 3.88.2 Member Function Documentation

##### 3.88.2.1 def rpki.left\_right.list\_resources\_elt.startElement ( self, stack, name, attrs)

Handle <list\_resources/> element. This requires special handling due to the data types of some of the attributes.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 753 of file left\_right.py.

##### 3.88.2.2 def rpki.left\_right.list\_resources\_elt.toXML ( self)

Generate <list\_resources/> element. This requires special handling due to the data types of some of the attributes.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 768 of file left\_right.py.

### 3.88.3 Member Data Documentation

#### 3.88.3.1 rpki.left\_right.list\_resources\_elt.asn

Definition at line 762 of file left\_right.py.

#### 3.88.3.2 tuple rpki.left\_right.list\_resources\_elt.attributes = ("self\_id", "tag", "child\_id", "valid\_until", "asn", "ipv4", "ipv6", "subject\_name") [static]

XML attributes for this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 750 of file left\_right.py.

#### 3.88.3.3 string rpki.left\_right.list\_resources\_elt.element\_name = "list\_resources" [static]

Definition at line 749 of file left\_right.py.

#### 3.88.3.4 rpki.left\_right.list\_resources\_elt.ipv4

Definition at line 764 of file left\_right.py.

#### 3.88.3.5 rpki.left\_right.list\_resources\_elt.ipv6

Definition at line 766 of file left\_right.py.

#### 3.88.3.6 rpki.left\_right.list\_resources\_elt.valid\_until = None [static]

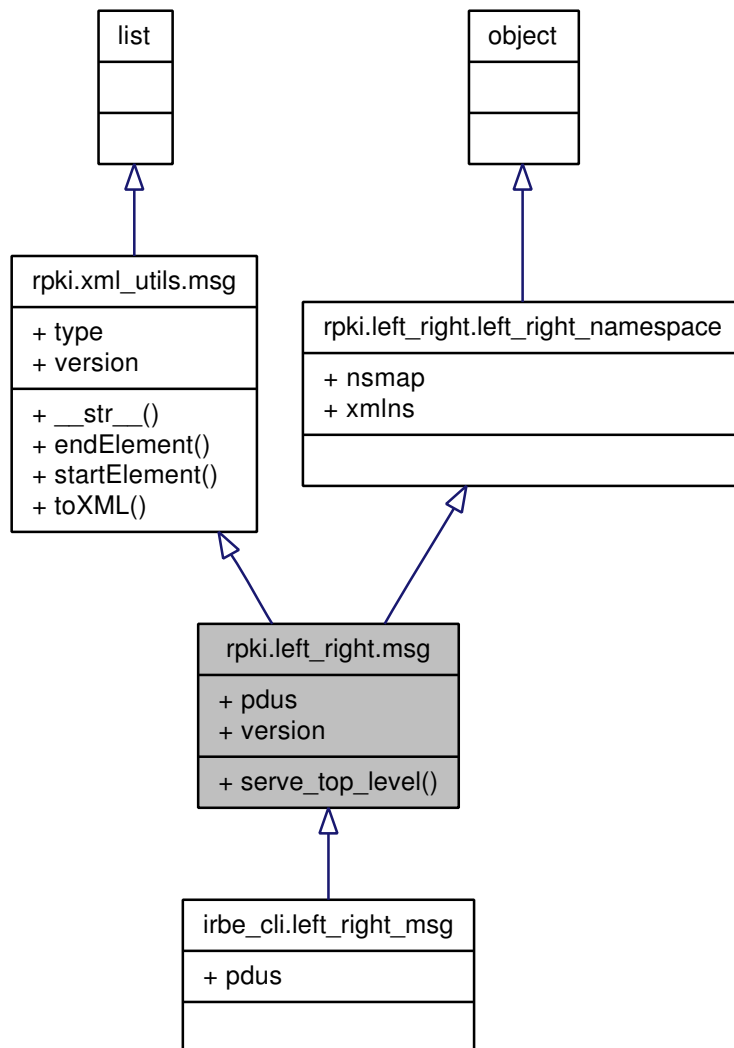
Definition at line 751 of file left\_right.py.

The documentation for this class was generated from the following file:

- [left\\_right.py](#) (2000)

### 3.89 rpki.left\_right.msg Class Reference

Inheritance diagram for rpki.left\_right.msg:



#### Public Member Functions

- def [serve\\_top\\_level](#)

### Static Public Attributes

- tuple [pdus](#)  
*Dispatch table of PDUs for this protocol.*
- int [version](#) = 1  
*Protocol version.*

### 3.89.1 Detailed Description

Left-right PDU.

Definition at line 791 of file [left\\_right.py](#).

### 3.89.2 Member Function Documentation

#### 3.89.2.1 def [rpki.left\\_right.msg.serve\\_top\\_level](#) (*self*, *gctx*)

Serve one msg PDU.

Definition at line 804 of file [left\\_right.py](#).

### 3.89.3 Member Data Documentation

#### 3.89.3.1 [rpki::left\\_right.msg::pdus](#) [static]

Initial value:

```
dict((x.element_name, x)
      for x in (self_elt, child_elt, parent_elt, bsc_elt, repository_elt,
               route_origin_elt, list_resources_elt, report_error_elt))
```

Dispatch table of PDUs for this protocol.

Reimplemented in [irbe\\_cli.left\\_right\\_msg](#).

Definition at line 800 of file [left\\_right.py](#).

#### 3.89.3.2 [rpki::left\\_right.msg::version](#) = 1 [static]

Protocol version.

Reimplemented from [rpki.xml\\_utils.msg](#).

Definition at line 796 of file [left\\_right.py](#).

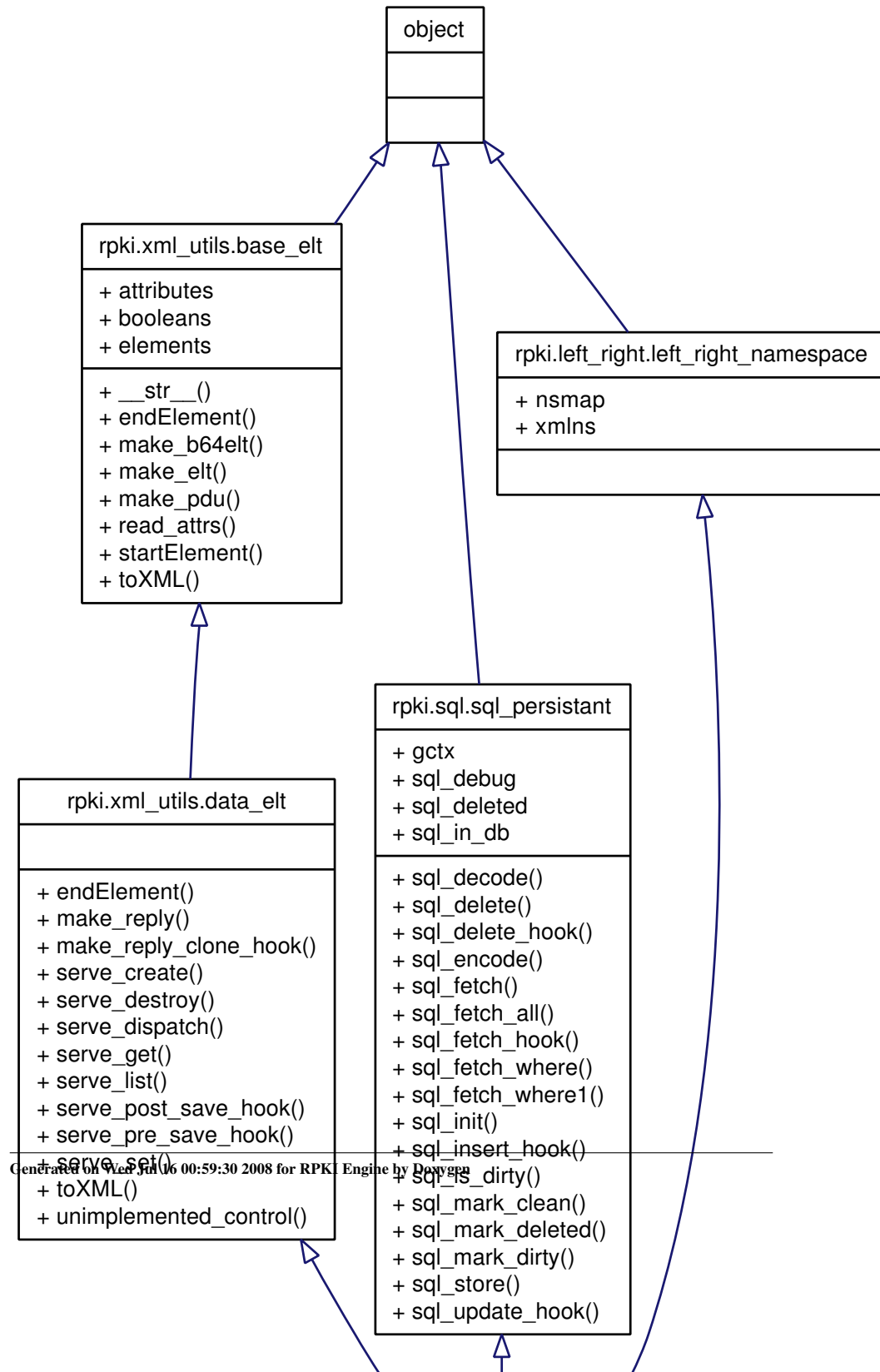
The documentation for this class was generated from the following file:

- [left\\_right.py \(2000\)](#)



### 3.90 rpki.left\_right.parent\_elt Class Reference

Inheritance diagram for rpki.left\_right.parent\_elt:



### Public Member Functions

- def [cas](#)
- def [query\\_up\\_down](#)
- def [repository](#)
- def [serve\\_post\\_save\\_hook](#)
- def [serve\\_rekey](#)
- def [serve\\_revoke](#)

### Static Public Attributes

- tuple [attributes](#)  
*XML attributes for this element.*
- tuple [booleans](#) = ("rekey", "reissue", "revoke")  
*Boolean attributes (value "yes" or "no") for this element.*
- [bpki\\_cms\\_cert](#) = None
- [bpki\\_cms\\_glue](#) = None
- [bpki\\_https\\_cert](#) = None
- [bpki\\_https\\_glue](#) = None
- string [element\\_name](#) = "parent"
- tuple [elements](#) = ("bpki\_cms\_cert", "bpki\_cms\_glue", "bpki\_https\_cert", "bpki\_https\_glue")  
*XML elements contained by this element.*
- tuple [sql\\_template](#)

#### 3.90.1 Detailed Description

<parent/> element.

Definition at line 276 of file left\_right.py.

#### 3.90.2 Member Function Documentation

##### 3.90.2.1 def rpki.left\_right.parent\_elt.cas ( self)

Fetch all CA objects that link to this parent object.

Definition at line 299 of file left\_right.py.



**3.90.2.2 def rpki.left\_right.parent\_elt.query\_up\_down ( self, q\_pdu)**

Client code for sending one up-down query PDU to this parent.

I haven't figured out yet whether this method should do something clever like dispatching via a method in the response PDU payload, or just hand back the whole response to the caller. In the long run this will have to become event driven with a context object that has methods of its own, but as this method is common code for several different queries and I don't yet know what the response processing looks like, it's too soon to tell what will make sense.

For now, keep this dead simple lock step, rewrite it later.

Definition at line 321 of file left\_right.py.

**3.90.2.3 def rpki.left\_right.parent\_elt.repository ( self)**

Fetch repository object to which this parent object links.

Definition at line 295 of file left\_right.py.

**3.90.2.4 def rpki.left\_right.parent\_elt.serve\_post\_save\_hook ( self, q\_pdu, r\_pdu)**

Extra server actions for parent\_elt.

Reimplemented from [rpki.xml\\_utils.data\\_elt](#).

Definition at line 303 of file left\_right.py.

**3.90.2.5 def rpki.left\_right.parent\_elt.serve\_rekey ( self)**

Handle a left-right rekey action for this parent.

Definition at line 311 of file left\_right.py.

**3.90.2.6 def rpki.left\_right.parent\_elt.serve\_revoke ( self)**

Handle a left-right revoke action for this parent.

Definition at line 316 of file left\_right.py.

### 3.90.3 Member Data Documentation

#### 3.90.3.1 tuple rpki.left\_right.parent\_elt.attributes [static]

Initial value:

```
("action", "tag", "self_id", "parent_id", "bsc_id", "repository_id",  
    "peer_contact_uri", "sia_base", "sender_name", "recipient_name")
```

XML attributes for this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 280 of file left\_right.py.

#### 3.90.3.2 tuple rpki.left\_right.parent\_elt.booleans = ("rekey", "reissue", "re- voke") [static]

Boolean attributes (value "yes" or "no") for this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 283 of file left\_right.py.

#### 3.90.3.3 rpki.left\_right.parent\_elt.bpki\_cms\_cert = None [static]

Definition at line 290 of file left\_right.py.

#### 3.90.3.4 rpki.left\_right.parent\_elt.bpki\_cms\_glue = None [static]

Definition at line 291 of file left\_right.py.

#### 3.90.3.5 rpki.left\_right.parent\_elt.bpki\_https\_cert = None [static]

Definition at line 292 of file left\_right.py.

#### 3.90.3.6 rpki.left\_right.parent\_elt.bpki\_https\_glue = None [static]

Definition at line 293 of file left\_right.py.

#### 3.90.3.7 string rpki.left\_right.parent\_elt.element\_name = "parent" [static]

Definition at line 279 of file left\_right.py.

**3.90.3.8** tuple `rpki.left_right.parent_elt.elements` = ("bpki\_cms\_cert", "bpki\_cms\_glue", "bpki\_https\_cert", "bpki\_https\_glue") [static]

XML elements contained by this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 282 of file `left_right.py`.

**3.90.3.9** tuple `rpki.left_right.parent_elt.sql_template` [static]

**Initial value:**

```
rpki.sql.template("parent", "parent_id", "self_id", "bsc_id", "repository_id",
                  ("bpki_cms_cert", rpki.x509.X509), ("bpki_cms_glue", rpki.x509.X509),
                  ("bpki_https_cert", rpki.x509.X509), ("bpki_https_glue", rpki.x509.X509),
                  "peer_contact_uri", "sia_base", "sender_name", "recipient_name")
```

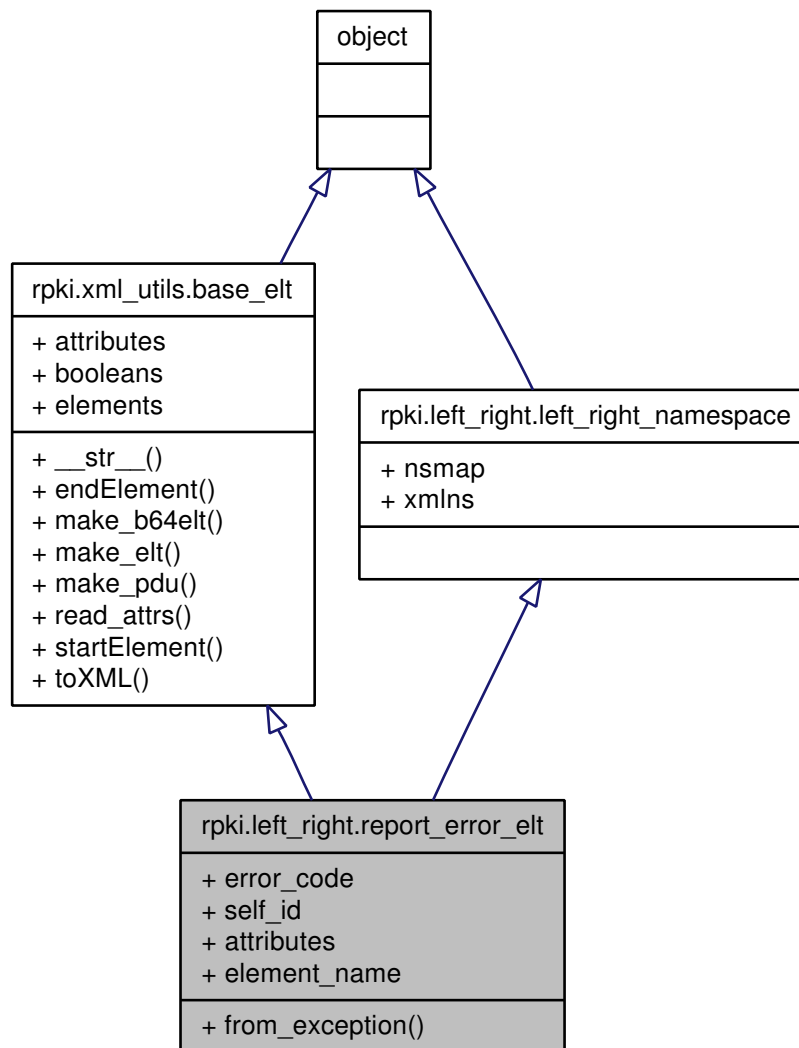
Definition at line 285 of file `left_right.py`.

The documentation for this class was generated from the following file:

- [left\\_right.py](#) (2000)

### 3.91 rpki.left\_right.report\_error\_elt Class Reference

Inheritance diagram for rpki.left\_right.report\_error\_elt:



#### Public Member Functions

- def [from\\_exception](#)

### Public Attributes

- [error\\_code](#)
- [self\\_id](#)

### Static Public Attributes

- tuple [attributes](#) = ("tag", "[self\\_id](#)", "[error\\_code](#)")  
*XML attributes for this element.*
- string [element\\_name](#) = "report\_error"

#### 3.91.1 Detailed Description

<report\_error/> element.

Definition at line 777 of file left\_right.py.

#### 3.91.2 Member Function Documentation

**3.91.2.1** def rpki.left\_right.report\_error\_elt.from\_exception ( *cls*, *exc*, *self\_id* = None)

Generate a <report\_error/> element from an exception.

Definition at line 784 of file left\_right.py.

#### 3.91.3 Member Data Documentation

**3.91.3.1** tuple rpki.left\_right.report\_error\_elt.attributes = ("tag", "self\_id", "error\_code") [static]

XML attributes for this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 781 of file left\_right.py.

**3.91.3.2** string rpki.left\_right.report\_error\_elt.element\_name = "report\_error" [static]

Definition at line 780 of file left\_right.py.

**3.91.3.3 rpki.left\_right.report\_error\_elt.error\_code**

Definition at line 788 of file left\_right.py.

**3.91.3.4 rpki.left\_right.report\_error\_elt.self\_id**

Definition at line 787 of file left\_right.py.

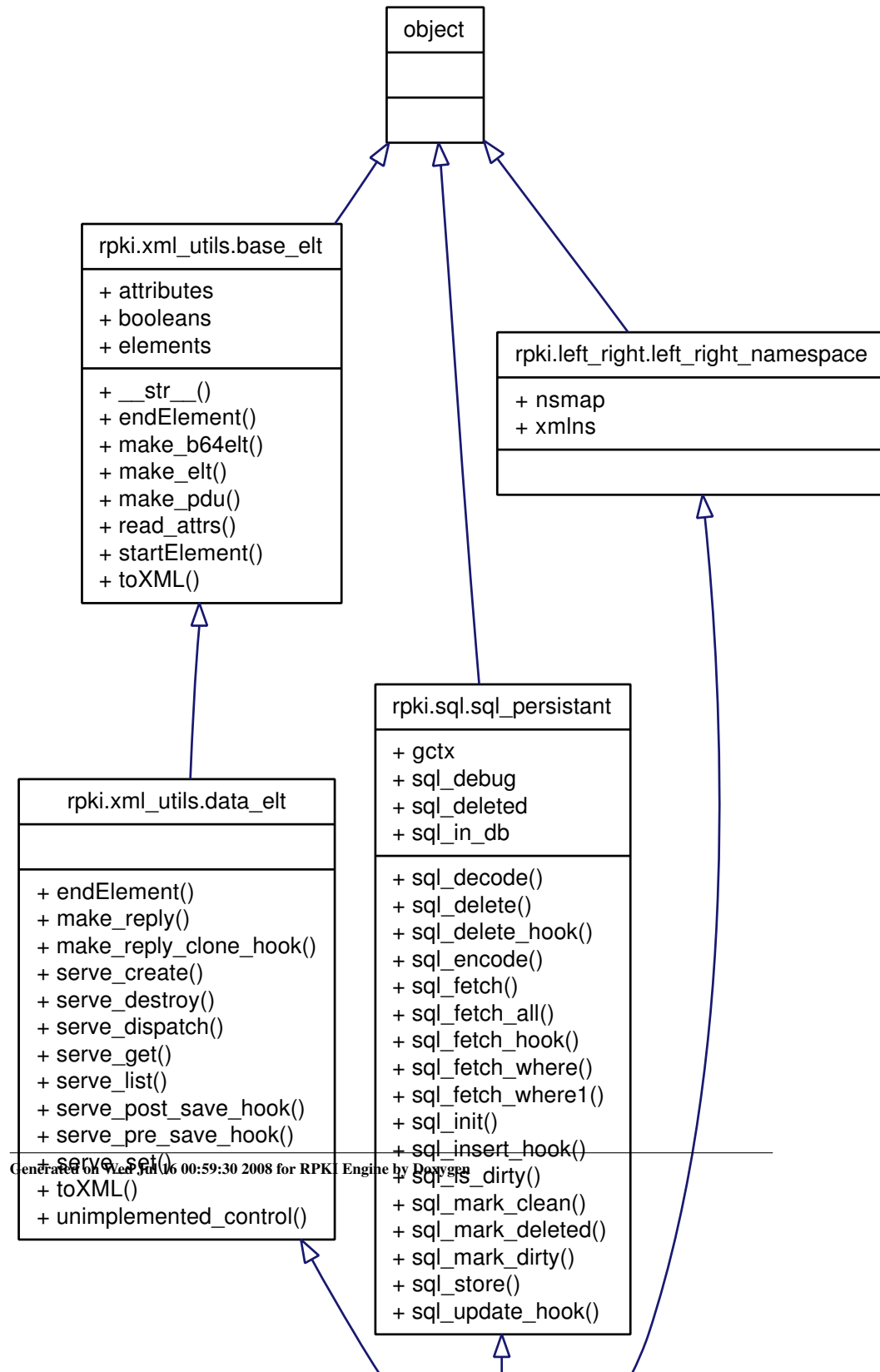
The documentation for this class was generated from the following file:

- [left\\_right.py \(2000\)](#)



### 3.92 rpki.left\_right.repository\_elt Class Reference

Inheritance diagram for rpki.left\_right.repository\_elt:





### Public Member Functions

- def [call\\_pubd](#)
- def [object\\_delete](#)
- def [object\\_write](#)
- def [parents](#)
- def [publish](#)
- def [uri\\_to\\_filename](#)
- def [withdraw](#)

### Static Public Attributes

- tuple [attributes](#) = ("action", "tag", "self\_id", "repository\_id", "bsc\_id", "peer\_contact\_uri")

*XML attributes for this element.*

- [bpki\\_cms\\_cert](#) = None
- [bpki\\_cms\\_glue](#) = None
- [bpki\\_https\\_cert](#) = None
- [bpki\\_https\\_glue](#) = None
- string [element\\_name](#) = "repository"
- tuple [elements](#) = ("bpki\_cms\_cert", "bpki\_cms\_glue", "bpki\_https\_cert", "bpki\_https\_glue")

*XML elements contained by this element.*

- tuple [sql\\_template](#)
- [use\\_pubd](#) = True

#### 3.92.1 Detailed Description

<repository/> element.

Definition at line 444 of file left\_right.py.

#### 3.92.2 Member Function Documentation

##### 3.92.2.1 def rpki.left\_right.repository\_elt.call\_pubd ( self, pdus)

Send a message to publication daemon and return the response.

Definition at line 494 of file left\_right.py.

**3.92.2.2 def rpki.left\_right.repository\_elt.object\_delete ( cls, base, uri)**

Delete an object from disk. [TEMPORARY]

Definition at line 489 of file left\_right.py.

**3.92.2.3 def rpki.left\_right.repository\_elt.object\_write ( cls, base, uri, obj)**

Write an object to disk. [TEMPORARY]

Definition at line 477 of file left\_right.py.

**3.92.2.4 def rpki.left\_right.repository\_elt.parents ( self)**

Fetch all parent objects that link to this repository object.

Definition at line 462 of file left\_right.py.

**3.92.2.5 def rpki.left\_right.repository\_elt.publish ( self, obj, uri)**

Placeholder for publication operation. [TEMPORARY]

Definition at line 512 of file left\_right.py.

**3.92.2.6 def rpki.left\_right.repository\_elt.uri\_to\_filename ( base, uri)**

Convert a URI to a filename. [TEMPORARY]

Definition at line 467 of file left\_right.py.

**3.92.2.7 def rpki.left\_right.repository\_elt.withdraw ( self, obj, uri)**

Placeholder for publication withdrawal operation. [TEMPORARY]

Definition at line 521 of file left\_right.py.

**3.92.3 Member Data Documentation****3.92.3.1 tuple rpki.left\_right.repository\_elt.attributes = ("action", "tag", "self-id", "repository\_id", "bsc\_id", "peer\_contact\_uri") [static]**

XML attributes for this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 448 of file left\_right.py.

**3.92.3.2 rpki.left\_right.repository\_elt.bpki\_cms\_cert = None** [static]

Definition at line 455 of file left\_right.py.

**3.92.3.3 rpki.left\_right.repository\_elt.bpki\_cms\_glue = None** [static]

Definition at line 456 of file left\_right.py.

**3.92.3.4 rpki.left\_right.repository\_elt.bpki\_https\_cert = None** [static]

Definition at line 457 of file left\_right.py.

**3.92.3.5 rpki.left\_right.repository\_elt.bpki\_https\_glue = None** [static]

Definition at line 458 of file left\_right.py.

**3.92.3.6 string rpki.left\_right.repository\_elt.element\_name = "repository"**  
[static]

Definition at line 447 of file left\_right.py.

**3.92.3.7 tuple rpki.left\_right.repository\_elt.elements = ("bpki\_cms\_cert",  
"bpki\_cms\_glue", "bpki\_https\_cert", "bpki\_https\_glue")** [static]

XML elements contained by this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 449 of file left\_right.py.

**3.92.3.8 tuple rpki.left\_right.repository\_elt.sql\_template** [static]

**Initial value:**

```
rpki.sql.template("repository", "repository_id", "self_id", "bsc_id", "peer_contact_uri",  
                  ("bpki_cms_cert", rpki.x509.X509), ("bpki_cms_glue", rpki.x509.X509),  
                  ("bpki_https_cert", rpki.x509.X509), ("bpki_https_glue", rpki.x509.X509))
```

Definition at line 451 of file left\_right.py.

**3.92.3.9 rpki.left\_right.repository\_elt.use\_pubd = True** [static]

Definition at line 460 of file left\_right.py.

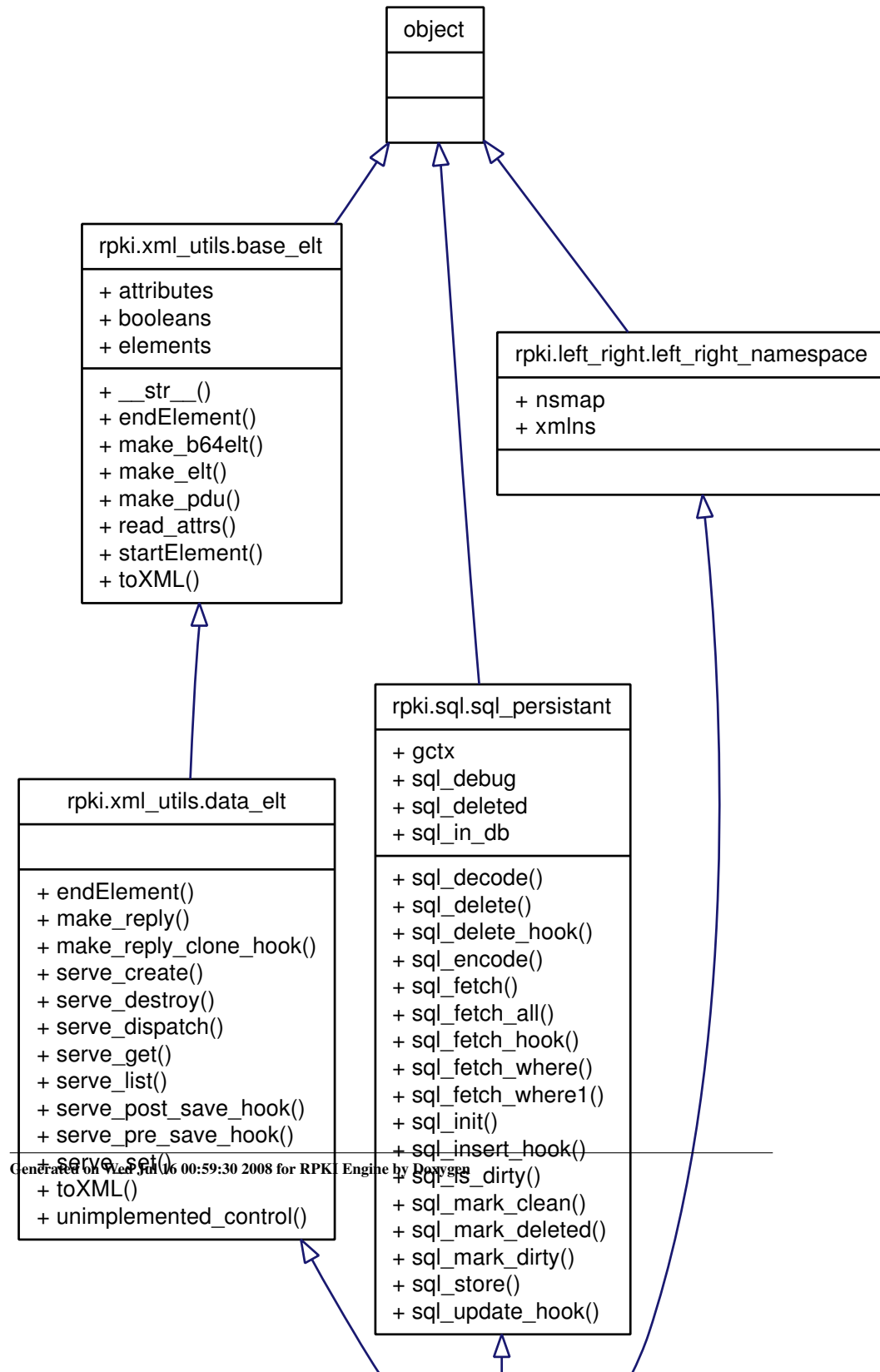
The documentation for this class was generated from the following file:

- [left\\_right.py](#) (2000)



### 3.93 rpki.left\_right.route\_origin\_elt Class Reference

Inheritance diagram for rpki.left\_right.route\_origin\_elt:



### Public Member Functions

- def [ca\\_detail](#)
- def [ee\\_uri](#)
- def [ee\\_uri\\_tail](#)
- def [generate\\_roa](#)
- def [regenerate\\_roa](#)
- def [roa\\_uri](#)
- def [roa\\_uri\\_tail](#)
- def [serve\\_post\\_save\\_hook](#)
- def [sql\\_delete\\_hook](#)
- def [sql\\_fetch\\_hook](#)
- def [sql\\_insert\\_hook](#)
- def [startElement](#)
- def [update\\_roa](#)
- def [withdraw\\_roa](#)

### Public Attributes

- [as\\_number](#)
- [ipv4](#)
- [ipv6](#)

### Static Public Attributes

- tuple [attributes](#) = ("action", "tag", "self\_id", "route\_origin\_id", "[as\\_number](#)", "[ipv4](#)", "[ipv6](#)")

*XML attributes for this element.*

- tuple [booleans](#) = ("suppress\_publication",)

*Boolean attributes (value "yes" or "no") for this element.*

- [ca\\_detail\\_id](#) = None
- [cert](#) = None
- string [element\\_name](#) = "route\_origin"
- [publish\\_ee\\_separately](#) = False

*Whether to publish the ROA EE certificate separately from the ROA.*

- [roa](#) = None
- tuple [sql\\_template](#)

### 3.93.1 Detailed Description

<route\_origin/> element.

Definition at line 530 of file left\_right.py.

### 3.93.2 Member Function Documentation

#### 3.93.2.1 def rpki.left\_right.route\_origin\_elt.ca\_detail ( *self* )

Fetch all ca\_detail objects that link to this route\_origin object.

Definition at line 578 of file left\_right.py.

#### 3.93.2.2 def rpki.left\_right.route\_origin\_elt.ee\_uri ( *self*, *ca* )

Return the publication URI for this route\_origin's ROA's EE certificate.

Definition at line 742 of file left\_right.py.

#### 3.93.2.3 def rpki.left\_right.route\_origin\_elt.ee\_uri\_tail ( *self* )

Return the tail (filename) portion of the URI for this route\_origin's ROA's EE certificate.

Definition at line 738 of file left\_right.py.

#### 3.93.2.4 def rpki.left\_right.route\_origin\_elt.generate\_roa ( *self* )

Generate a ROA based on this <route\_origin/> object.

At present this does not support ROAs with multiple signatures (neither does the current CMS code).

At present we have no way of performing a direct lookup from a desired set of resources to a covering certificate, so we have to search. This could be quite slow if we have a lot of active ca\_detail objects. Punt on the issue for now, revisit if profiling shows this as a hotspot.

Once we have the right covering certificate, we generate the ROA payload, generate a new EE certificate, use the EE certificate to sign the ROA payload, publish the result, then throw away the private key for the EE cert, all per the ROA specification. This implies that generating a lot of ROAs will tend to thrash /dev/random, but there is not much we can do about that.

Definition at line 627 of file left\_right.py.

**3.93.2.5 def rpki.left\_right.route\_origin\_elt.regenerate\_roa ( self)**

Reissue ROA associated with this route\_origin.

Definition at line 726 of file left\_right.py.

**3.93.2.6 def rpki.left\_right.route\_origin\_elt.roa\_uri ( self, ca, key = None)**

Return the publication URI for this route\_origin's ROA.

Definition at line 730 of file left\_right.py.

**3.93.2.7 def rpki.left\_right.route\_origin\_elt.roa\_uri\_tail ( self, key = None)**

Return the tail (filename portion) of the publication URI for this route\_origin's ROA.

Definition at line 734 of file left\_right.py.

**3.93.2.8 def rpki.left\_right.route\_origin\_elt.serve\_post\_save\_hook ( self, q\_pdu, r\_pdu)**

Extra server actions for route\_origin\_elt.

Reimplemented from [rpki.xml\\_utils.data\\_elt](#).

Definition at line 582 of file left\_right.py.

**3.93.2.9 def rpki.left\_right.route\_origin\_elt.sql\_delete\_hook ( self)**

Extra SQL delete actions for route\_origin\_elt -- handle address ranges.

Reimplemented from [rpki.sql.sql\\_persistent](#).

Definition at line 574 of file left\_right.py.

**3.93.2.10 def rpki.left\_right.route\_origin\_elt.sql\_fetch\_hook ( self)**

Extra SQL fetch actions for route\_origin\_elt -- handle prefix list.

Reimplemented from [rpki.sql.sql\\_persistent](#).

Definition at line 550 of file left\_right.py.



#### 3.93.2.11 def rpki.left\_right.route\_origin\_elt.sql\_insert\_hook ( self)

Extra SQL insert actions for route\_origin\_elt -- handle address ranges.

Reimplemented from [rpki.sql.sql\\_persistent](#).

Definition at line 565 of file left\_right.py.

#### 3.93.2.12 def rpki.left\_right.route\_origin\_elt.startElement ( self, stack, name, attrs)

Handle <route\_origin/> element. This requires special processing due to the data types of some of the attributes.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 586 of file left\_right.py.

#### 3.93.2.13 def rpki.left\_right.route\_origin\_elt.update\_roa ( self)

Bring this route\_origin's ROA up to date if necessary.

Definition at line 599 of file left\_right.py.

#### 3.93.2.14 def rpki.left\_right.route\_origin\_elt.withdraw\_roa ( self, regenerate = False)

Withdraw ROA associated with this route\_origin.

In order to preserve make-before-break properties without duplicating code, this method also handles generating a replacement ROA when requested.

Definition at line 696 of file left\_right.py.

### 3.93.3 Member Data Documentation

#### 3.93.3.1 rpki.left\_right.route\_origin\_elt.as\_number

Reimplemented in [irbe\\_cli.route\\_origin\\_elt](#).

Definition at line 593 of file left\_right.py.

**3.93.3.2** `tuple rpki.left_right.route_origin_elt.attributes = ("action", "tag", "self_id", "route_origin_id", "as_number", "ipv4", "ipv6") [static]`

XML attributes for this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 534 of file `left_right.py`.

**3.93.3.3** `tuple rpki.left_right.route_origin_elt.booleans = ("suppress_publication",) [static]`

Boolean attributes (value "yes" or "no") for this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 535 of file `left_right.py`.

**3.93.3.4** `rpki.left_right.route_origin_elt.ca_detail_id = None [static]`

Definition at line 542 of file `left_right.py`.

**3.93.3.5** `rpki.left_right.route_origin_elt.cert = None [static]`

Definition at line 543 of file `left_right.py`.

**3.93.3.6** `string rpki.left_right.route_origin_elt.element_name = "route_origin" [static]`

Definition at line 533 of file `left_right.py`.

**3.93.3.7** `rpki.left_right.route_origin_elt.ipv4`

Reimplemented in [irbe\\_cli.route\\_origin\\_elt](#).

Definition at line 552 of file `left_right.py`.

**3.93.3.8** `rpki.left_right.route_origin_elt.ipv6`

Reimplemented in [irbe\\_cli.route\\_origin\\_elt](#).

Definition at line 558 of file `left_right.py`.

**3.93.3.9** `rpki::left_right.route_origin_elt::publish_ee_separately = False [static]`

Whether to publish the ROA EE certificate separately from the ROA.

Definition at line 548 of file `left_right.py`.

**3.93.3.10 rpki.left\_right.route\_origin\_elt.roa = None** [static]

Definition at line 544 of file left\_right.py.

**3.93.3.11 tuple rpki.left\_right.route\_origin\_elt.sql\_template** [static]

**Initial value:**

```
rpki.sql.template("route_origin", "route_origin_id", "ca_detail_id",  
                  "self_id", "as_number",  
                  ("roa", rpki.x509.ROA),  
                  ("cert", rpki.x509.X509))
```

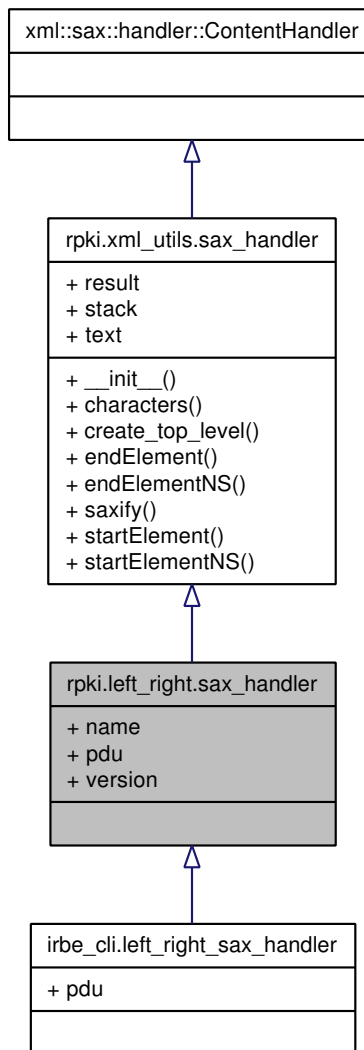
Definition at line 537 of file left\_right.py.

The documentation for this class was generated from the following file:

- [left\\_right.py \(2000\)](#)

### 3.94 rpki.left\_right.sax\_handler Class Reference

Inheritance diagram for rpki.left\_right.sax\_handler:



#### Static Public Attributes

- string `name` = "msg"
- `pdu` = `msg`
- string `version` = "1"

### 3.94.1 Detailed Description

SAX handler for Left-Right protocol.

Definition at line 813 of file left\_right.py.

### 3.94.2 Member Data Documentation

#### 3.94.2.1 string rpki.left\_right.sax\_handler.name = "msg" [static]

Definition at line 817 of file left\_right.py.

#### 3.94.2.2 rpki.left\_right.sax\_handler.pdu = msg [static]

Reimplemented in [irbe\\_cli.left\\_right\\_sax\\_handler](#).

Definition at line 816 of file left\_right.py.

#### 3.94.2.3 string rpki.left\_right.sax\_handler.version = "1" [static]

Definition at line 818 of file left\_right.py.

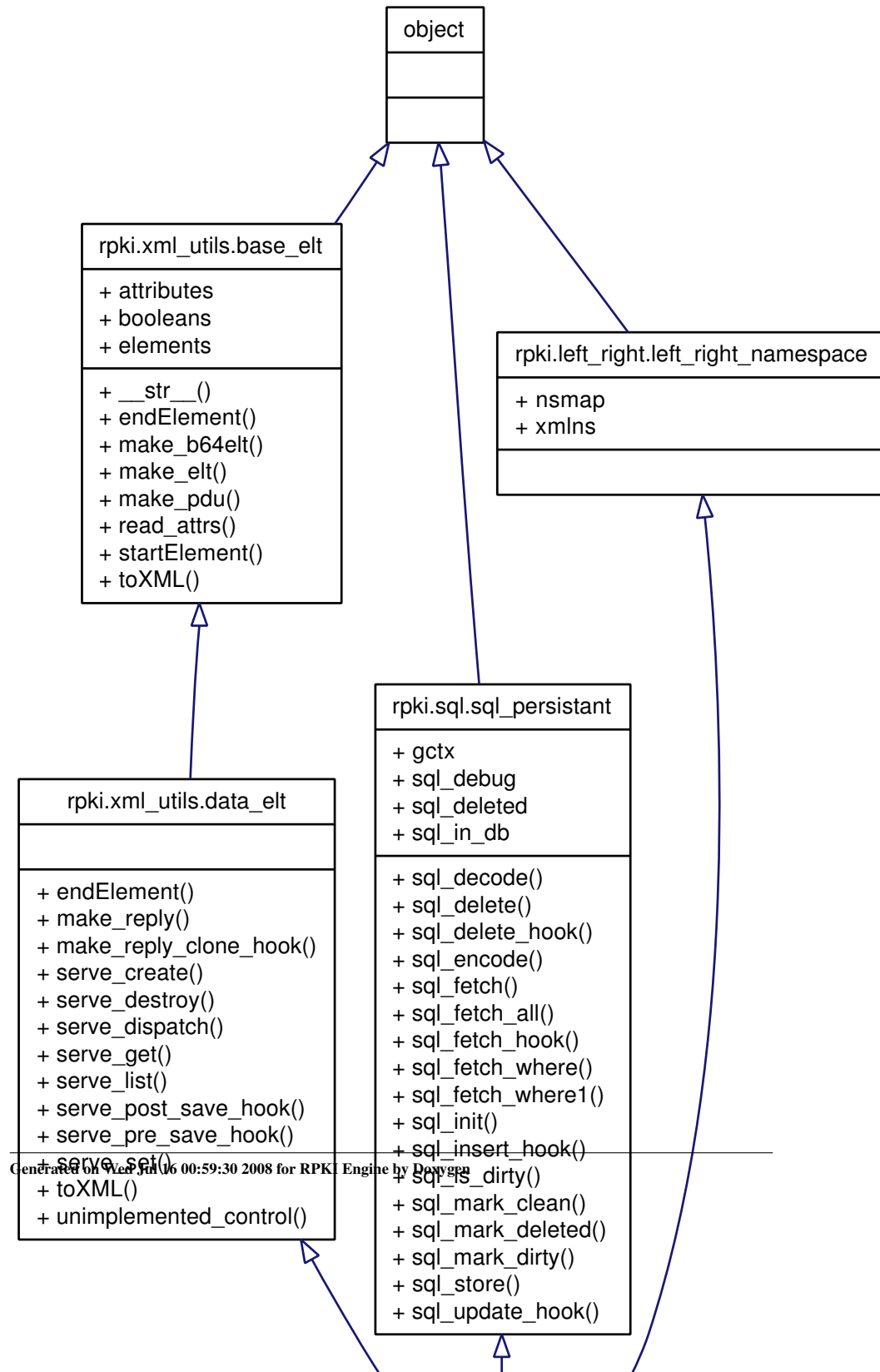
The documentation for this class was generated from the following file:

- [left\\_right.py](#) (2000)



### 3.95 rpki.left\_right.self\_elt Class Reference

Inheritance diagram for rpki.left\_right.self\_elt:



### Public Member Functions

- def [bscs](#)
- def [children](#)
- def [client\\_poll](#)
- def [parents](#)
- def [regenerate\\_crls\\_and\\_manifests](#)
- def [repositories](#)
- def [route\\_origins](#)
- def [serve\\_fetch\\_all](#)
- def [serve\\_fetch\\_one](#)
- def [serve\\_post\\_save\\_hook](#)
- def [serve\\_rekey](#)
- def [serve\\_revoke](#)
- def [update\\_children](#)
- def [update\\_roas](#)

### Static Public Attributes

- tuple [attributes](#) = ("action", "tag", "self\_id", "crl\_interval", "regen\_margin")  
*XML attributes for this element.*
- tuple [booleans](#) = ("rekey", "reissue", "revoke", "run\_now", "publish\_world\_now")  
*Boolean attributes (value "yes" or "no") for this element.*
- [bpki\\_cert](#) = None
- [bpki\\_glue](#) = None
- [crl\\_interval](#) = None
- string [element\\_name](#) = "self"
- tuple [elements](#) = ("bpki\_cert", "bpki\_glue")  
*XML elements contained by this element.*
- [regen\\_margin](#) = None
- [self\\_id](#) = None
- tuple [sql\\_template](#)
- [use\\_hsm](#) = False

#### 3.95.1 Detailed Description

<self/> element.

Definition at line 70 of file left\_right.py.



### 3.95.2 Member Function Documentation

#### 3.95.2.1 def rpki.left\_right.self\_elt.bsces ( *self* )

Fetch all BSC objects that link to this self object.

Definition at line 88 of file left\_right.py.

#### 3.95.2.2 def rpki.left\_right.self\_elt.children ( *self* )

Fetch all child objects that link to this self object.

Definition at line 100 of file left\_right.py.

#### 3.95.2.3 def rpki.left\_right.self\_elt.client\_poll ( *self* )

Run the regular client poll cycle with each of this self's parents in turn.

Definition at line 145 of file left\_right.py.

#### 3.95.2.4 def rpki.left\_right.self\_elt.parents ( *self* )

Fetch all parent objects that link to this self object.

Definition at line 96 of file left\_right.py.

#### 3.95.2.5 def rpki.left\_right.self\_elt.regenerate\_crls\_and\_manifests ( *self* )

Generate new CRLs and manifests as necessary for all of this self's CAs. Extracting nextUpdate from a manifest is hard at the moment due to implementation silliness, so for now we generate a new manifest whenever we generate a new CRL

This method also cleans up tombstones left behind by revoked ca\_detail objects, since we're walking through the relevant portions of the database anyway.

Definition at line 204 of file left\_right.py.

#### 3.95.2.6 def rpki.left\_right.self\_elt.repositories ( *self* )

Fetch all repository objects that link to this self object.

Definition at line 92 of file left\_right.py.

### 3.95.2.7 def rpki.left\_right.self\_elt.route\_origins ( self)

Fetch all route\_origin objects that link to this self object.

Definition at line 104 of file left\_right.py.

### 3.95.2.8 def rpki.left\_right.self\_elt.serve\_fetch\_all ( self)

Find the self objects upon which a list action should operate. This is different from the list action for all other objects, where list only works within a given self\_id context.

Reimplemented from [rpki.left\\_right.data\\_elt](#).

Definition at line 138 of file left\_right.py.

### 3.95.2.9 def rpki.left\_right.self\_elt.serve\_fetch\_one ( self)

Find the self object upon which a get, set, or destroy action should operate.

Reimplemented from [rpki.left\\_right.data\\_elt](#).

Definition at line 129 of file left\_right.py.

### 3.95.2.10 def rpki.left\_right.self\_elt.serve\_post\_save\_hook ( self, q\_pdu, r\_pdu)

Extra server actions for self\_elt.

Reimplemented from [rpki.xml\\_utils.data\\_elt](#).

Definition at line 108 of file left\_right.py.

### 3.95.2.11 def rpki.left\_right.self\_elt.serve\_rekey ( self)

Handle a left-right rekey action for this self.

Definition at line 117 of file left\_right.py.

### 3.95.2.12 def rpki.left\_right.self\_elt.serve\_revoke ( self)

Handle a left-right revoke action for this self.

Definition at line 123 of file left\_right.py.

### 3.95.2.13 def rpki.left\_right.self\_elt.update\_children (self)

Check for updated IRDB data for all of this self's children and issue new certs as necessary. Must handle changes both in resources and in expiration date.

Definition at line 167 of file left\_right.py.

### 3.95.2.14 def rpki.left\_right.self\_elt.update\_roas (self)

Generate or update ROAs for this self's route\_origin objects.

Definition at line 229 of file left\_right.py.

## 3.95.3 Member Data Documentation

### 3.95.3.1 tuple rpki.left\_right.self\_elt.attributes = ("action", "tag", "self\_id", "crl\_interval", "regen\_margin") [static]

XML attributes for this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 74 of file left\_right.py.

### 3.95.3.2 tuple rpki.left\_right.self\_elt.booleans = ("rekey", "reissue", "revoke", "run\_now", "publish\_world\_now") [static]

Boolean attributes (value "yes" or "no") for this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 76 of file left\_right.py.

### 3.95.3.3 rpki.left\_right.self\_elt.bpki\_cert = None [static]

Definition at line 85 of file left\_right.py.

### 3.95.3.4 rpki.left\_right.self\_elt.bpki\_glue = None [static]

Definition at line 86 of file left\_right.py.

### 3.95.3.5 rpki.left\_right.self\_elt.crl\_interval = None [static]

Definition at line 83 of file left\_right.py.

**3.95.3.6 string rpki.left\_right.self\_elt.element\_name = "self" [static]**

Definition at line 73 of file left\_right.py.

**3.95.3.7 tuple rpki.left\_right.self\_elt.elements = ("bpki\_cert", "bpki\_glue") [static]**

XML elements contained by this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 75 of file left\_right.py.

**3.95.3.8 rpki.left\_right.self\_elt.regen\_margin = None [static]**

Definition at line 84 of file left\_right.py.

**3.95.3.9 rpki.left\_right.self\_elt.self\_id = None [static]**

Definition at line 81 of file left\_right.py.

**3.95.3.10 tuple rpki.left\_right.self\_elt.sql\_template [static]**

**Initial value:**

```
rpki.sql.template("self", "self_id", "use_hsm", "crl_interval", "regen_margin",  
                  ("bpki_cert", rpki.x509.X509), ("bpki_glue", rpki.x509.X509))
```

Definition at line 78 of file left\_right.py.

**3.95.3.11 rpki.left\_right.self\_elt.use\_hsm = False [static]**

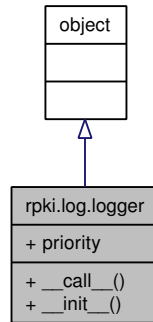
Definition at line 82 of file left\_right.py.

The documentation for this class was generated from the following file:

- [left\\_right.py](#) (2000)

## 3.96 rpki.log.logger Class Reference

Inheritance diagram for rpki.log.logger:



### Public Member Functions

- [def \\_\\_call\\_\\_](#)
- [def \\_\\_init\\_\\_](#)

### Public Attributes

- [priority](#)

### 3.96.1 Detailed Description

Closure for logging.

Definition at line 38 of file log.py.

### 3.96.2 Member Function Documentation

#### 3.96.2.1 `def rpki.log.logger.__call__(self, message)`

Definition at line 44 of file log.py.

#### 3.96.2.2 `def rpki.log.logger.__init__(self, priority)`

Definition at line 41 of file log.py.

### 3.96.3 Member Data Documentation

#### 3.96.3.1 rpki.log.logger.priority

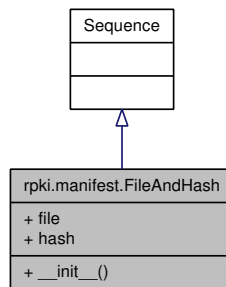
Definition at line 42 of file log.py.

The documentation for this class was generated from the following file:

- [log.py \(1873\)](#)

## 3.97 rpki.manifest.FileAndHash Class Reference

Inheritance diagram for rpki.manifest.FileAndHash:



### Public Member Functions

- [def \\_\\_init\\_\\_](#)

### Public Attributes

- [file](#)
- [hash](#)

### 3.97.1 Detailed Description

Definition at line 26 of file manifest.py.

### 3.97.2 Member Function Documentation

#### 3.97.2.1 def rpki.manifest.FileAndHash.\_\_init\_\_(self, optional = 0, default = "")

Definition at line 27 of file manifest.py.

### 3.97.3 Member Data Documentation

#### 3.97.3.1 rpki.manifest.FileAndHash.file

Definition at line 28 of file manifest.py.

#### 3.97.3.2 rpki.manifest.FileAndHash.hash

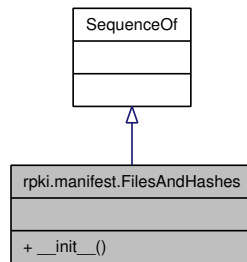
Definition at line 29 of file manifest.py.

The documentation for this class was generated from the following file:

- [manifest.py \(1873\)](#)

## 3.98 rpki.manifest.FilesAndHashes Class Reference

Inheritance diagram for rpki.manifest.FilesAndHashes:



### Public Member Functions

- [def \\_\\_init\\_\\_](#)

#### 3.98.1 Detailed Description

Definition at line 33 of file manifest.py.

#### 3.98.2 Member Function Documentation

##### 3.98.2.1 def rpki.manifest.FilesAndHashes.\_\_init\_\_ ( self, optional = 0, default = "")

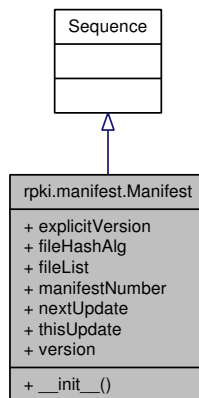
Definition at line 34 of file manifest.py.

The documentation for this class was generated from the following file:

- [manifest.py \(1873\)](#)

### 3.99 rpki.manifest.Manifest Class Reference

Inheritance diagram for rpki.manifest.Manifest:



#### Public Member Functions

- `def __init__`

#### Public Attributes

- `explicitVersion`
- `fileHashAlg`
- `fileList`
- `manifestNumber`
- `nextUpdate`
- `thisUpdate`
- `version`

#### 3.99.1 Detailed Description

Definition at line 37 of file `manifest.py`.

#### 3.99.2 Member Function Documentation

**3.99.2.1** `def rpki.manifest.Manifest.__init__( self, optional = 0, default = '' )`



Definition at line 38 of file manifest.py.

### 3.99.3 Member Data Documentation

#### 3.99.3.1 rpki.manifest.Manifest.explicitVersion

Definition at line 40 of file manifest.py.

#### 3.99.3.2 rpki.manifest.Manifest.fileHashAlg

Definition at line 44 of file manifest.py.

#### 3.99.3.3 rpki.manifest.Manifest.fileList

Definition at line 45 of file manifest.py.

#### 3.99.3.4 rpki.manifest.Manifest.manifestNumber

Definition at line 41 of file manifest.py.

#### 3.99.3.5 rpki.manifest.Manifest.nextUpdate

Definition at line 43 of file manifest.py.

#### 3.99.3.6 rpki.manifest.Manifest.thisUpdate

Definition at line 42 of file manifest.py.

#### 3.99.3.7 rpki.manifest.Manifest.version

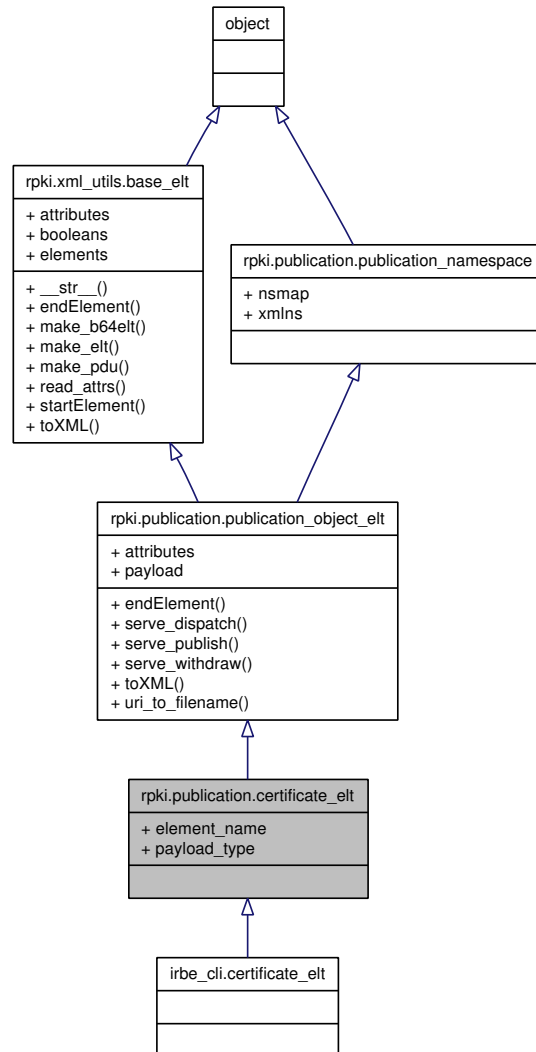
Definition at line 39 of file manifest.py.

The documentation for this class was generated from the following file:

- [manifest.py \(1873\)](#)

### 3.100 rpki.publication.certificate\_elt Class Reference

Inheritance diagram for rpki.publication.certificate\_elt:



#### Static Public Attributes

- string `element_name` = "certificate"
- `payload_type` = `rpki.x509.X509`

### 3.100.1 Detailed Description

`<certificate/> element.`

Definition at line 205 of file publication.py.

### 3.100.2 Member Data Documentation

**3.100.2.1** `string rpki.publication.certificate_elt.element_name = "certificate"`  
[static]

Definition at line 208 of file publication.py.

**3.100.2.2** `rpki.publication.certificate_elt.payload_type = rpki.x509.X509`  
[static]

Definition at line 209 of file publication.py.

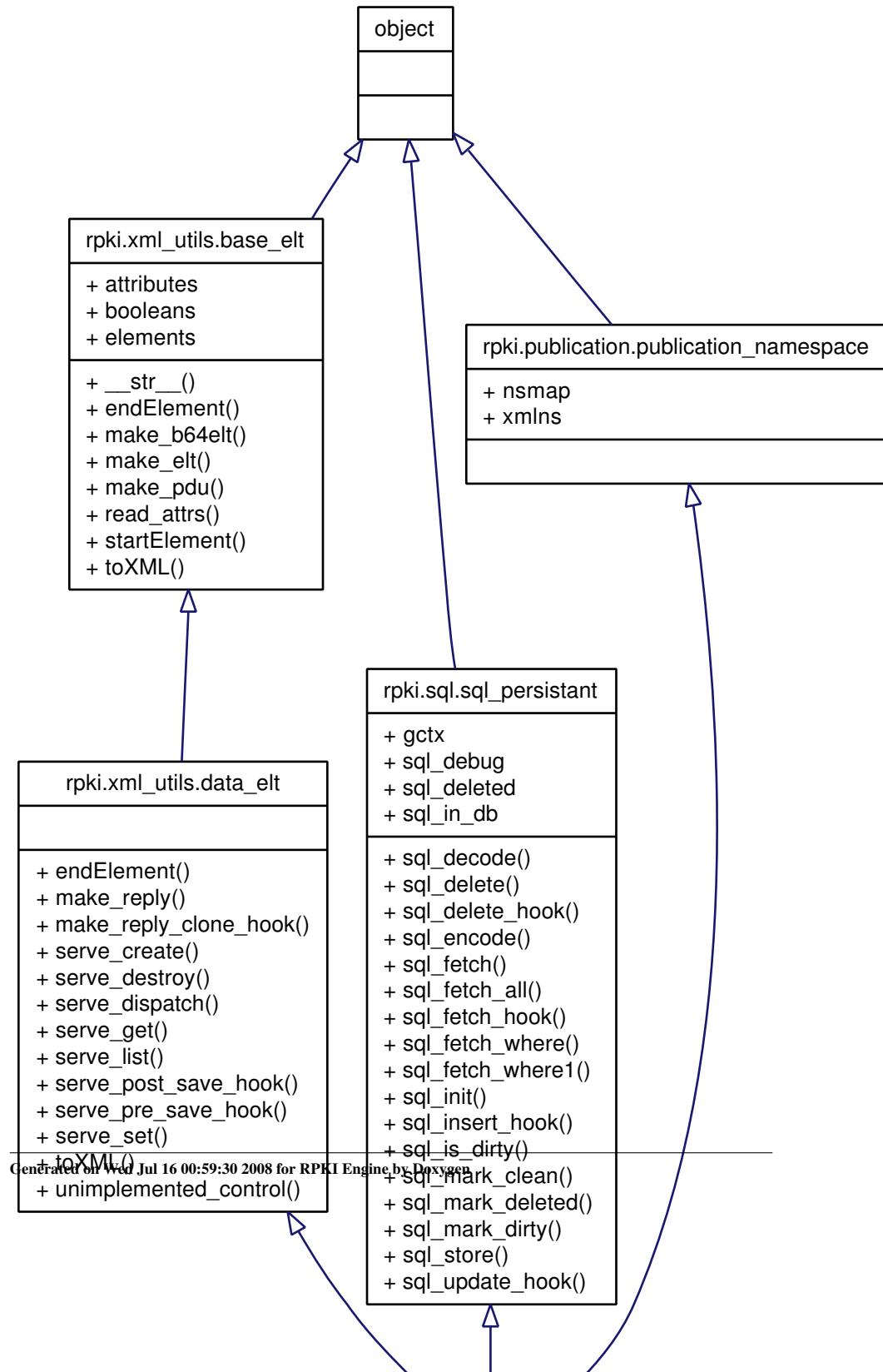
The documentation for this class was generated from the following file:

- [publication.py \(1914\)](#)



## 3.101 rpki.publication.client\_elt Class Reference

Inheritance diagram for rpki.publication.client\_elt:



### Public Member Functions

- def [check\\_allowed\\_uri](#)
- def [endElement](#)
- def [serve\\_fetch\\_all](#)
- def [serve\\_fetch\\_one](#)
- def [serve\\_post\\_save\\_hook](#)

### Static Public Attributes

- tuple [attributes](#) = ("action", "tag", "client\_id", "[base\\_uri](#)")  
*XML attributes for this element.*
- [base\\_uri](#) = None
- [bpki\\_cert](#) = None
- [bpki\\_glue](#) = None
- [clear\\_https\\_ta\\_cache](#) = False
- string [element\\_name](#) = "client"
- tuple [elements](#) = ("bpki\_cert", "[bpki\\_glue](#)")  
*XML elements contained by this element.*
- tuple [sql\\_template](#) = [rpki.sql.template](#)("client", "client\_id", "[base\\_uri](#)", ("bpki\_cert", [rpki.x509.X509](#)), ("[bpki\\_glue](#)", [rpki.x509.X509](#)))

#### 3.101.1 Detailed Description

<client/> element.

Definition at line 91 of file publication.py.

#### 3.101.2 Member Function Documentation

##### 3.101.2.1 def rpki.publication.client\_elt.check\_allowed\_uri ( self, uri)

Definition at line 134 of file publication.py.

##### 3.101.2.2 def rpki.publication.client\_elt.endElement ( self, stack, name, text)

Handle subelements of <client/> element. These require special handling because modifying them invalidates the HTTPS trust anchor cache.

Reimplemented from [rpki.xml\\_utils.data\\_elt](#).

Definition at line 106 of file publication.py.

### 3.101.2.3 def rpki.publication.client\_elt.serve\_fetch\_all ( self)

Find client objects on which a list method should operate.

Definition at line 130 of file publication.py.

### 3.101.2.4 def rpki.publication.client\_elt.serve\_fetch\_one ( self)

Find the client object on which a get, set, or destroy method should operate.

Definition at line 121 of file publication.py.

### 3.101.2.5 def rpki.publication.client\_elt.serve\_post\_save\_hook ( self, q\_pdu, r\_pdu)

Extra server actions for client\_elt.

Reimplemented from [rpki.xml\\_utils.data\\_elt](#).

Definition at line 115 of file publication.py.

## 3.101.3 Member Data Documentation

### 3.101.3.1 tuple rpki.publication.client\_elt.attributes = ("action", "tag", "client\_id", "base\_uri") [static]

XML attributes for this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 95 of file publication.py.

### 3.101.3.2 rpki.publication.client\_elt.base\_uri = None [static]

Definition at line 100 of file publication.py.

### 3.101.3.3 rpki.publication.client\_elt.bpki\_cert = None [static]

Definition at line 101 of file publication.py.

### 3.101.3.4 rpki.publication.client\_elt.bpki\_glue = None [static]

Definition at line 102 of file publication.py.

**3.101.3.5 rpki.publication.client\_elt.clear\_https\_ta\_cache = False** [static]

Definition at line 104 of file publication.py.

**3.101.3.6 string rpki.publication.client\_elt.element\_name = "client"**  
[static]

Definition at line 94 of file publication.py.

**3.101.3.7 tuple rpki.publication.client\_elt.elements = ("bpki\_cert", "bpki-glue")** [static]

XML elements contained by this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 96 of file publication.py.

**3.101.3.8 tuple rpki.publication.client\_elt.sql\_template =**  
**rpki.sql.template("client", "client\_id", "base\_uri", ("bpki\_cert",**  
**rpki.x509.X509), ("bpki\_glue", rpki.x509.X509))** [static]

Definition at line 98 of file publication.py.

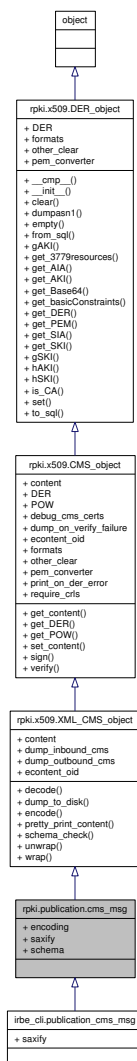
The documentation for this class was generated from the following file:

- [publication.py \(1914\)](#)



### 3.102 rpki.publication.cms\_msg Class Reference

Inheritance diagram for rpki.publication.cms\_msg:



#### Static Public Attributes

- string `encoding` = "us-ascii"
- `saxify` = `sax_handler.saxify`
- `schema` = `rpki.relaxng.publication`

### 3.102.1 Detailed Description

Class to hold a CMS-signed publication PDU.

Definition at line 277 of file publication.py.

### 3.102.2 Member Data Documentation

#### 3.102.2.1 `string rpki.publication.cms_msg.encoding = "us-ascii" [static]`

Definition at line 280 of file publication.py.

#### 3.102.2.2 `rpki.publication.cms_msg.saxify = sax_handler.saxify [static]`

Reimplemented in [irbe\\_cli.publication\\_cms\\_msg](#).

Definition at line 282 of file publication.py.

#### 3.102.2.3 `rpki.publication.cms_msg.schema = rpki.relaxng.publication [static]`

Definition at line 281 of file publication.py.

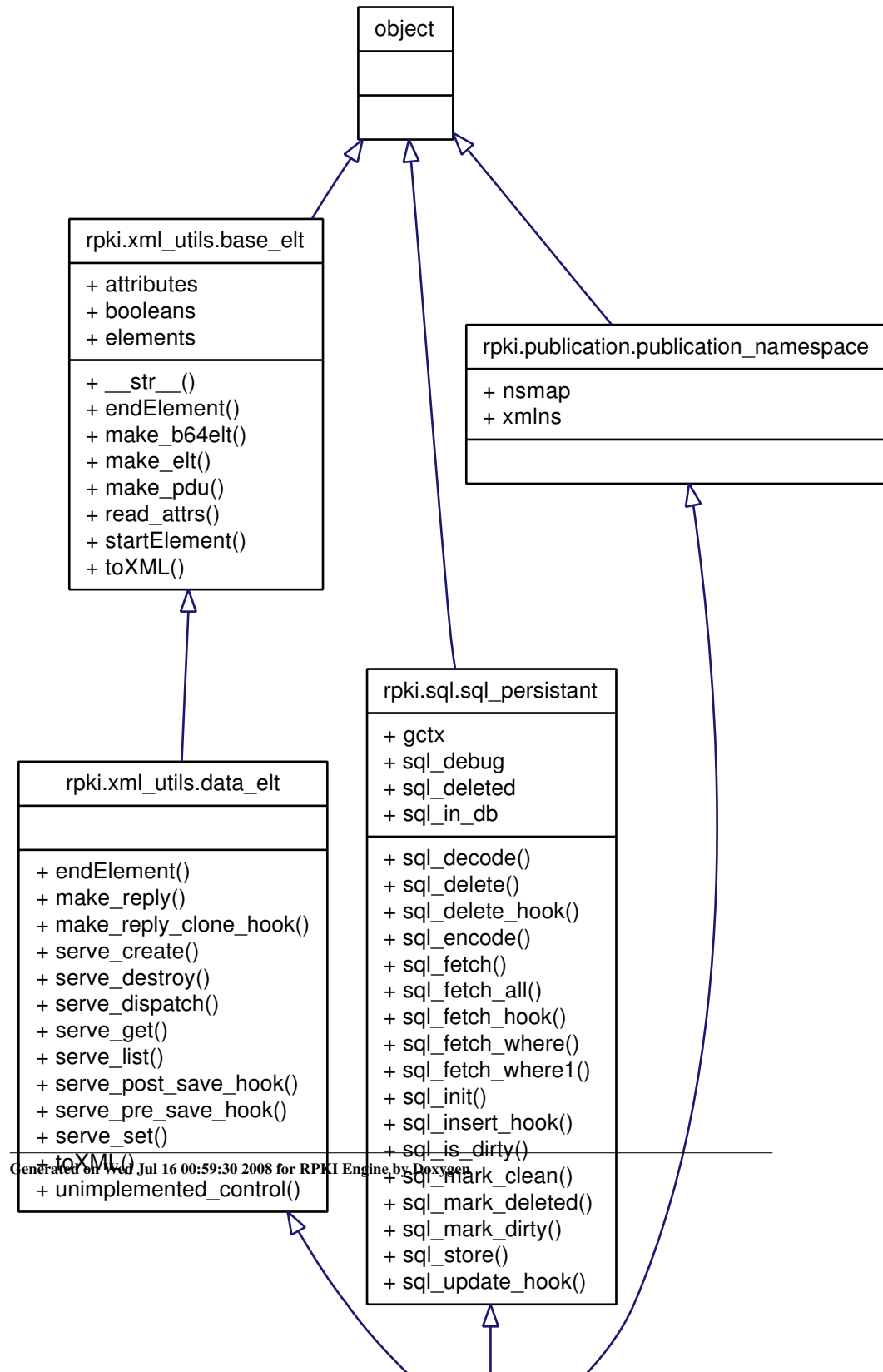
The documentation for this class was generated from the following file:

- [publication.py \(1914\)](#)



## 3.103 rpki.publication.config\_elt Class Reference

Inheritance diagram for rpki.publication.config\_elt:



### Public Member Functions

- def [fetch](#)
- def [serve\\_fetch\\_one](#)
- def [serve\\_set](#)
- def [startElement](#)

### Public Attributes

- [config\\_id](#)

### Static Public Attributes

- tuple [attributes](#) = ("action", "tag")  
*XML attributes for this element.*
- string [element\\_name](#) = "config"
- tuple [elements](#) = ("bpki\_crl",)  
*XML elements contained by this element.*
- tuple [sql\\_template](#) = [rpki.sql.template](#)("config", ["config\\_id"](#), ("bpki\_crl", [rpki.x509.CRL](#)))
- int [wired\\_in\\_config\\_id](#) = 1

#### 3.103.1 Detailed Description

<config/> element. This is a little weird because there should never be more than one row in the SQL config table, but we have to put the BPKI CRL somewhere and SQL is the least bad place available.

So we reuse a lot of the SQL machinery, but we nail [config\\_id](#) at 1, we don't expose it in the XML protocol, and we only support the get and set actions.

Definition at line 41 of file [publication.py](#).

#### 3.103.2 Member Function Documentation

##### 3.103.2.1 def [rpki.publication.config\\_elt.fetch](#) (*cls*, *gctx*)

Fetch the config object from SQL. This requires special handling because of the weird way we treat [config\\_id](#).

Definition at line 67 of file [publication.py](#).

### 3.103.2.2 def rpki.publication.config\_elt.serve\_fetch\_one ( self)

Find the config object on which a get or set method should operate.

Definition at line 82 of file publication.py.

### 3.103.2.3 def rpki.publication.config\_elt.serve\_set ( self, r\_msg)

Handle a set action. This requires special handling because config we don't support the create method.

Reimplemented from [rpki.xml\\_utils.data\\_elt](#).

Definition at line 73 of file publication.py.

### 3.103.2.4 def rpki.publication.config\_elt.startElement ( self, stack, name, attrs)

StartElement() handler for config object. This requires special handling because of the weird way we treat config\_id.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 59 of file publication.py.

## 3.103.3 Member Data Documentation

### 3.103.3.1 tuple rpki.publication.config\_elt.attributes = ("action", "tag") [static]

XML attributes for this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 51 of file publication.py.

### 3.103.3.2 rpki.publication.config\_elt.config\_id

Definition at line 64 of file publication.py.

### 3.103.3.3 string rpki.publication.config\_elt.element\_name = "config" [static]

Definition at line 52 of file publication.py.

**3.103.3.4 tuple** `rpki.publication.config_elt.elements` = `("bpki_crl",)`  
[static]

XML elements contained by this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 53 of file `publication.py`.

**3.103.3.5 tuple** `rpki.publication.config_elt.sql_template` =  
`rpki.sql.template("config", "config_id", ("bpki_crl", rpki.x509.CRL))`  
[static]

Definition at line 55 of file `publication.py`.

**3.103.3.6 int** `rpki.publication.config_elt.wired_in_config_id` = 1 [static]

Definition at line 57 of file `publication.py`.

The documentation for this class was generated from the following file:

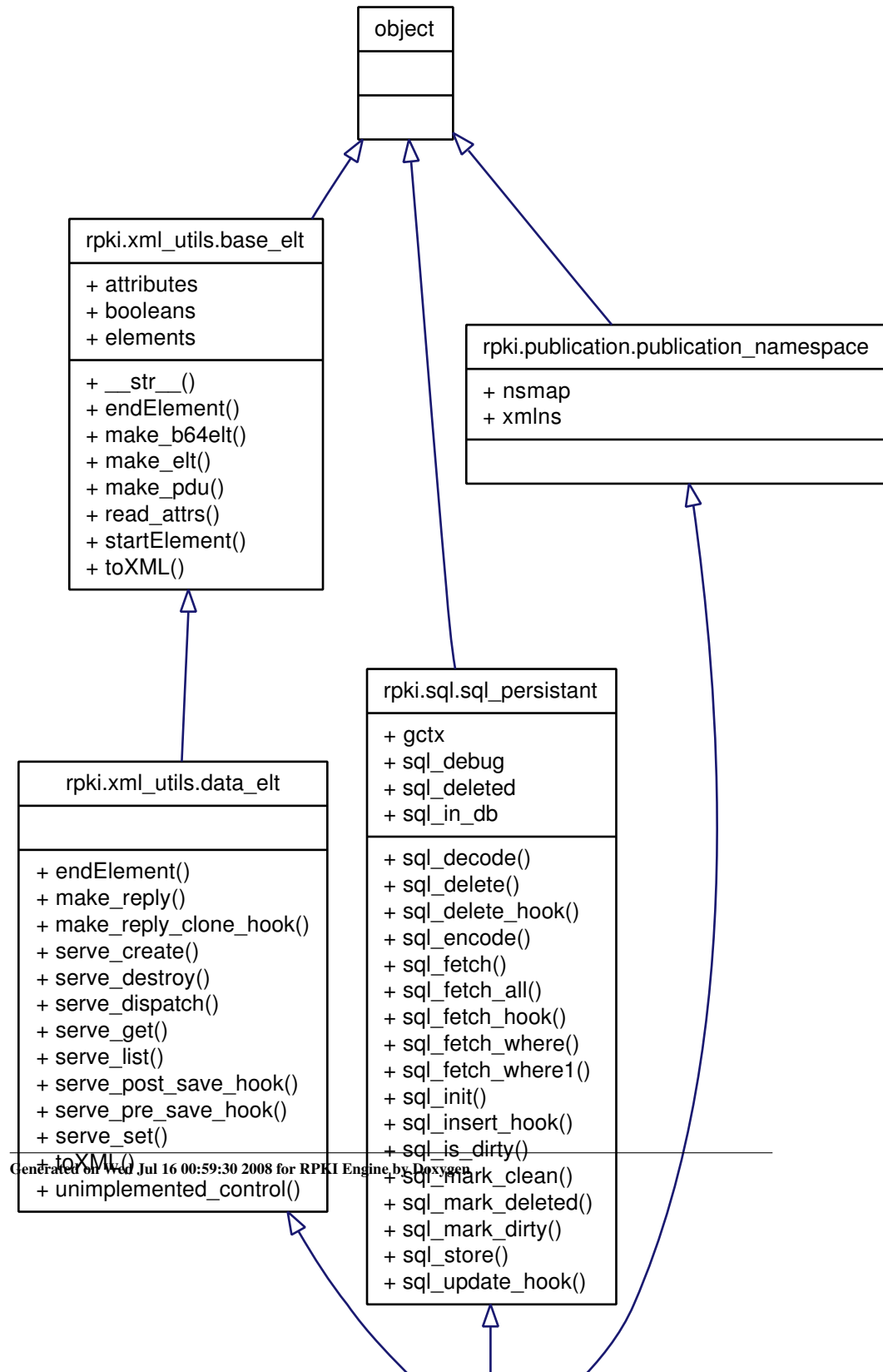
- [publication.py](#) (1914)





## 3.104 rpki.publication.control\_elt Class Reference

Inheritance diagram for rpki.publication.control\_elt:



## Public Member Functions

- [def serve\\_dispatch](#)

### 3.104.1 Detailed Description

Virtual class for control channel objects.

Definition at line 30 of file publication.py.

### 3.104.2 Member Function Documentation

#### 3.104.2.1 `def rpki.publication.control_elt.serve_dispatch ( self, r_msg, client)`

Action dispatch handler. This needs special handling because we need to make sure that this PDU arrived via the control channel.

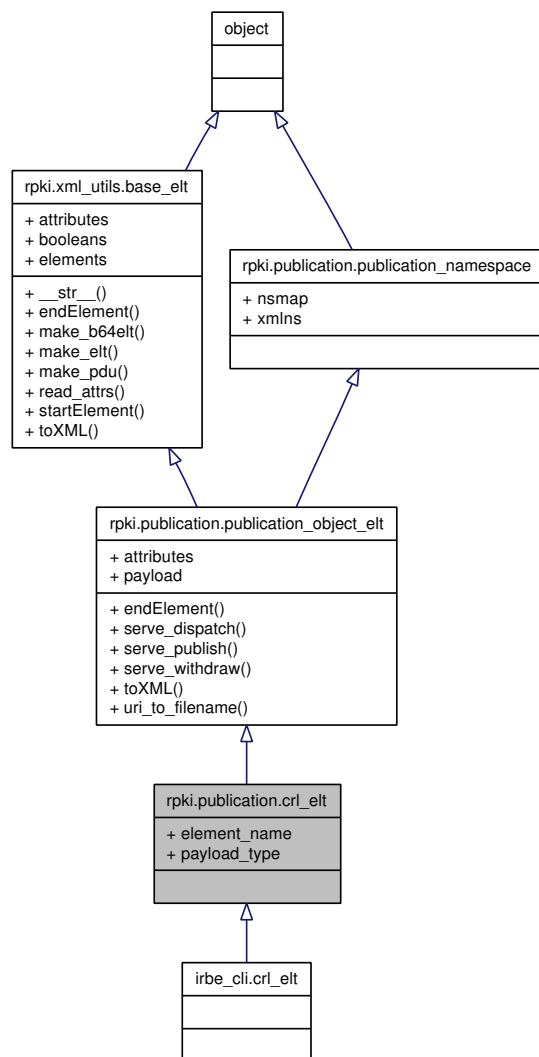
Definition at line 33 of file publication.py.

The documentation for this class was generated from the following file:

- [publication.py \(1914\)](#)

### 3.105 rpki.publication.crl\_elt Class Reference

Inheritance diagram for rpki.publication.crl\_elt:



#### Static Public Attributes

- string `element_name` = "crl"
- `payload_type` = `rpki.x509.CRL`

### 3.105.1 Detailed Description

`<crl/> element.`

Definition at line 211 of file publication.py.

### 3.105.2 Member Data Documentation

#### 3.105.2.1 `string rpki.publication.crl_elt.element_name = "crl" [static]`

Definition at line 214 of file publication.py.

#### 3.105.2.2 `rpki.publication.crl_elt.payload_type = rpki.x509.CRL [static]`

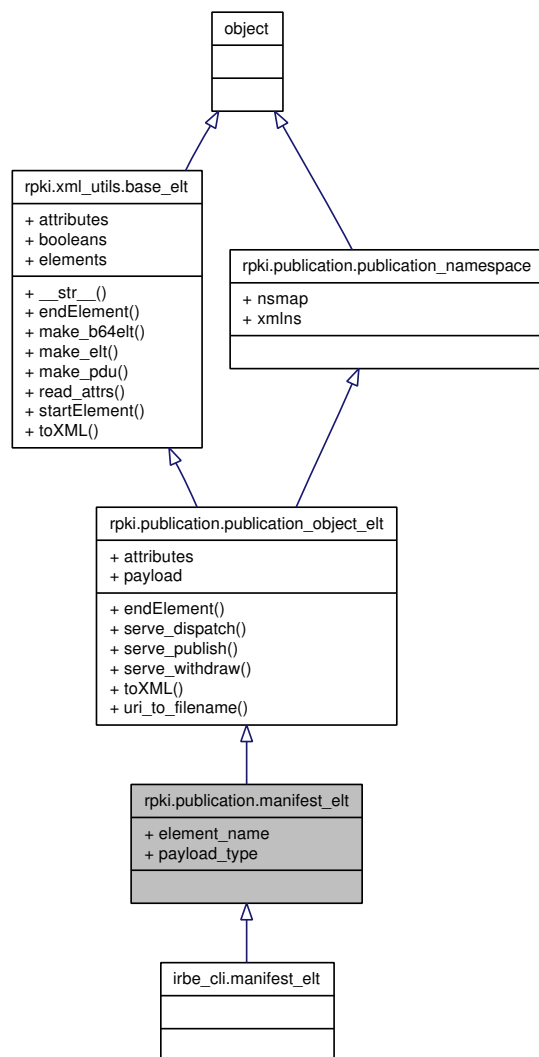
Definition at line 215 of file publication.py.

The documentation for this class was generated from the following file:

- [publication.py \(1914\)](#)

### 3.106 rpki.publication.manifest\_elt Class Reference

Inheritance diagram for rpki.publication.manifest\_elt:



#### Static Public Attributes

- string `element_name` = "manifest"
- `payload_type` = `rpki.x509.SignedManifest`

### 3.106.1 Detailed Description

`<manifest/> element.`

Definition at line 217 of file `publication.py`.

### 3.106.2 Member Data Documentation

**3.106.2.1** `string rpki.publication.manifest_elt.element_name = "manifest"`  
[static]

Definition at line 220 of file `publication.py`.

**3.106.2.2** `rpki.publication.manifest_elt.payload_type` =  
`rpki.x509.SignedManifest` [static]

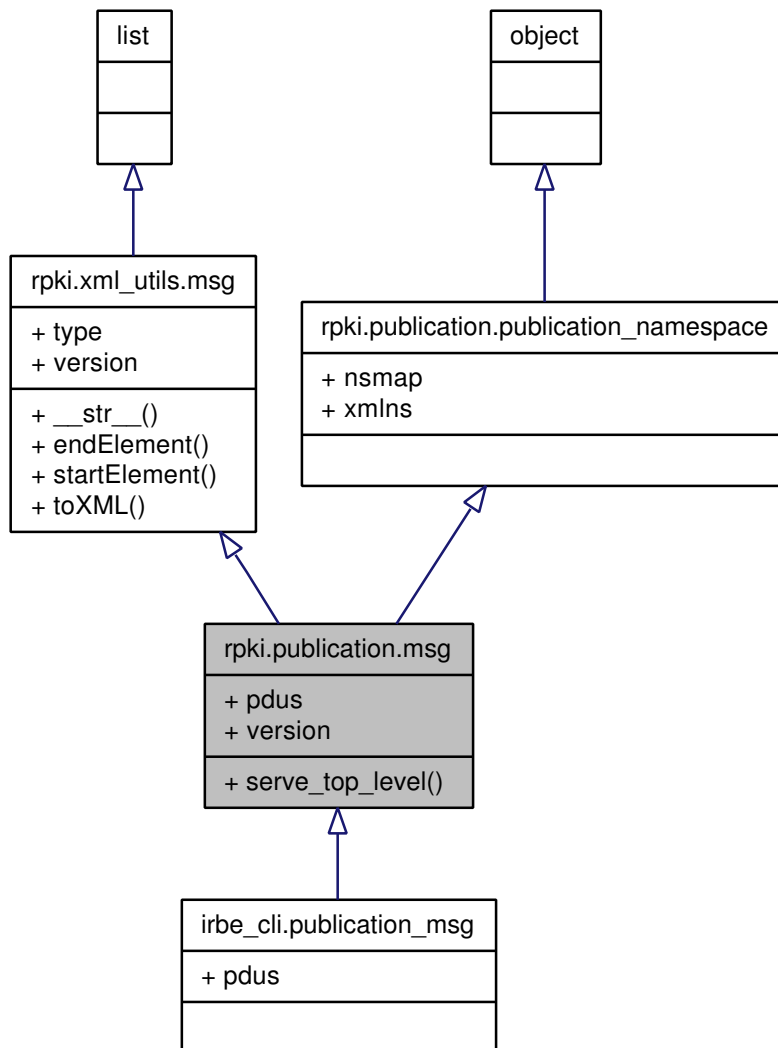
Definition at line 221 of file `publication.py`.

The documentation for this class was generated from the following file:

- [publication.py \(1914\)](#)

### 3.107 rpki.publication.msg Class Reference

Inheritance diagram for rpki.publication.msg:



#### Public Member Functions

- def [serve\\_top\\_level](#)

**Static Public Attributes**

- tuple [pdus](#)  
*Dispatch table of PDUs for this protocol.*
- int [version](#) = 1  
*Protocol version.*

**3.107.1 Detailed Description**

Publication PDU.

Definition at line 247 of file publication.py.

**3.107.2 Member Function Documentation****3.107.2.1 def rpki.publication.msg.serve\_top\_level (self, gctx, client)**

Serve one msg PDU.

Definition at line 259 of file publication.py.

**3.107.3 Member Data Documentation****3.107.3.1 rpki::publication.msg::pdus [static]**

**Initial value:**

```
dict((x.element_name, x)
      for x in (config_elt, client_elt, certificate_elt, crl_elt, manifest_elt, roa_elt, rep
```

Dispatch table of PDUs for this protocol.

Reimplemented in [irbe\\_cli.publication\\_msg](#).

Definition at line 256 of file publication.py.

**3.107.3.2 rpki::publication.msg::version = 1 [static]**

Protocol version.

Reimplemented from [rpki.xml\\_utils.msg](#).

Definition at line 252 of file publication.py.

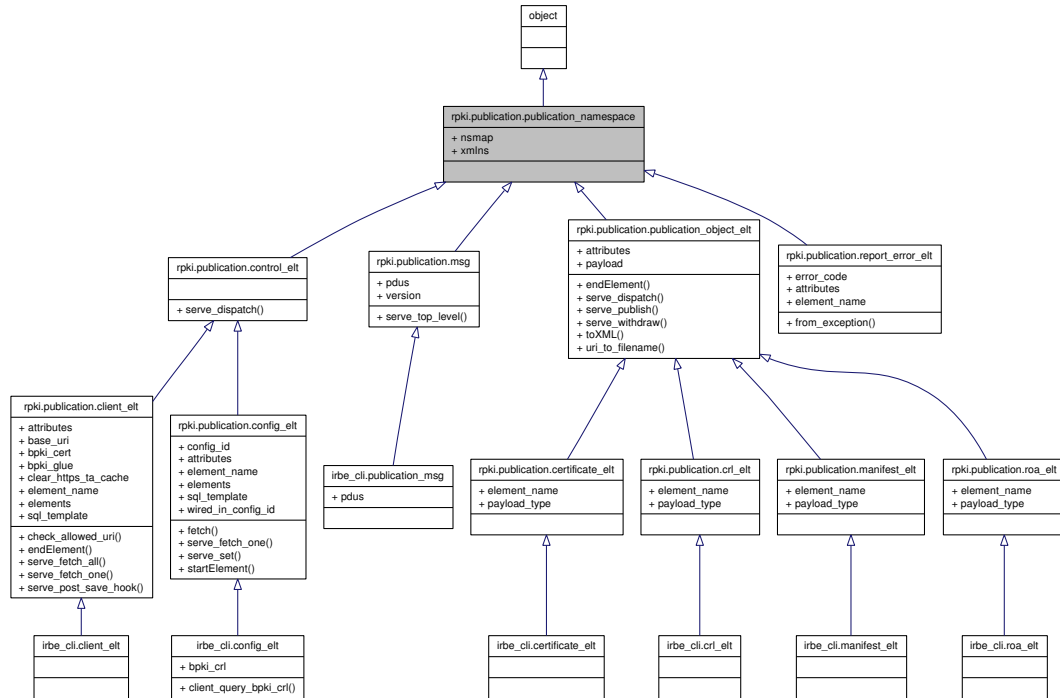
The documentation for this class was generated from the following file:



- [publication.py \(1914\)](#)

### 3.108 rpki.publication.publication\_namespace Class Reference

Inheritance diagram for rpki.publication.publication\_namespace:



#### Static Public Attributes

- dictionary `nsmmap` = { None : `xmlns` }
- string `xmlns` = "http://www.hactrn.net/uris/rpki/publication-spec/"

#### 3.108.1 Detailed Description

XML namespace parameters for publication protocol.

Definition at line 24 of file `publication.py`.

### 3.108.2 Member Data Documentation

**3.108.2.1** dictionary `rpki.publication.publication_namespace.nsmap = { None : xmlns }` `[static]`

Definition at line 28 of file `publication.py`.

**3.108.2.2** string `rpki.publication.publication_namespace.xmlns = "http://www.hactrn.net/uris/rpki/publication-spec/"` `[static]`

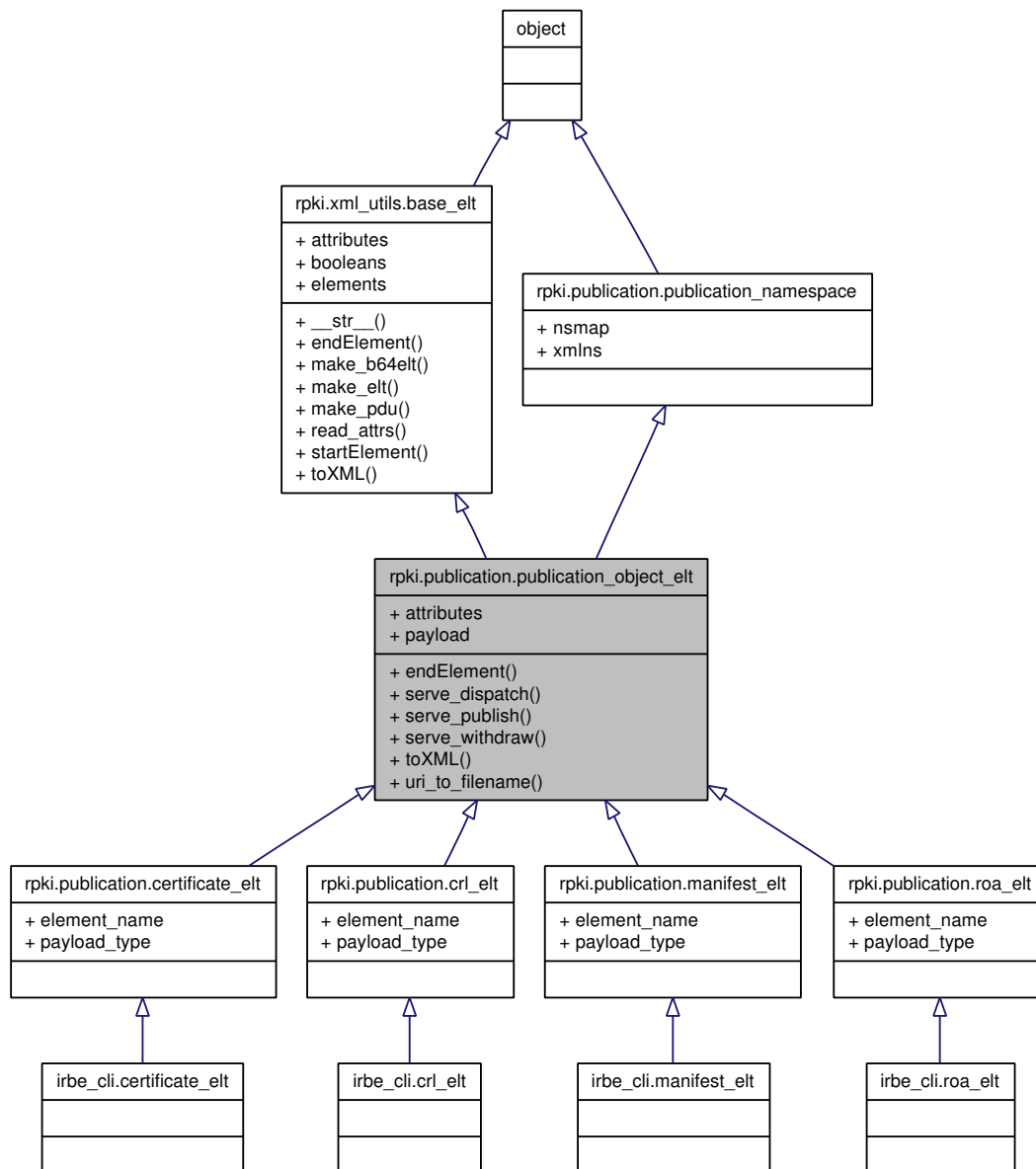
Definition at line 27 of file `publication.py`.

The documentation for this class was generated from the following file:

- [publication.py \(1914\)](#)

## 3.109 rpki.publication.publication\_object\_elt Class Reference

Inheritance diagram for rpki.publication.publication\_object\_elt:



## Public Member Functions

- def [endElement](#)
- def [serve\\_dispatch](#)
- def [serve\\_publish](#)
- def [serve\\_withdraw](#)
- def [toXML](#)
- def [uri\\_to\\_filename](#)

## Static Public Attributes

- tuple [attributes](#) = ("action", "tag", "client\_id", "uri")

*XML attributes for this element.*

- [payload](#) = None

### 3.109.1 Detailed Description

Virtual class for publishable objects. These have very similar syntax, differences lie in underlying datatype and methods. XML methods are a little different from the pattern used for objects that support the create/set/get/list/destroy actions, but publishable objects don't go in SQL either so these classes would be different in any case.

Definition at line 138 of file publication.py.

### 3.109.2 Member Function Documentation

#### 3.109.2.1 def rpki.publication.publication\_object\_elt.endElement ( self, stack, name, text)

Handle a publishable element element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 150 of file publication.py.

#### 3.109.2.2 def rpki.publication.publication\_object\_elt.serve\_dispatch ( self, r\_msg, client)

Action dispatch handler.

Definition at line 164 of file publication.py.

**3.109.2.3 def rpki.publication.publication\_object\_elt.serve\_publish ( self)**

Publish an object.

Definition at line 180 of file publication.py.

**3.109.2.4 def rpki.publication.publication\_object\_elt.serve\_withdraw ( self)**

Withdraw an object.

Definition at line 191 of file publication.py.

**3.109.2.5 def rpki.publication.publication\_object\_elt.toXML ( self)**

Generate XML element for publishable object.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 157 of file publication.py.

**3.109.2.6 def rpki.publication.publication\_object\_elt.uri\_to\_filename ( self)**

Convert a URI to a local filename.

Definition at line 196 of file publication.py.

**3.109.3 Member Data Documentation****3.109.3.1 tuple rpki.publication.publication\_object\_elt.attributes = ("action", "tag", "client\_id", "uri") [static]**

XML attributes for this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 147 of file publication.py.

**3.109.3.2 rpki.publication.publication\_object\_elt.payload = None [static]**

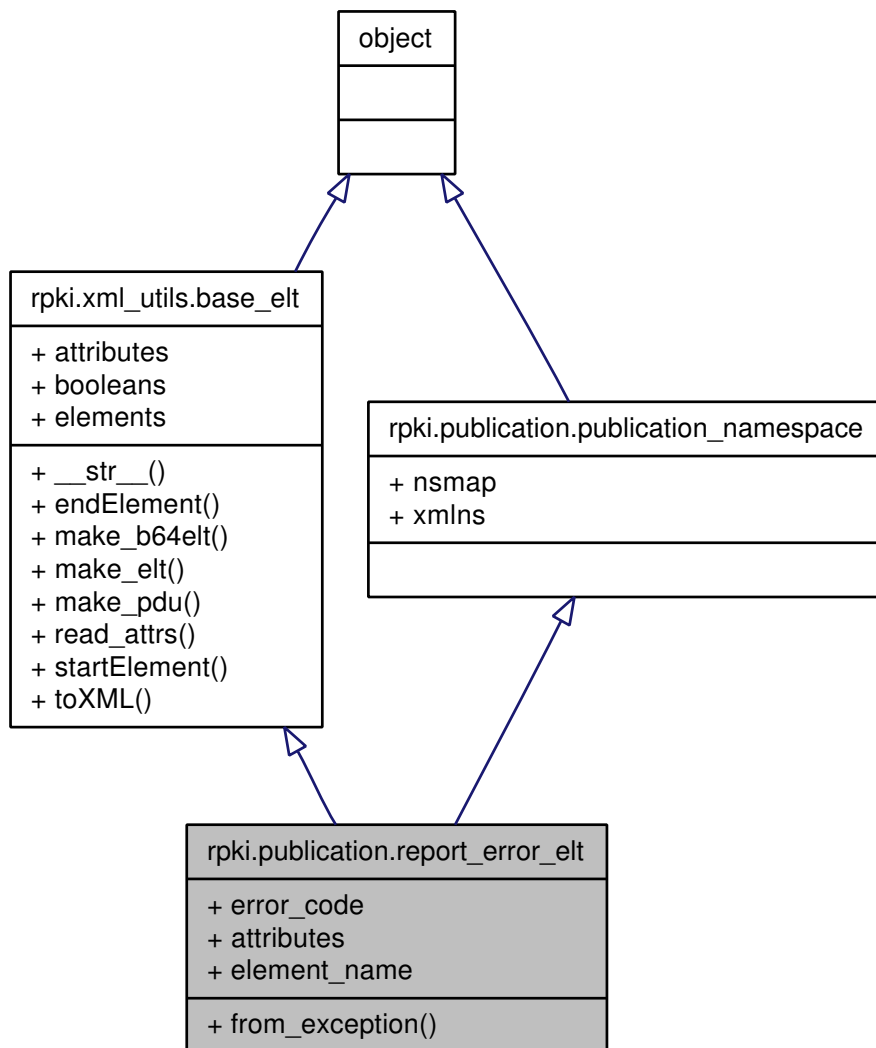
Definition at line 148 of file publication.py.

The documentation for this class was generated from the following file:

- [publication.py \(1914\)](#)

### 3.110 rpki.publication.report\_error\_elt Class Reference

Inheritance diagram for rpki.publication.report\_error\_elt:



#### Public Member Functions

- def [from\\_exception](#)

### Public Attributes

- [error\\_code](#)

### Static Public Attributes

- tuple [attributes](#) = ("tag", "[error\\_code](#)")  
*XML attributes for this element.*
- string [element\\_name](#) = "report\_error"

#### 3.110.1 Detailed Description

<report\_error/> element.

Definition at line 234 of file publication.py.

#### 3.110.2 Member Function Documentation

##### 3.110.2.1 def rpki.publication.report\_error\_elt.from\_exception ( cls, exc)

Generate a <report\_error/> element from an exception.

Definition at line 241 of file publication.py.

#### 3.110.3 Member Data Documentation

##### 3.110.3.1 tuple rpki.publication.report\_error\_elt.attributes = ("tag", "error\_code") [static]

XML attributes for this element.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 238 of file publication.py.

##### 3.110.3.2 string rpki.publication.report\_error\_elt.element\_name = "report\_error" [static]

Definition at line 237 of file publication.py.

### 3.110.3.3 rpki.publication.report\_error\_elt.error\_code

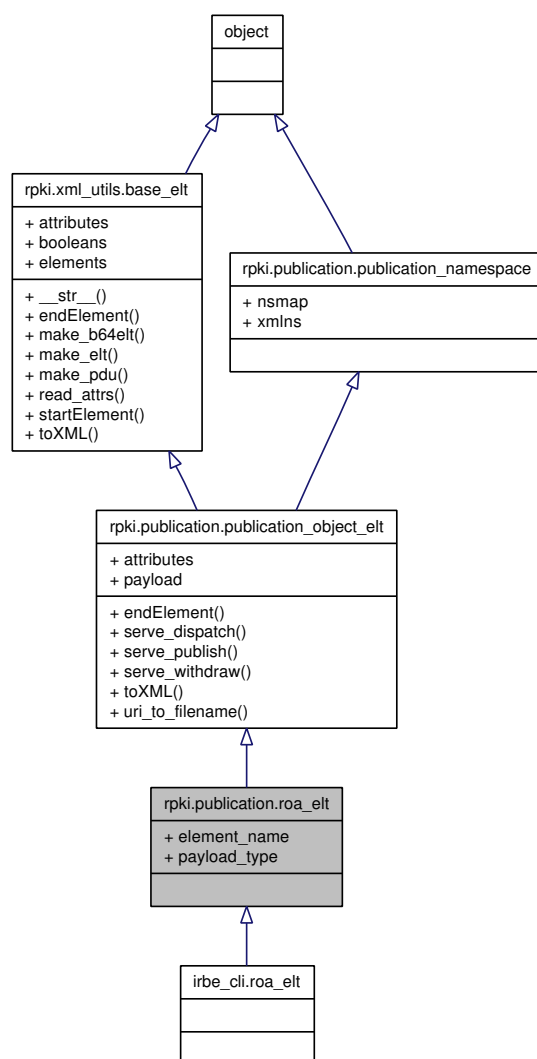
Definition at line 244 of file publication.py.

The documentation for this class was generated from the following file:

- [publication.py \(1914\)](#)

## 3.111 rpki.publication.roa\_elt Class Reference

Inheritance diagram for rpki.publication.roa\_elt:





### Static Public Attributes

- string [element\\_name](#) = "roa"
- [payload\\_type](#) = [rpki.x509.ROA](#)

#### 3.111.1 Detailed Description

<roa/> element.

Definition at line 223 of file publication.py.

#### 3.111.2 Member Data Documentation

##### 3.111.2.1 string [rpki.publication.roa\\_elt.element\\_name](#) = "roa" [static]

Definition at line 226 of file publication.py.

##### 3.111.2.2 [rpki.publication.roa\\_elt.payload\\_type](#) = [rpki.x509.ROA](#) [static]

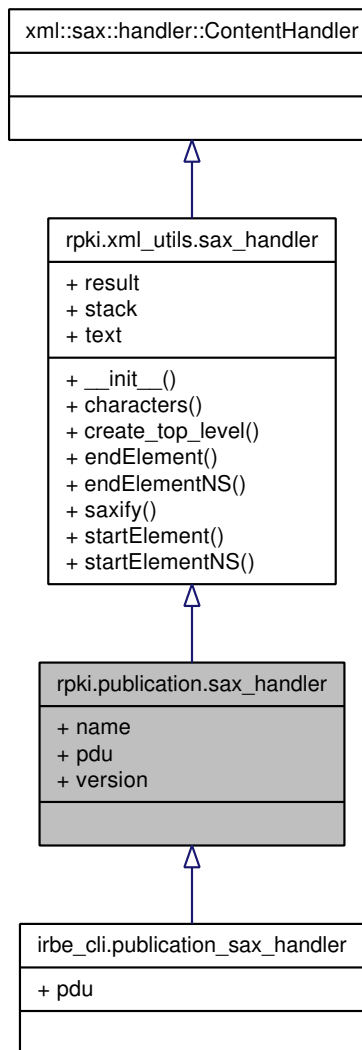
Definition at line 227 of file publication.py.

The documentation for this class was generated from the following file:

- [publication.py](#) (1914)

### 3.112 rpki.publication.sax\_handler Class Reference

Inheritance diagram for rpki.publication.sax\_handler:



#### Static Public Attributes

- string `name` = "msg"
- `pdu` = `msg`
- string `version` = "1"

### 3.112.1 Detailed Description

SAX handler for publication protocol.

Definition at line 270 of file publication.py.

### 3.112.2 Member Data Documentation

#### 3.112.2.1 `string rpki.publication.sax_handler.name = "msg" [static]`

Definition at line 274 of file publication.py.

#### 3.112.2.2 `rpki.publication.sax_handler.pdu = msg [static]`

Reimplemented in [irbe\\_cli.publication\\_sax\\_handler](#).

Definition at line 273 of file publication.py.

#### 3.112.2.3 `string rpki.publication.sax_handler.version = "1" [static]`

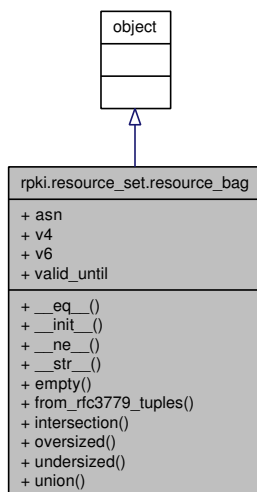
Definition at line 275 of file publication.py.

The documentation for this class was generated from the following file:

- [publication.py \(1914\)](#)

### 3.113 rpki.resource\_set.resource\_bag Class Reference

Inheritance diagram for rpki.resource\_set.resource\_bag:



#### Public Member Functions

- def [\\_\\_eq\\_\\_](#)
- def [\\_\\_init\\_\\_](#)
- def [\\_\\_ne\\_\\_](#)
- def [\\_\\_str\\_\\_](#)
- def [empty](#)
- def [from\\_rfc3779\\_tuples](#)
- def [intersection](#)
- def [oversized](#)
- def [undersized](#)
- def [union](#)

#### Public Attributes

- [asn](#)  
*Set of Autonomous System Number resources.*
- [v4](#)  
*Set of IPv4 resources.*
- [v6](#)

*Set of IPv6 resources.*

- [valid\\_until](#)

*Expiration date of resources, for setting certificate notAfter field.*

### 3.113.1 Detailed Description

Container to simplify passing around the usual triple of ASN, IPv4, and IPv6 resource sets.

Definition at line 450 of file resource\_set.py.

### 3.113.2 Member Function Documentation

#### 3.113.2.1 def rpki.resource\_set.resource\_bag.\_\_eq\_\_ ( self, other)

Definition at line 510 of file resource\_set.py.

#### 3.113.2.2 def rpki.resource\_set.resource\_bag.\_\_init\_\_ ( self, asn = None, v4 = None, v6 = None, valid\_until = None)

Definition at line 467 of file resource\_set.py.

#### 3.113.2.3 def rpki.resource\_set.resource\_bag.\_\_ne\_\_ ( self, other)

Definition at line 516 of file resource\_set.py.

#### 3.113.2.4 def rpki.resource\_set.resource\_bag.\_\_str\_\_ ( self)

Definition at line 537 of file resource\_set.py.

#### 3.113.2.5 def rpki.resource\_set.resource\_bag.empty ( self)

Return True iff all resource sets in this bag are empty.

Definition at line 506 of file resource\_set.py.

#### 3.113.2.6 def rpki.resource\_set.resource\_bag.from\_rfc3779\_tuples ( cls, exts)

Build a resource\_bag from intermediate form generated by RFC 3779 ASN.1 decoder.

Definition at line 486 of file resource\_set.py.

**3.113.2.7 def rpki.resource\_set.resource\_bag.intersection ( *self*, *other* )**

Compute intersection with another resource\_bag.  
valid\_until attribute (if any) inherits from self.

Definition at line 519 of file resource\_set.py.

**3.113.2.8 def rpki.resource\_set.resource\_bag.oversized ( *self*, *other* )**

True iff self is oversized with respect to other.

Definition at line 473 of file resource\_set.py.

**3.113.2.9 def rpki.resource\_set.resource\_bag.undersized ( *self*, *other* )**

True iff self is undersized with respect to other.

Definition at line 479 of file resource\_set.py.

**3.113.2.10 def rpki.resource\_set.resource\_bag.union ( *self*, *other* )**

Compute union with another resource\_bag.  
valid\_until attribute (if any) inherits from self.

Definition at line 528 of file resource\_set.py.

**3.113.3 Member Data Documentation****3.113.3.1 rpki::resource\_set.resource\_bag::asn**

Set of Autonomous System Number resources.

Definition at line 468 of file resource\_set.py.

**3.113.3.2 rpki::resource\_set.resource\_bag::v4**

Set of IPv4 resources.

Definition at line 469 of file resource\_set.py.

**3.113.3.3 rpki::resource\_set.resource\_bag::v6**

Set of IPv6 resources.

Definition at line 470 of file resource\_set.py.

#### 3.113.3.4 rpki::resource\_set.resource\_bag::valid\_until

Expiration date of resources, for setting certificate notAfter field.

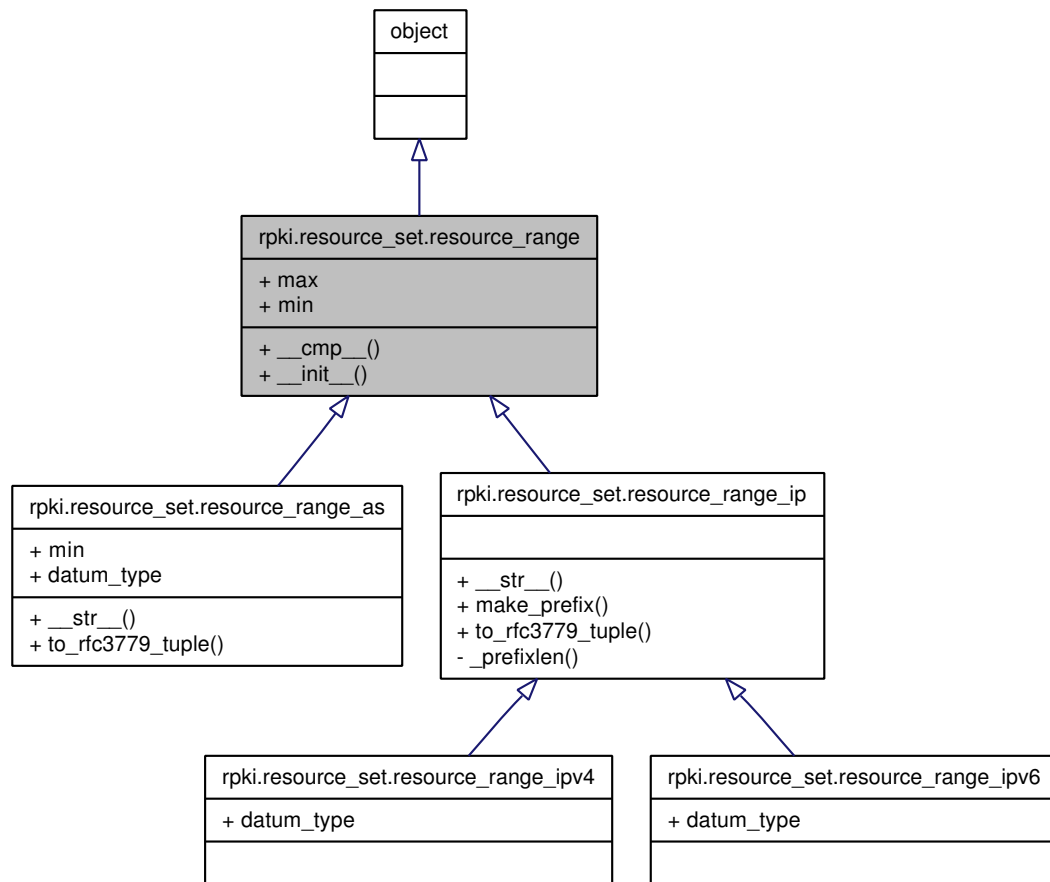
Definition at line 471 of file resource\_set.py.

The documentation for this class was generated from the following file:

- [resource\\_set.py \(1984\)](#)

### 3.114 rpki.resource\_set.resource\_range Class Reference

Inheritance diagram for rpki.resource\_set.resource\_range:



## Public Member Functions

- [def \\_\\_cmp\\_\\_](#)
- [def \\_\\_init\\_\\_](#)

## Public Attributes

- [max](#)
- [min](#)

### 3.114.1 Detailed Description

Generic resource range type. Assumes underlying type is some kind of integer.

This is a virtual class. You probably don't want to use this type directly.

Definition at line 35 of file resource\_set.py.

### 3.114.2 Member Function Documentation

#### 3.114.2.1 `def rpki.resource_set.resource_range.__cmp__(self, other)`

Compare two resource\_range objects.

Definition at line 49 of file resource\_set.py.

#### 3.114.2.2 `def rpki.resource_set.resource_range.__init__(self, min, max)`

Initialize and sanity check a resource\_range.

Definition at line 43 of file resource\_set.py.

### 3.114.3 Member Data Documentation

#### 3.114.3.1 `rpki.resource_set.resource_range.max`

Definition at line 47 of file resource\_set.py.



### 3.114.3.2 rpki.resource\_set.resource\_range.min

Reimplemented in [rpki.resource\\_set.resource\\_range\\_as](#).

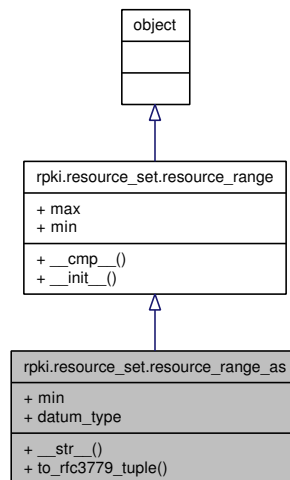
Definition at line 46 of file resource\_set.py.

The documentation for this class was generated from the following file:

- [resource\\_set.py](#) (1984)

## 3.115 rpki.resource\_set.resource\_range\_as Class Reference

Inheritance diagram for rpki.resource\_set.resource\_range\_as:



### Public Member Functions

- [def \\_\\_str\\_\\_](#)
- [def to\\_rfc3779\\_tuple](#)

### Public Attributes

- [min](#)

### Static Public Attributes

- [datum\\_type](#) = `long`  
*Type of underlying data (min and max).*

### 3.115.1 Detailed Description

Range of Autonomous System Numbers.

Denotes a single ASN by a range whose min and max values are identical.

Definition at line 58 of file `resource_set.py`.

### 3.115.2 Member Function Documentation

#### 3.115.2.1 `def rpki.resource_set.resource_range_as.__str__ ( self )`

Convert a `resource_range_as` to string format.

Definition at line 69 of file `resource_set.py`.

#### 3.115.2.2 `def rpki.resource_set.resource_range_as.to_rfc3779_tuple ( self )`

Convert a `resource_range_as` to tuple format for RFC 3779 ASN.1 encoding.

Definition at line 76 of file `resource_set.py`.

### 3.115.3 Member Data Documentation

#### 3.115.3.1 `rpki::resource_set.resource_range_as::datum_type` = `long` [static]

Type of underlying data (min and max).

Definition at line 67 of file `resource_set.py`.

#### 3.115.3.2 `rpki.resource_set.resource_range_as.min`

Reimplemented from [rpki.resource\\_set.resource\\_range](#).

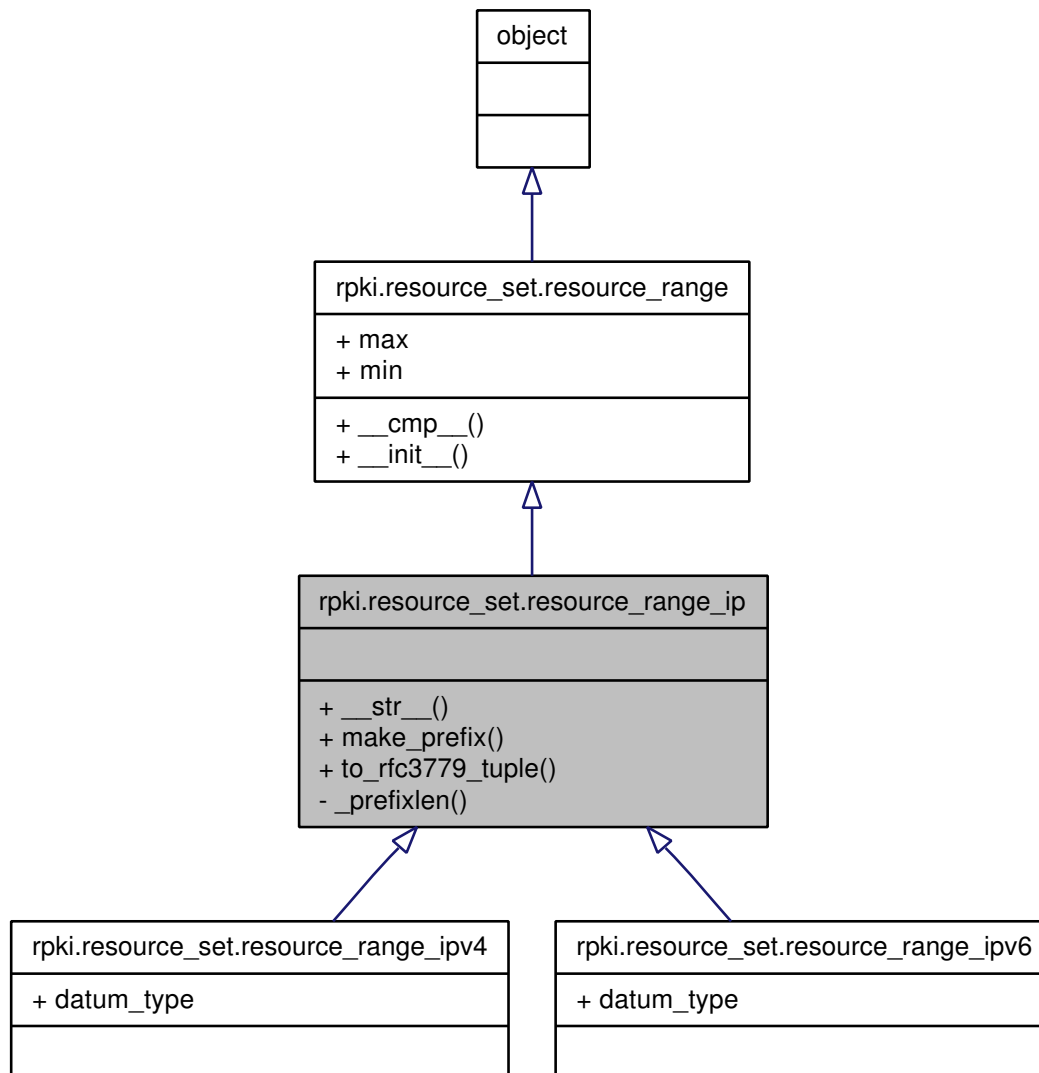
Definition at line 71 of file `resource_set.py`.

The documentation for this class was generated from the following file:

- [resource\\_set.py](#) (1984)

### 3.116 rpki.resource\_set.resource\_range\_ip Class Reference

Inheritance diagram for rpki.resource\_set.resource\_range\_ip:



#### Public Member Functions

- def `__str__`
- def `make_prefix`
- def `to_rfc3779_tuple`

## Private Member Functions

- [def \\_prefixlen](#)

### 3.116.1 Detailed Description

Range of (generic) IP addresses.

Prefixes are converted to ranges on input, and ranges that can be represented as prefixes are written as prefixes on output.

This is a virtual class. You probably don't want to use it directly.

Definition at line 83 of file resource\_set.py.

### 3.116.2 Member Function Documentation

#### 3.116.2.1 `def rpki.resource_set.resource_range_ip.__str__ ( self)`

Convert a resource\_range\_ip to string format.

Definition at line 106 of file resource\_set.py.

#### 3.116.2.2 `def rpki.resource_set.resource_range_ip._prefixlen ( self)` [private]

Determine whether a resource\_range\_ip can be expressed as a prefix.

Definition at line 92 of file resource\_set.py.

#### 3.116.2.3 `def rpki.resource_set.resource_range_ip.make_prefix ( cls, address, prefixlen)`

Construct a resource range corresponding to a prefix.

Definition at line 124 of file resource\_set.py.

#### 3.116.2.4 `def rpki.resource_set.resource_range_ip.to_rfc3779_tuple ( self)`

Convert a resource\_range\_ip to tuple format for RFC 3779 ASN.1 encoding.

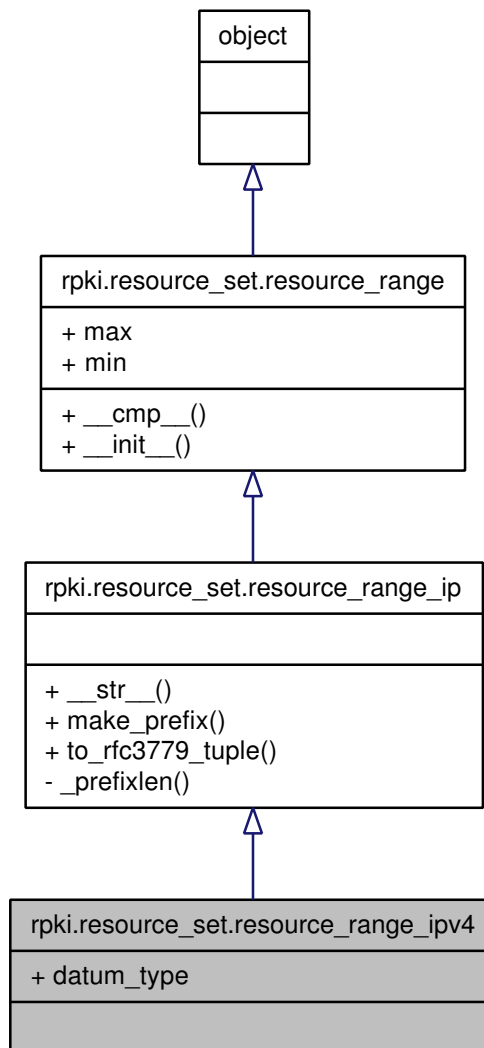
Definition at line 114 of file resource\_set.py.

The documentation for this class was generated from the following file:

- [resource\\_set.py \(1984\)](#)

### 3.117 rpki.resource\_set.resource\_range\_ipv4 Class Reference

Inheritance diagram for rpki.resource\_set.resource\_range\_ipv4:



#### Static Public Attributes

- `datum_type = rpki.ipaddrs.v4addr`  
Type of underlying data (min and max).

### 3.117.1 Detailed Description

Range of IPv4 addresses.

Definition at line 132 of file `resource_set.py`.

### 3.117.2 Member Data Documentation

**3.117.2.1** `rpki::resource_set.resource_range_ipv4::datum_type` =  
`rpki.ipaddr.v4addr` [static]

Type of underlying data (min and max).

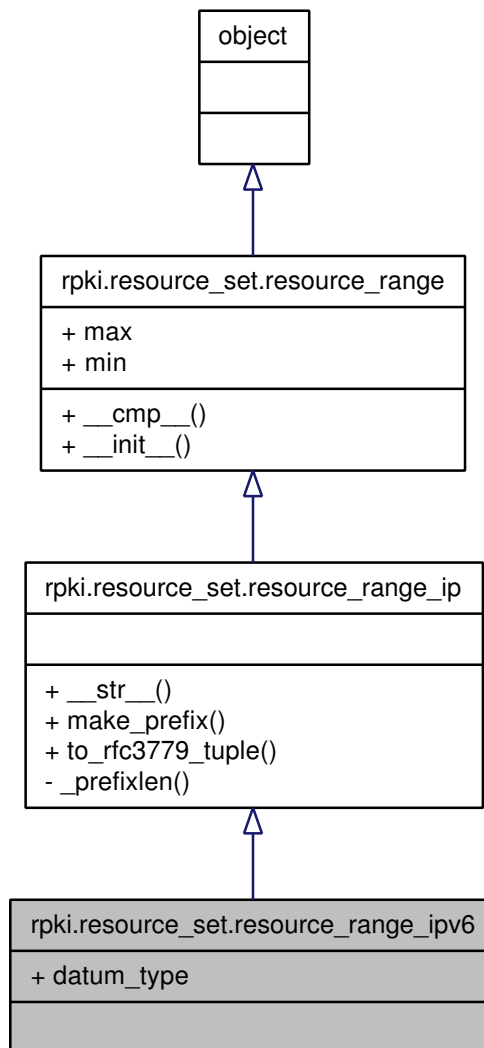
Definition at line 138 of file `resource_set.py`.

The documentation for this class was generated from the following file:

- [resource\\_set.py \(1984\)](#)

### 3.118 rpki.resource\_set.resource\_range\_ipv6 Class Reference

Inheritance diagram for rpki.resource\_set.resource\_range\_ipv6:



#### Static Public Attributes

- `datum_type = rpki.ipaddrs.v6addr`  
*Type of underlying data (min and max).*

### 3.118.1 Detailed Description

Range of IPv6 addresses.

Definition at line 140 of file resource\_set.py.

### 3.118.2 Member Data Documentation

**3.118.2.1 rpki::resource\_set.resource\_range\_ipv6::datum\_type** =  
**rpki.ipaddr.v6addr** [static]

Type of underlying data (min and max).

Definition at line 146 of file resource\_set.py.

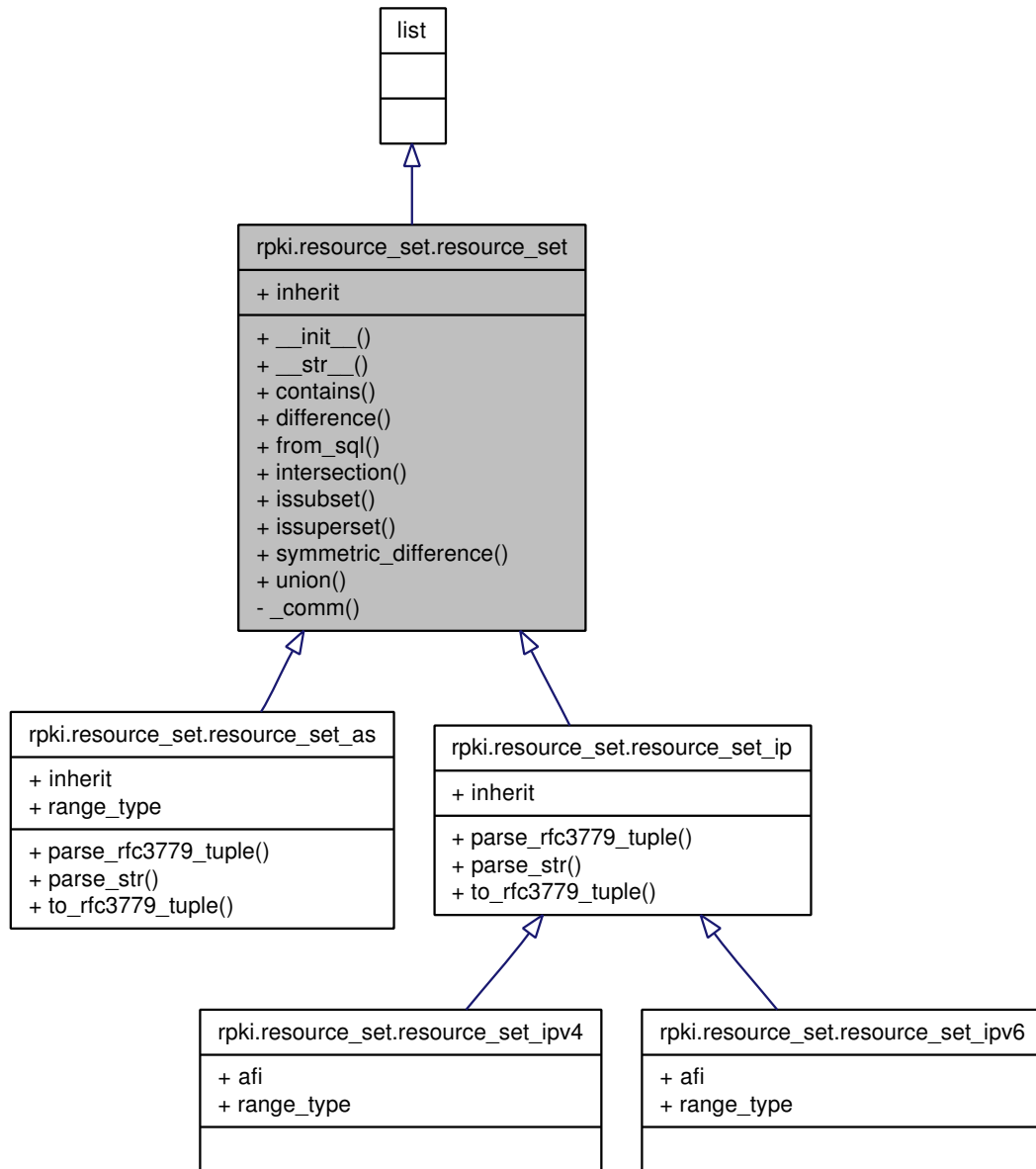
The documentation for this class was generated from the following file:

- [resource\\_set.py \(1984\)](#)



### 3.119 rpki.resource\_set.resource\_set Class Reference

Inheritance diagram for rpki.resource\_set.resource\_set:



### Public Member Functions

- def `__init__`
- def `__str__`
- def `contains`
- def `difference`
- def `from_sql`
- def `intersection`
- def `issubset`
- def `issuperset`
- def `symmetric_difference`
- def `union`

### Static Public Attributes

- `inherit` = False  
*Boolean indicating whether this `resource_set` uses RFC 3779 inheritance.*

### Private Member Functions

- def `_comm`

#### 3.119.1 Detailed Description

Generic resource set.  
This is a list subclass containing resource ranges.

This is a virtual class. You probably don't want to use it directly.

Definition at line 162 of file resource\_set.py.

#### 3.119.2 Member Function Documentation

##### 3.119.2.1 def rpki.resource\_set.resource\_set.\_\_init\_\_ ( self, ini = None)

Initialize a resource\_set.

Definition at line 175 of file resource\_set.py.

**3.119.2.2** `def rpki.resource_set.resource_set.__str__ ( self)`

Convert a resource\_set to string format.

Definition at line 199 of file resource\_set.py.

**3.119.2.3** `def rpki.resource_set.resource_set._comm ( self, other)` [private]

Like comm(1), sort of.

Returns a tuple of three resource sets: resources only in self, resources only in other, and resources in both. Used (not very efficiently) as the basis for most set operations on resource sets.

Definition at line 206 of file resource\_set.py.

**3.119.2.4** `def rpki.resource_set.resource_set.contains ( self, item)`

Set membership test for resource sets.

Definition at line 274 of file resource\_set.py.

**3.119.2.5** `def rpki.resource_set.resource_set.difference ( self, other)`

Set difference for resource sets.

Definition at line 265 of file resource\_set.py.

**3.119.2.6** `def rpki.resource_set.resource_set.from_sql ( cls, sql, query, args = None)`

Create resource set from an SQL query.

sql is an object that supports execute() and fetchall() methods like a DB API 2.0 cursor object.

query is an SQL query that returns a sequence of (min, max) pairs.

Definition at line 298 of file resource\_set.py.

**3.119.2.7 def rpki.resource\_set.resource\_set.intersection ( self, other)**

Set intersection for resource sets.

Definition at line 261 of file resource\_set.py.

**3.119.2.8 def rpki.resource\_set.resource\_set.issubset ( self, other)**

Test whether self is a subset (possibly improper) of other.

Definition at line 286 of file resource\_set.py.

**3.119.2.9 def rpki.resource\_set.resource\_set.issuperset ( self, other)**

Test whether self is a superset (possibly improper) of other.

Definition at line 293 of file resource\_set.py.

**3.119.2.10 def rpki.resource\_set.resource\_set.symmetric\_difference ( self, other)**

Set symmetric difference (XOR) for resource sets.

Definition at line 269 of file resource\_set.py.

**3.119.2.11 def rpki.resource\_set.resource\_set.union ( self, other)**

Set union for resource sets.

Definition at line 238 of file resource\_set.py.

**3.119.3 Member Data Documentation****3.119.3.1 rpki::resource\_set.resource\_set::inherit = False [static]**

Boolean indicating whether this [resource\\_set](#) uses RFC 3779 inheritance.

Reimplemented in [rpki.resource\\_set.resource\\_set\\_as](#), and [rpki.resource\\_set.resource\\_set\\_ip](#).

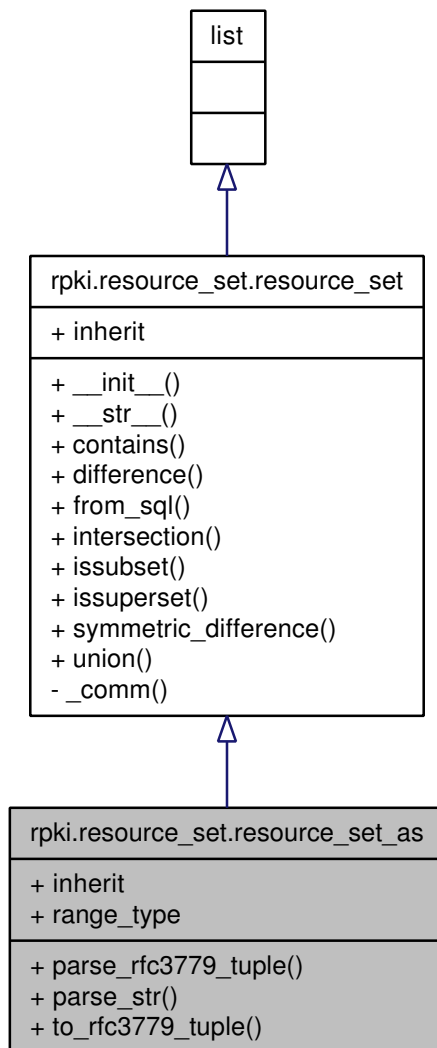
Definition at line 173 of file resource\_set.py.

The documentation for this class was generated from the following file:

- [resource\\_set.py \(1984\)](#)

### 3.120 rpki.resource\_set.resource\_set\_as Class Reference

Inheritance diagram for rpki.resource\_set.resource\_set\_as:



#### Public Member Functions

- def [parse\\_rfc3779\\_tuple](#)
- def [parse\\_str](#)
- def [to\\_rfc3779\\_tuple](#)

## Public Attributes

- [inherit](#)

*Boolean indicating whether this [resource\\_set](#) uses RFC 3779 inheritance.*

## Static Public Attributes

- [range\\_type](#) = [resource\\_range\\_as](#)

*Type of range underlying this type of [resource\\_set](#).*

### 3.120.1 Detailed Description

ASN resource set.

Definition at line 312 of file resource\_set.py.

### 3.120.2 Member Function Documentation

#### 3.120.2.1 `def rpki.resource_set.resource_set_as.parse_rfc3779_tuple (self, x)`

Parse ASN resource from tuple format generated by RFC 3779 ASN.1 decoder.

Definition at line 328 of file resource\_set.py.

#### 3.120.2.2 `def rpki.resource_set.resource_set_as.parse_str (self, x)`

Parse ASN resource sets from text (eg, XML attributes).

Definition at line 320 of file resource\_set.py.

#### 3.120.2.3 `def rpki.resource_set.resource_set_as.to_rfc3779_tuple (self)`

Convert ASN resource set into tuple format used for RFC 3779 ASN.1 encoding.

Definition at line 343 of file resource\_set.py.

### 3.120.3 Member Data Documentation

#### 3.120.3.1 `rpki.resource_set.resource_set_as.inherit`

Boolean indicating whether this [resource\\_set](#) uses RFC 3779 inheritance.

Reimplemented from [rpki.resource\\_set.resource\\_set](#).

Definition at line 341 of file `resource_set.py`.

#### 3.120.3.2 `rpki::resource_set.resource_set_as::range_type = resource_range_as` [static]

Type of range underlying this type of [resource\\_set](#).

Definition at line 318 of file `resource_set.py`.

The documentation for this class was generated from the following file:

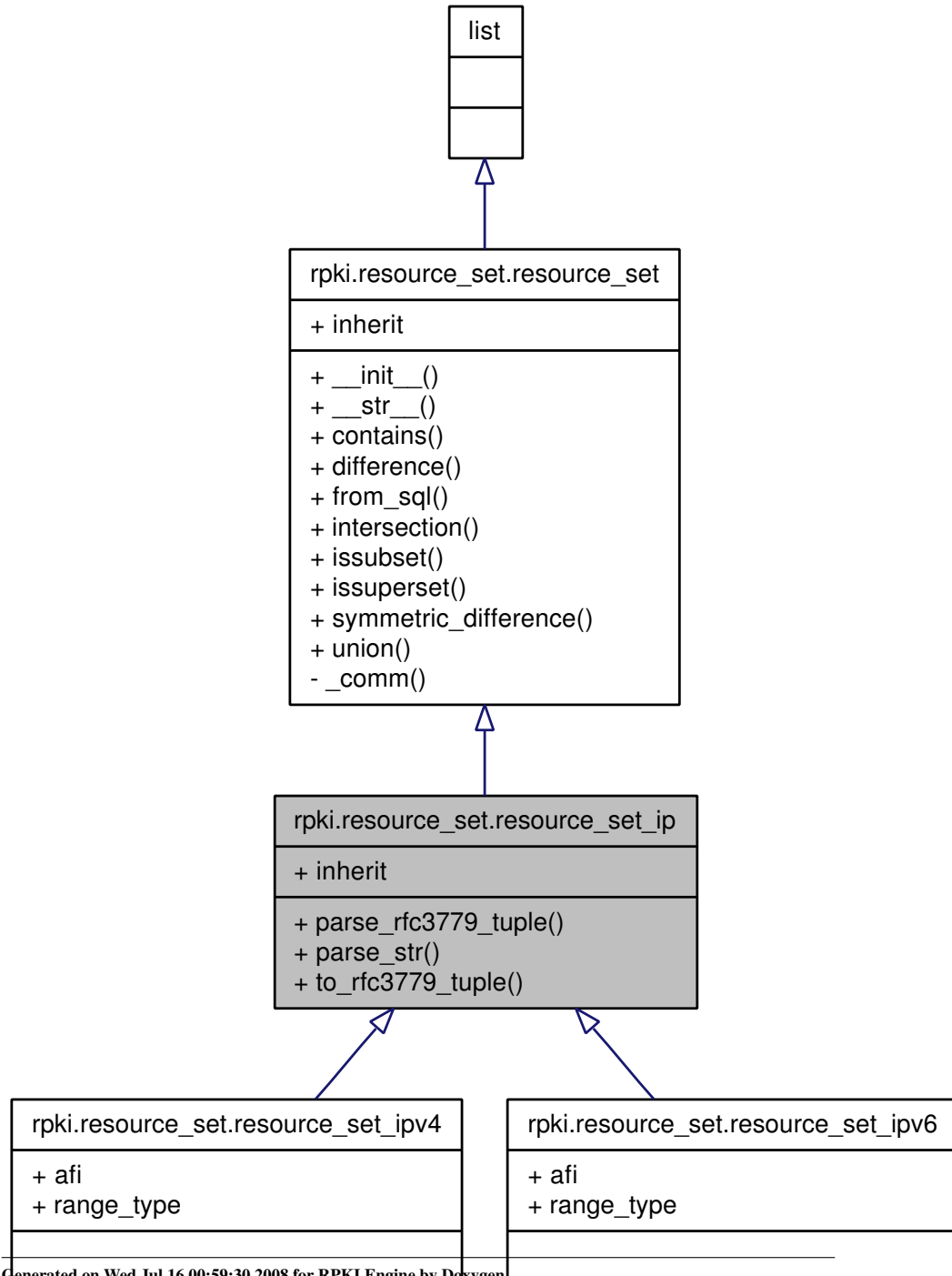
- [resource\\_set.py](#) (1984)





### 3.121 rpki.resource\_set.resource\_set\_ip Class Reference

Inheritance diagram for rpki.resource\_set.resource\_set\_ip:



### Public Member Functions

- def [parse\\_rfc3779\\_tuple](#)
- def [parse\\_str](#)
- def [to\\_rfc3779\\_tuple](#)

### Public Attributes

- [inherit](#)

*Boolean indicating whether this [resource\\_set](#) uses RFC 3779 inheritance.*

#### 3.121.1 Detailed Description

(Generic) IP address resource set.

This is a virtual class. You probably don't want to use it directly.

Definition at line 352 of file resource\_set.py.

#### 3.121.2 Member Function Documentation

##### 3.121.2.1 def rpki.resource\_set.resource\_set\_ip.parse\_rfc3779\_tuple ( self, x)

Parse IP address resource sets from tuple format generated by RFC 3779 ASN.1 decoder.

Definition at line 369 of file resource\_set.py.

##### 3.121.2.2 def rpki.resource\_set.resource\_set\_ip.parse\_str ( self, x)

Parse IP address resource sets from text (eg, XML attributes).

Definition at line 359 of file resource\_set.py.

##### 3.121.2.3 def rpki.resource\_set.resource\_set\_ip.to\_rfc3779\_tuple ( self)

Convert IP resource set into tuple format used by RFC 3779 ASN.1 encoder.

Definition at line 384 of file resource\_set.py.

### 3.121.3 Member Data Documentation

#### 3.121.3.1 rpki.resource\_set.resource\_set\_ip.inherit

Boolean indicating whether this [resource\\_set](#) uses RFC 3779 inheritance.

Reimplemented from [rpki.resource\\_set.resource\\_set](#).

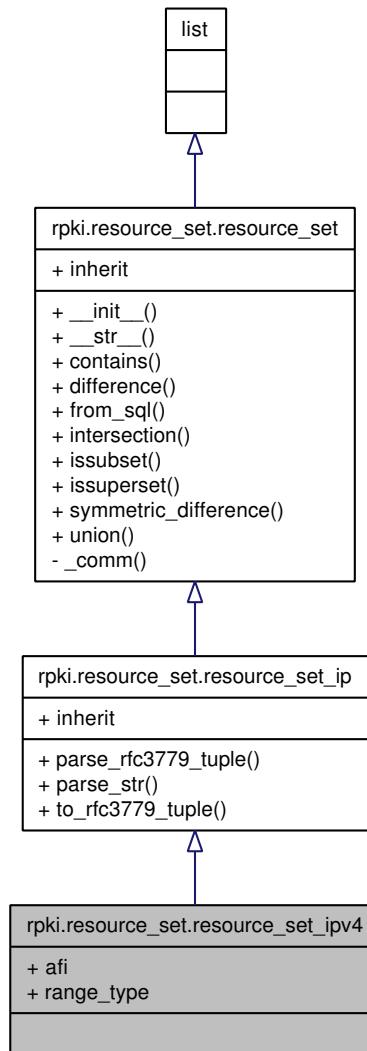
Definition at line 382 of file resource\_set.py.

The documentation for this class was generated from the following file:

- [resource\\_set.py](#) (1984)

### 3.122 rpki.resource\_set.resource\_set\_ipv4 Class Reference

Inheritance diagram for rpki.resource\_set.resource\_set\_ipv4:



#### Static Public Attributes

- string `afi` = `"\x00\x01"`  
*Address Family Identifier value for IPv4.*
- `range_type` = `resource_range_ipv4`

*Type of range underlying this type of [resource\\_set](#).*

### 3.122.1 Detailed Description

IPv4 address resource set.

Definition at line 393 of file resource\_set.py.

### 3.122.2 Member Data Documentation

#### 3.122.2.1 rpki::resource\_set.resource\_set\_ipv4::afi = "\x00\x01" [static]

Address Family Identifier value for IPv4.

Definition at line 404 of file resource\_set.py.

#### 3.122.2.2 rpki::resource\_set.resource\_set\_ipv4::range\_type = resource\_range\_ipv4 [static]

Type of range underlying this type of [resource\\_set](#).

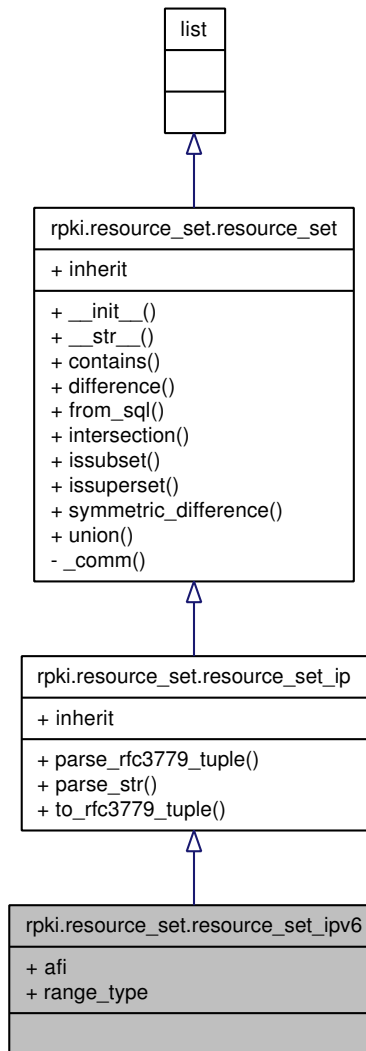
Definition at line 399 of file resource\_set.py.

The documentation for this class was generated from the following file:

- [resource\\_set.py](#) (1984)

### 3.123 rpki.resource\_set.resource\_set\_ipv6 Class Reference

Inheritance diagram for rpki.resource\_set.resource\_set\_ipv6:



#### Static Public Attributes

- string [afi](#) = "\x00\x02"  
*Address Family Identifier value for IPv6.*
- [range\\_type](#) = [resource\\_range\\_ipv6](#)

*Type of range underlying this type of [resource\\_set](#).*

### 3.123.1 Detailed Description

IPv6 address resource set.

Definition at line 406 of file resource\_set.py.

### 3.123.2 Member Data Documentation

#### 3.123.2.1 rpki::resource\_set.resource\_set\_ipv6::afi = "\x00\x02" [static]

Address Family Identifier value for IPv6.

Definition at line 417 of file resource\_set.py.

#### 3.123.2.2 rpki::resource\_set.resource\_set\_ipv6::range\_type = resource\_range\_ipv6 [static]

Type of range underlying this type of [resource\\_set](#).

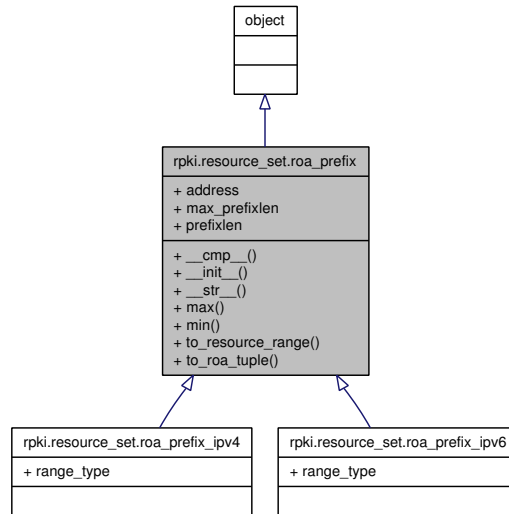
Definition at line 412 of file resource\_set.py.

The documentation for this class was generated from the following file:

- [resource\\_set.py](#) (1984)

### 3.124 rpki.resource\_set.roa\_prefix Class Reference

Inheritance diagram for rpki.resource\_set.roa\_prefix:



#### Public Member Functions

- [def \\_\\_cmp\\_\\_](#)
- [def \\_\\_init\\_\\_](#)
- [def \\_\\_str\\_\\_](#)
- [def max](#)
- [def min](#)
- [def to\\_resource\\_range](#)
- [def to\\_roa\\_tuple](#)

#### Public Attributes

- [address](#)  
*Address portion of prefix.*
- [max\\_prefixlen](#)  
*Maximum prefix length.*
- [prefixlen](#)  
*(Minimum) prefix length.*



### 3.124.1 Detailed Description

ROA prefix. This is similar to the `resource_range_ip` class, but differs in that it only represents prefixes, never ranges, and includes the maximum prefix length as an additional value.

This is a virtual class, you probably don't want to use it directly.

Definition at line 559 of file `resource_set.py`.

### 3.124.2 Member Function Documentation

#### 3.124.2.1 `def rpki.resource_set.roa_prefix.__cmp__( self, other)`

Compare two ROA prefix objects. Comparison is based on address, prefixlen, and max\_prefixlen, in that order.

Definition at line 588 of file `resource_set.py`.

#### 3.124.2.2 `def rpki.resource_set.roa_prefix.__init__( self, address, prefixlen, max_prefixlen = None)`

Initialize a ROA prefix. max\_prefixlen is optional and defaults to prefixlen. max\_prefixlen must not be smaller than prefixlen.

Definition at line 576 of file `resource_set.py`.

#### 3.124.2.3 `def rpki.resource_set.roa_prefix.__str__( self)`

Convert a ROA prefix to string format.

Definition at line 600 of file `resource_set.py`.

#### 3.124.2.4 `def rpki.resource_set.roa_prefix.max( self)`

Return highest address covered by prefix.

Definition at line 618 of file `resource_set.py`.

#### 3.124.2.5 `def rpki.resource_set.roa_prefix.min( self)`

Return lowest address covered by prefix.

Definition at line 614 of file `resource_set.py`.

#### 3.124.2.6 def rpki.resource\_set.roa\_prefix.to\_resource\_range ( self)

Convert this ROA prefix to the equivalent resource\_range\_ip object. This is an irreversible transformation because it loses the max\_prefixlen attribute, nothing we can do about that.

Definition at line 607 of file resource\_set.py.

#### 3.124.2.7 def rpki.resource\_set.roa\_prefix.to\_roa\_tuple ( self)

Convert a resource\_range\_ip to tuple format for ROA ASN.1 encoding.

Definition at line 623 of file resource\_set.py.

### 3.124.3 Member Data Documentation

#### 3.124.3.1 rpki::resource\_set.roa\_prefix::address

Address portion of prefix.

Definition at line 584 of file resource\_set.py.

#### 3.124.3.2 rpki::resource\_set.roa\_prefix::max\_prefixlen

Maximum prefix length.

Definition at line 586 of file resource\_set.py.

#### 3.124.3.3 rpki::resource\_set.roa\_prefix::prefixlen

(Minimum) prefix length.

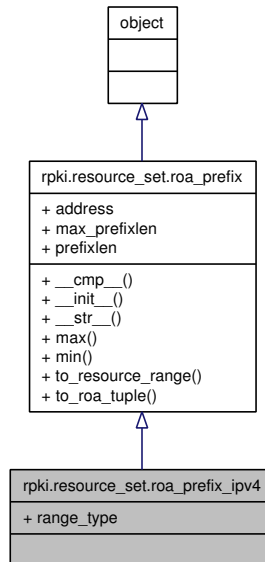
Definition at line 585 of file resource\_set.py.

The documentation for this class was generated from the following file:

- [resource\\_set.py \(1984\)](#)

### 3.125 rpki.resource\_set.roa\_prefix\_ipv4 Class Reference

Inheritance diagram for rpki.resource\_set.roa\_prefix\_ipv4:



#### Static Public Attributes

- `range_type = resource_range_ipv4`  
Type of corresponding [resource\\_range\\_ip](#).

#### 3.125.1 Detailed Description

IPv4 ROA prefix.

Definition at line 628 of file `resource_set.py`.

#### 3.125.2 Member Data Documentation

##### 3.125.2.1 `rpki::resource_set.roa_prefix_ipv4::range_type = resource_range_ipv4` [static]

Type of corresponding [resource\\_range\\_ip](#).

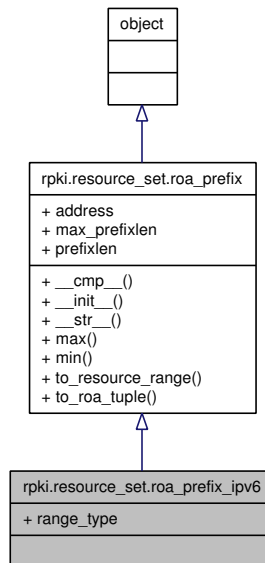
Definition at line 634 of file `resource_set.py`.

The documentation for this class was generated from the following file:

- [resource\\_set.py \(1984\)](#)

### 3.126 rpki.resource\_set.roa\_prefix\_ipv6 Class Reference

Inheritance diagram for rpki.resource\_set.roa\_prefix\_ipv6:



#### Static Public Attributes

- `range_type = resource_range_ipv6`  
Type of corresponding *resource\_range\_ip*.

#### 3.126.1 Detailed Description

IPv6 ROA prefix.

Definition at line 636 of file `resource_set.py`.

### 3.126.2 Member Data Documentation

#### 3.126.2.1 rpki::resource\_set.roa\_prefix\_ipv6::range\_type = resource\_range\_ipv6 [static]

Type of corresponding [resource\\_range\\_ip](#).

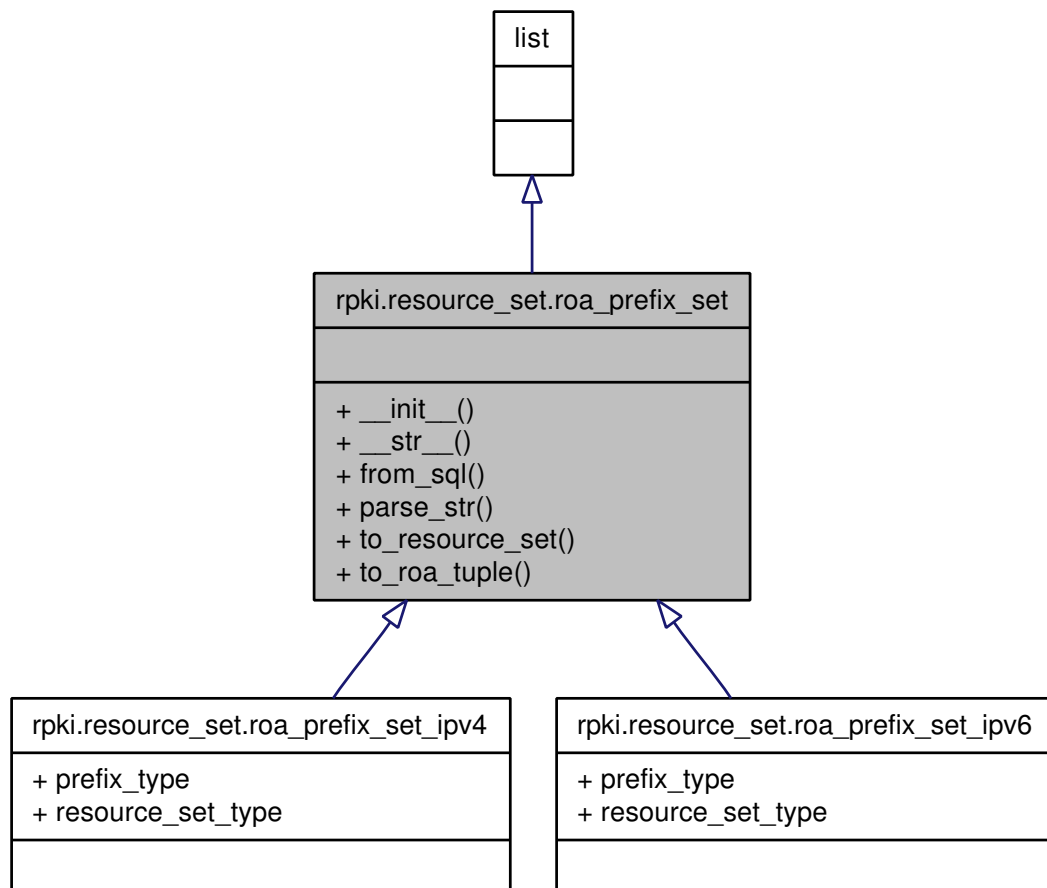
Definition at line 642 of file resource\_set.py.

The documentation for this class was generated from the following file:

- [resource\\_set.py](#) (1984)

### 3.127 rpki.resource\_set.roa\_prefix\_set Class Reference

Inheritance diagram for rpki.resource\_set.roa\_prefix\_set:



## Public Member Functions

- [def \\_\\_init\\_\\_](#)
- [def \\_\\_str\\_\\_](#)
- [def from\\_sql](#)
- [def parse\\_str](#)
- [def to\\_resource\\_set](#)
- [def to\\_roa\\_tuple](#)

### 3.127.1 Detailed Description

Set of ROA prefixes, analogous to the `resource_set_ip` class.

Definition at line 644 of file `resource_set.py`.

### 3.127.2 Member Function Documentation

#### 3.127.2.1 `def rpki.resource_set.roa_prefix_set.__init__ ( self, ini = None)`

Initialize a ROA prefix set.

Definition at line 647 of file `resource_set.py`.

#### 3.127.2.2 `def rpki.resource_set.roa_prefix_set.__str__ ( self)`

Convert a ROA prefix set to string format.

Definition at line 660 of file `resource_set.py`.

#### 3.127.2.3 `def rpki.resource_set.roa_prefix_set.from_sql ( cls, sql, query, args = None)`

Create ROA prefix set from an SQL query.

`sql` is an object that supports `execute()` and `fetchall()` methods like a DB API 2.0 cursor object.

`query` is an SQL query that returns a sequence of (address, prefixlen, max\_prefixlen) triples.

Definition at line 681 of file `resource_set.py`.

**3.127.2.4 def rpki.resource\_set.roa\_prefix\_set.parse\_str ( self, x)**

Parse ROA prefix from text (eg, an XML attribute).

Definition at line 664 of file resource\_set.py.

**3.127.2.5 def rpki.resource\_set.roa\_prefix\_set.to\_resource\_set ( self)**

Convert a ROA prefix set to a resource set. This is an irreversable transformation.

Definition at line 674 of file resource\_set.py.

**3.127.2.6 def rpki.resource\_set.roa\_prefix\_set.to\_roa\_tuple ( self)**

Convert ROA prefix set into tuple format used by ROA ASN.1 encoder.  
This is a variation on the format used in RFC 3779.

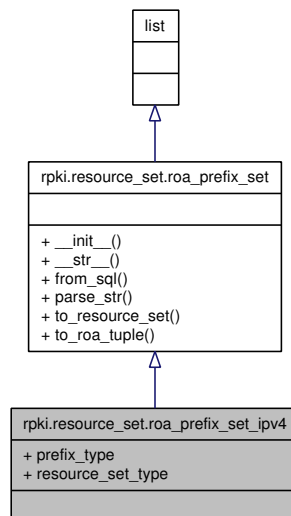
Definition at line 695 of file resource\_set.py.

The documentation for this class was generated from the following file:

- [resource\\_set.py \(1984\)](#)

**3.128 rpki.resource\_set.roa\_prefix\_set\_ipv4 Class Reference**

Inheritance diagram for rpki.resource\_set.roa\_prefix\_set\_ipv4:



### Static Public Attributes

- [prefix\\_type = roa\\_prefix\\_ipv4](#)  
*Type of underlying [roa\\_prefix](#).*
- [resource\\_set\\_type = resource\\_set\\_ipv4](#)  
*Type of corresponding [resource\\_set\\_ip](#) class.*

#### 3.128.1 Detailed Description

Set of IPv4 ROA prefixes.

Definition at line 703 of file resource\_set.py.

#### 3.128.2 Member Data Documentation

##### 3.128.2.1 `rpki::resource_set.roa_prefix_set_ipv4::prefix_type = roa_prefix_ipv4` [static]

Type of underlying [roa\\_prefix](#).

Definition at line 709 of file resource\_set.py.

##### 3.128.2.2 `rpki::resource_set.roa_prefix_set_ipv4::resource_set_type = resource_set_ipv4` [static]

Type of corresponding [resource\\_set\\_ip](#) class.

Definition at line 714 of file resource\_set.py.

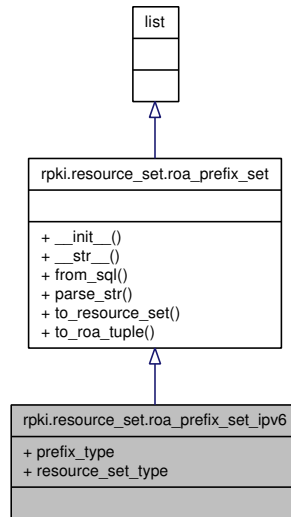
The documentation for this class was generated from the following file:

- [resource\\_set.py](#) (1984)



### 3.129 rpki.resource\_set.roa\_prefix\_set\_ipv6 Class Reference

Inheritance diagram for rpki.resource\_set.roa\_prefix\_set\_ipv6:



#### Static Public Attributes

- `prefix_type = roa_prefix_ipv6`  
Type of underlying *roa\_prefix*.
- `resource_set_type = resource_set_ipv6`  
Type of corresponding *resource\_set\_ip* class.

#### 3.129.1 Detailed Description

Set of IPv6 ROA prefixes.

Definition at line 716 of file `resource_set.py`.

#### 3.129.2 Member Data Documentation

##### 3.129.2.1 `rpki::resource_set.roa_prefix_set_ipv6::prefix_type = roa_prefix_ipv6` [static]

Type of underlying *roa\_prefix*.

Definition at line 722 of file `resource_set.py`.

### 3.129.2.2 rpki::resource\_set.roa\_prefix\_set\_ipv6::resource\_set\_type = resource\_set\_ipv6 [static]

Type of corresponding [resource\\_set\\_ip](#) class.

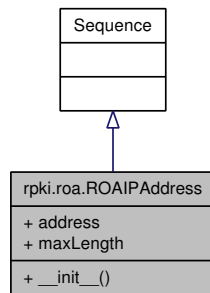
Definition at line 727 of file resource\_set.py.

The documentation for this class was generated from the following file:

- [resource\\_set.py](#) (1984)

## 3.130 rpki.roa.ROAIPAddress Class Reference

Inheritance diagram for rpki.roa.ROAIPAddress:



### Public Member Functions

- `def \_\_init\_\_`

### Public Attributes

- [address](#)
- [maxLength](#)

### 3.130.1 Detailed Description

Definition at line 46 of file roa.py.

### 3.130.2 Member Function Documentation

#### 3.130.2.1 `def rpki.roa.ROAIPAddress.__init__( self, optional = 0, default = '' )`

Definition at line 47 of file roa.py.

### 3.130.3 Member Data Documentation

#### 3.130.3.1 rpki.roa.ROAIPAddress.address

Definition at line 48 of file roa.py.

#### 3.130.3.2 rpki.roa.ROAIPAddress.maxLength

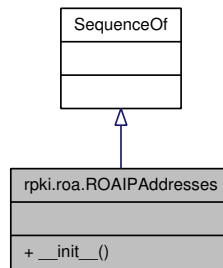
Definition at line 49 of file roa.py.

The documentation for this class was generated from the following file:

- [roa.py \(1975\)](#)

## 3.131 rpki.roa.ROAIPAddresses Class Reference

Inheritance diagram for rpki.roa.ROAIPAddresses:



### Public Member Functions

- [def \\_\\_init\\_\\_](#)

#### 3.131.1 Detailed Description

Definition at line 53 of file roa.py.

### 3.131.2 Member Function Documentation

#### 3.131.2.1 def rpki.roa.ROAIPAddresses.\_\_init\_\_ ( self, optional = 0, default = "")

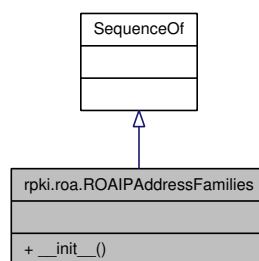
Definition at line 54 of file roa.py.

The documentation for this class was generated from the following file:

- [roa.py \(1975\)](#)

### 3.132 rpki.roa.ROAIPAddressFamilies Class Reference

Inheritance diagram for rpki.roa.ROAIPAddressFamilies:



#### Public Member Functions

- [def \\_\\_init\\_\\_](#)

#### 3.132.1 Detailed Description

Definition at line 64 of file roa.py.

#### 3.132.2 Member Function Documentation

**3.132.2.1** `def rpki.roa.ROAIPAddressFamilies.__init__ ( self, optional = 0, default = "")`

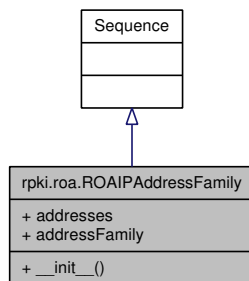
Definition at line 65 of file roa.py.

The documentation for this class was generated from the following file:

- [roa.py \(1975\)](#)

### 3.133 rpki.roa.ROAIPAddressFamily Class Reference

Inheritance diagram for rpki.roa.ROAIPAddressFamily:



#### Public Member Functions

- [def \\_\\_init\\_\\_](#)

#### Public Attributes

- [addresses](#)
- [addressFamily](#)

#### 3.133.1 Detailed Description

Definition at line 57 of file roa.py.

#### 3.133.2 Member Function Documentation

**3.133.2.1** `def rpki.roa.ROAIPAddressFamily.__init__(self, optional = 0, default = "")`

Definition at line 58 of file roa.py.

#### 3.133.3 Member Data Documentation

##### 3.133.3.1 rpki.roa.ROAIPAddressFamily.addresses

Definition at line 60 of file roa.py.

### 3.133.3.2 rpki.roa.ROAIPAddressFamily.addressFamily

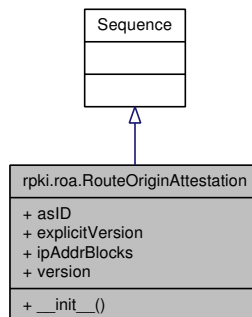
Definition at line 59 of file roa.py.

The documentation for this class was generated from the following file:

- [roa.py \(1975\)](#)

## 3.134 rpki.roa.RouteOriginAttestation Class Reference

Inheritance diagram for rpki.roa.RouteOriginAttestation:



### Public Member Functions

- `def \_\_init\_\_`

### Public Attributes

- [asID](#)
- [explicitVersion](#)
- [ipAddrBlocks](#)
- [version](#)

### 3.134.1 Detailed Description

Definition at line 68 of file roa.py.

### 3.134.2 Member Function Documentation

**3.134.2.1** `def rpki.roa.RouteOriginAttestation.__init__ ( self, optional = 0, default = "")`

Definition at line 69 of file roa.py.

### 3.134.3 Member Data Documentation

#### 3.134.3.1 **rpki.roa.RouteOriginAttestation.asID**

Definition at line 72 of file roa.py.

#### 3.134.3.2 **rpki.roa.RouteOriginAttestation.explicitVersion**

Definition at line 71 of file roa.py.

#### 3.134.3.3 **rpki.roa.RouteOriginAttestation.ipAddrBlocks**

Definition at line 73 of file roa.py.

#### 3.134.3.4 **rpki.roa.RouteOriginAttestation.version**

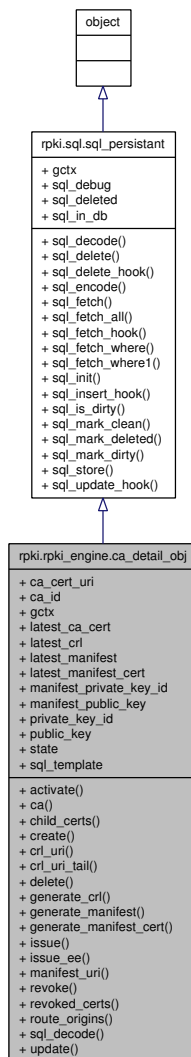
Definition at line 70 of file roa.py.

The documentation for this class was generated from the following file:

- [roa.py \(1975\)](#)

### 3.135 rpki.rpki\_engine.ca\_detail\_obj Class Reference

Inheritance diagram for rpki.rpki\_engine.ca\_detail\_obj:



#### Public Member Functions

- def [activate](#)
- def [ca](#)
- def [child\\_certs](#)
- def [create](#)



- def [crl\\_uri](#)
- def [crl\\_uri\\_tail](#)
- def [delete](#)
- def [generate\\_crl](#)
- def [generate\\_manifest](#)
- def [generate\\_manifest\\_cert](#)
- def [issue](#)
- def [issue\\_ee](#)
- def [manifest\\_uri](#)
- def [revoke](#)
- def [revoked\\_certs](#)
- def [route\\_origins](#)
- def [sql\\_decode](#)
- def [update](#)

#### Public Attributes

- [ca\\_cert\\_uri](#)
- [ca\\_id](#)
- [gctx](#)
- [latest\\_ca\\_cert](#)
- [latest\\_crl](#)
- [latest\\_manifest](#)
- [latest\\_manifest\\_cert](#)
- [manifest\\_private\\_key\\_id](#)
- [manifest\\_public\\_key](#)
- [private\\_key\\_id](#)
- [public\\_key](#)
- [state](#)

#### Static Public Attributes

- tuple [sql\\_template](#)

#### 3.135.1 Detailed Description

Internal CA detail object.

Definition at line 342 of file `rpki_engine.py`.

### 3.135.2 Member Function Documentation

#### 3.135.2.1 `def rpki.rpki_engine.ca_detail_obj.activate (self, ca, cert, uri, predecessor = None)`

Activate this ca\_detail.

Definition at line 396 of file rpki\_engine.py.

#### 3.135.2.2 `def rpki.rpki_engine.ca_detail_obj.ca (self)`

Fetch CA object to which this ca\_detail links.

Definition at line 368 of file rpki\_engine.py.

#### 3.135.2.3 `def rpki.rpki_engine.ca_detail_obj.child_certs (self, child = None, ski = None, unique = False)`

Fetch all child\_cert objects that link to this ca\_detail.

Definition at line 372 of file rpki\_engine.py.

#### 3.135.2.4 `def rpki.rpki_engine.ca_detail_obj.create (cls, ca)`

Create a new ca\_detail object for a specified CA.

Definition at line 501 of file rpki\_engine.py.

#### 3.135.2.5 `def rpki.rpki_engine.ca_detail_obj.crl_uri (self, ca)`

Return publication URI for this ca\_detail's CRL.

Definition at line 384 of file rpki\_engine.py.

#### 3.135.2.6 `def rpki.rpki_engine.ca_detail_obj.crl_uri_tail (self)`

Return tail (filename portion) of publication URI for this ca\_detail's CRL.

Definition at line 388 of file rpki\_engine.py.

**3.135.2.7 def rpki.rpki\_engine.ca\_detail\_obj.delete ( self, ca, repository)**

Delete this ca\_detail and all of the certs it issued.

Definition at line 415 of file rpki\_engine.py.

**3.135.2.8 def rpki.rpki\_engine.ca\_detail\_obj.generate\_crl ( self, nextUpdate = None)**

Generate a new CRL for this ca\_detail. At the moment this is unconditional, that is, it is up to the caller to decide whether a new CRL is needed.

Definition at line 583 of file rpki\_engine.py.

**3.135.2.9 def rpki.rpki\_engine.ca\_detail\_obj.generate\_manifest ( self, nextUpdate = None)**

Generate a new manifest for this ca\_detail.

Definition at line 616 of file rpki\_engine.py.

**3.135.2.10 def rpki.rpki\_engine.ca\_detail\_obj.generate\_manifest\_cert ( self, ca)**

Generate a new manifest certificate for this ca\_detail.

Definition at line 532 of file rpki\_engine.py.

**3.135.2.11 def rpki.rpki\_engine.ca\_detail\_obj.issue ( self, ca, child, subject\_key, sia, resources, child\_cert = None)**

Issue a new certificate to a child. Optional child\_cert argument specifies an existing child\_cert object to update in place; if not specified, we create a new one. Returns the child\_cert object containing the newly issued cert.

Definition at line 542 of file rpki\_engine.py.

**3.135.2.12 def rpki.rpki\_engine.ca\_detail\_obj.issue\_ee ( self, ca, resources, subject\_key, sia = None)**

Issue a new EE certificate.

Definition at line 517 of file rpki\_engine.py.

**3.135.2.13 def rpki.rpki\_engine.ca\_detail\_obj.manifest\_uri ( self, ca)**

Return publication URI for this ca\_detail's manifest.

Definition at line 392 of file rpki\_engine.py.

**3.135.2.14 def rpki.rpki\_engine.ca\_detail\_obj.revoke ( self)**

Request revocation of all certificates whose SKI matches the key for this ca\_detail.

Tasks:

- Request revocation of old keypair by parent.
- Revoke all child certs issued by the old keypair.
- Generate a final CRL, signed with the old keypair, listing all the revoked certs, with a next CRL time after the last cert or CRL signed by the old keypair will have expired.
- Destroy old keypair (and manifest keypair).
- Leave final CRL in place until its next CRL time has passed.

Definition at line 429 of file rpki\_engine.py.

**3.135.2.15 def rpki.rpki\_engine.ca\_detail\_obj.revoked\_certs ( self)**

Fetch all revoked\_cert objects that link to this ca\_detail.

Definition at line 376 of file rpki\_engine.py.

**3.135.2.16 def rpki.rpki\_engine.ca\_detail\_obj.route\_origins ( self)**

Fetch all route\_origin objects that link to this ca\_detail.

Definition at line 380 of file rpki\_engine.py.

**3.135.2.17 def rpki.rpki\_engine.ca\_detail\_obj.sql\_decode ( self, vals)**

Extra assertions for SQL decode of a ca\_detail\_obj.

Reimplemented from [rpki.sql.sql\\_persistent](#).

Definition at line 360 of file rpki\_engine.py.

### 3.135.2.18 `def rpki.rpki_engine.ca_detail_obj.update(self, parent, ca, rc, sia_uri_changed, old_resources)`

Need to get a new certificate for this ca\_detail and perhaps frob children of this ca\_detail.

Definition at line 481 of file rpki\_engine.py.

## 3.135.3 Member Data Documentation

### 3.135.3.1 `rpki.rpki_engine.ca_detail_obj.ca_cert_uri`

Definition at line 400 of file rpki\_engine.py.

### 3.135.3.2 `rpki.rpki_engine.ca_detail_obj.ca_id`

Definition at line 505 of file rpki\_engine.py.

### 3.135.3.3 `rpki.rpki_engine.ca_detail_obj.gctx`

Reimplemented from [rpki.sql.sql\\_persistent](#).

Definition at line 504 of file rpki\_engine.py.

### 3.135.3.4 `rpki.rpki_engine.ca_detail_obj.latest_ca_cert`

Definition at line 399 of file rpki\_engine.py.

### 3.135.3.5 `rpki.rpki_engine.ca_detail_obj.latest_crl`

Definition at line 606 of file rpki\_engine.py.

### 3.135.3.6 `rpki.rpki_engine.ca_detail_obj.latest_manifest`

Definition at line 635 of file rpki\_engine.py.

### 3.135.3.7 `rpki.rpki_engine.ca_detail_obj.latest_manifest_cert`

Definition at line 477 of file rpki\_engine.py.

### 3.135.3.8 `rpki.rpki_engine.ca_detail_obj.manifest_private_key_id`

Definition at line 475 of file rpki\_engine.py.

### 3.135.3.9 rpki.rpki\_engine.ca\_detail\_obj.manifest\_public\_key

Definition at line 476 of file rpki\_engine.py.

### 3.135.3.10 rpki.rpki\_engine.ca\_detail\_obj.private\_key\_id

Definition at line 474 of file rpki\_engine.py.

### 3.135.3.11 rpki.rpki\_engine.ca\_detail\_obj.public\_key

Definition at line 509 of file rpki\_engine.py.

### 3.135.3.12 tuple rpki.rpki\_engine.ca\_detail\_obj.sql\_template [static]

Initial value:

```
rpki.sql.template(  
    "ca_detail",  
    "ca_detail_id",  
    ("private_key_id",      rpki.x509.RSA),  
    ("public_key",          rpki.x509.RSAPublic),  
    ("latest_ca_cert",      rpki.x509.X509),  
    ("manifest_private_key_id", rpki.x509.RSA),  
    ("manifest_public_key",  rpki.x509.RSAPublic),  
    ("latest_manifest_cert", rpki.x509.X509),  
    ("latest_manifest",      rpki.x509.SignedManifest),  
    ("latest_crl",          rpki.x509.CRL),  
    "state",  
    "ca_cert_uri",  
    "ca_id")
```

Definition at line 345 of file rpki\_engine.py.

### 3.135.3.13 rpki.rpki\_engine.ca\_detail\_obj.state

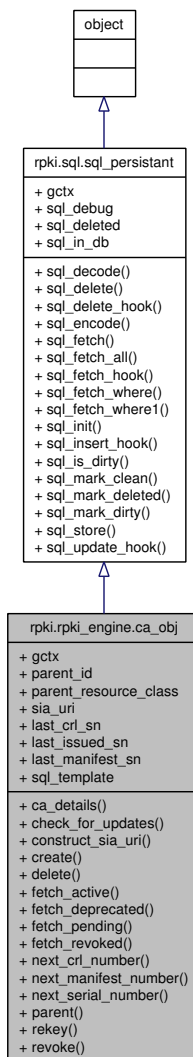
Definition at line 404 of file rpki\_engine.py.

The documentation for this class was generated from the following file:

- [rpki\\_engine.py \(2000\)](#)

### 3.136 rpki.rpki\_engine.ca\_obj Class Reference

Inheritance diagram for rpki.rpki\_engine.ca\_obj:



#### Public Member Functions

- def [ca\\_details](#)
- def [check\\_for\\_updates](#)
- def [construct\\_sia\\_uri](#)
- def [create](#)

- def [delete](#)
- def [fetch\\_active](#)
- def [fetch\\_deprecated](#)
- def [fetch\\_pending](#)
- def [fetch\\_revoked](#)
- def [next\\_crl\\_number](#)
- def [next\\_manifest\\_number](#)
- def [next\\_serial\\_number](#)
- def [parent](#)
- def [rekey](#)
- def [revoke](#)

#### Public Attributes

- [gctx](#)
- [parent\\_id](#)
- [parent\\_resource\\_class](#)
- [sia\\_uri](#)

#### Static Public Attributes

- int [last\\_crl\\_sn](#) = 0
- int [last\\_issued\\_sn](#) = 0
- int [last\\_manifest\\_sn](#) = 0
- tuple [sql\\_template](#)

### 3.136.1 Detailed Description

Internal CA object.

Definition at line 160 of file `rpki_engine.py`.

### 3.136.2 Member Function Documentation

#### 3.136.2.1 def `rpki.rpki_engine.ca_obj.ca_details ( self )`

Fetch all `ca_detail` objects that link to this CA object.

Definition at line 180 of file `rpki_engine.py`.



**3.136.2.2 def rpki.rpki\_engine.ca\_obj.check\_for\_updates ( *self*, *parent*, *rc* )**

Parent has signaled continued existence of a resource class we already knew about, so we need to check for an updated certificate, changes in resource coverage, revocation and reissue with the same key, etc.

Definition at line 213 of file rpki\_engine.py.

**3.136.2.3 def rpki.rpki\_engine.ca\_obj.construct\_sia\_uri ( *self*, *parent*, *rc* )**

Construct the sia\_uri value for this CA given configured information and the parent's up-down protocol list\_response PDU.

Definition at line 200 of file rpki\_engine.py.

**3.136.2.4 def rpki.rpki\_engine.ca\_obj.create ( *cls*, *parent*, *rc* )**

Parent has signaled existence of a new resource class, so we need to create and set up a corresponding CA object.

Definition at line 257 of file rpki\_engine.py.

**3.136.2.5 def rpki.rpki\_engine.ca\_obj.delete ( *self*, *parent* )**

The list of current resource classes received from parent does not include the class corresponding to this CA, so we need to delete it (and its little dog too...).

All certs published by this CA are now invalid, so need to withdraw them, the CRL, and the manifest from the repository, delete all child\_cert and ca\_detail records associated with this CA, then finally delete this CA itself.

Definition at line 278 of file rpki\_engine.py.

**3.136.2.6 def rpki.rpki\_engine.ca\_obj.fetch\_active ( *self* )**

Fetch the active ca\_detail for this CA, if any.

Definition at line 188 of file rpki\_engine.py.

**3.136.2.7 def rpki.rpki\_engine.ca\_obj.fetch\_deprecated ( self)**

Fetch deprecated ca\_details for this CA, if any.

Definition at line 192 of file rpki\_engine.py.

**3.136.2.8 def rpki.rpki\_engine.ca\_obj.fetch\_pending ( self)**

Fetch the pending ca\_details for this CA, if any.

Definition at line 184 of file rpki\_engine.py.

**3.136.2.9 def rpki.rpki\_engine.ca\_obj.fetch\_revoked ( self)**

Fetch revoked ca\_details for this CA, if any.

Definition at line 196 of file rpki\_engine.py.

**3.136.2.10 def rpki.rpki\_engine.ca\_obj.next\_crl\_number ( self)**

Allocate a CRL serial number.

Definition at line 306 of file rpki\_engine.py.

**3.136.2.11 def rpki.rpki\_engine.ca\_obj.next\_manifest\_number ( self)**

Allocate a manifest serial number.

Definition at line 300 of file rpki\_engine.py.

**3.136.2.12 def rpki.rpki\_engine.ca\_obj.next\_serial\_number ( self)**

Allocate a certificate serial number.

Definition at line 294 of file rpki\_engine.py.

**3.136.2.13 def rpki.rpki\_engine.ca\_obj.parent ( self)**

Fetch parent object to which this CA object links.

Definition at line 176 of file rpki\_engine.py.

### 3.136.2.14 def rpki.rpki\_engine.ca\_obj.rekey ( self)

Initiate a rekey operation for this ca. Generate a new keypair. Request cert from parent using new keypair. Mark result as our active ca\_detail. Reissue all child certs issued by this ca using the new ca\_detail.

Definition at line 312 of file rpki\_engine.py.

### 3.136.2.15 def rpki.rpki\_engine.ca\_obj.revoke ( self)

Revoke deprecated ca\_detail objects associated with this ca.

Definition at line 334 of file rpki\_engine.py.

## 3.136.3 Member Data Documentation

### 3.136.3.1 rpki.rpki\_engine.ca\_obj.gctx

Reimplemented from [rpki.sql.sql\\_persistent](#).

Definition at line 263 of file rpki\_engine.py.

### 3.136.3.2 int rpki.rpki\_engine.ca\_obj.last\_crl\_sn = 0 [static]

Definition at line 172 of file rpki\_engine.py.

### 3.136.3.3 int rpki.rpki\_engine.ca\_obj.last\_issued\_sn = 0 [static]

Definition at line 173 of file rpki\_engine.py.

### 3.136.3.4 int rpki.rpki\_engine.ca\_obj.last\_manifest\_sn = 0 [static]

Definition at line 174 of file rpki\_engine.py.

### 3.136.3.5 rpki.rpki\_engine.ca\_obj.parent\_id

Definition at line 264 of file rpki\_engine.py.

### 3.136.3.6 rpki.rpki\_engine.ca\_obj.parent\_resource\_class

Definition at line 265 of file rpki\_engine.py.

### 3.136.3.7 rpki.rpki\_engine.ca\_obj.sia\_uri

Definition at line 223 of file rpki\_engine.py.

**3.136.3.8 tuple rpki.rpki\_engine.ca\_obj.sql\_template** [static]

**Initial value:**

```
rpki.sql.template(  
    "ca",  
    "ca_id",  
    "last_crl_sn",  
    ("next_crl_update", rpki.sundial.datetime),  
    "last_issued_sn", "last_manifest_sn",  
    ("next_manifest_update", rpki.sundial.datetime),  
    "sia_uri", "parent_id", "parent_resource_class")
```

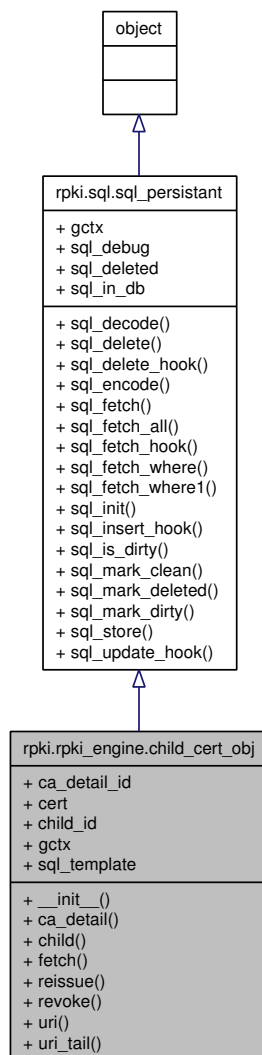
Definition at line 163 of file rpki\_engine.py.

The documentation for this class was generated from the following file:

- [rpki\\_engine.py \(2000\)](#)

### 3.137 rpki.rpki\_engine.child\_cert\_obj Class Reference

Inheritance diagram for rpki.rpki\_engine.child\_cert\_obj:



#### Public Member Functions

- def [\\_\\_init\\_\\_](#)
- def [ca\\_detail](#)
- def [child](#)
- def [fetch](#)

- def [reissue](#)
- def [revoke](#)
- def [uri](#)
- def [uri\\_tail](#)

#### Public Attributes

- [ca\\_detail\\_id](#)
- [cert](#)
- [child\\_id](#)
- [gctx](#)

#### Static Public Attributes

- tuple [sql\\_template](#)

### 3.137.1 Detailed Description

Certificate that has been issued to a child.

Definition at line 645 of file `rpki_engine.py`.

### 3.137.2 Member Function Documentation

**3.137.2.1** `def rpki.rpki_engine.child_cert_obj.__init__ ( self, gctx = None, child_id = None, ca_detail_id = None, cert = None)`

Initialize a `child_cert_obj`.

Definition at line 656 of file `rpki_engine.py`.

**3.137.2.2** `def rpki.rpki_engine.child_cert_obj.ca_detail ( self)`

Fetch `ca_detail` object to which this `child_cert` object links.

Definition at line 669 of file `rpki_engine.py`.

**3.137.2.3** `def rpki.rpki_engine.child_cert_obj.child ( self)`

Fetch `child` object to which this `child_cert` object links.

Definition at line 665 of file `rpki_engine.py`.

#### 3.137.2.4 `def rpki.rpki_engine.child_cert_obj.fetch ( cls, gctx = None, child = None, ca_detail = None, ski = None, unique = False)`

Fetch all child\_cert objects matching a particular set of parameters. This is a wrapper to consolidate various queries that would otherwise be inline SQL WHERE expressions. In most cases code calls this indirectly, through methods in other classes.

Definition at line 746 of file rpki\_engine.py.

#### 3.137.2.5 `def rpki.rpki_engine.child_cert_obj.reissue ( self, ca_detail, resources = None, sia = None)`

Reissue an existing cert, reusing the public key. If the cert we would generate is identical to the one we already have, we just return the one we already have. If we have to revoke the old certificate when generating the new one, we have to generate a new child\_cert\_obj, so calling code that needs the updated child\_cert\_obj must use the return value from this method.

Definition at line 692 of file rpki\_engine.py.

#### 3.137.2.6 `def rpki.rpki_engine.child_cert_obj.revoke ( self)`

Revoke a child cert.

Definition at line 681 of file rpki\_engine.py.

#### 3.137.2.7 `def rpki.rpki_engine.child_cert_obj.uri ( self, ca)`

Return the publication URI for this child\_cert.

Definition at line 677 of file rpki\_engine.py.

#### 3.137.2.8 `def rpki.rpki_engine.child_cert_obj.uri_tail ( self)`

Return the tail (filename) portion of the URI for this child\_cert.

Definition at line 673 of file rpki\_engine.py.

### 3.137.3 Member Data Documentation

#### 3.137.3.1 `rpki.rpki_engine.child_cert_obj.ca_detail_id`

Definition at line 660 of file rpki\_engine.py.

### 3.137.3.2 rpki.rpki\_engine.child\_cert\_obj.cert

Definition at line 661 of file rpki\_engine.py.

### 3.137.3.3 rpki.rpki\_engine.child\_cert\_obj.child\_id

Definition at line 659 of file rpki\_engine.py.

### 3.137.3.4 rpki.rpki\_engine.child\_cert\_obj.gctx

Reimplemented from [rpki.sql.sql\\_persistent](#).

Definition at line 658 of file rpki\_engine.py.

### 3.137.3.5 tuple rpki.rpki\_engine.child\_cert\_obj.sql\_template [static]

**Initial value:**

```
rpki.sql.template(  
    "child_cert",  
    "child_cert_id",  
    ("cert", rpki.x509.X509),  
    "child_id",  
    "ca_detail_id",  
    "ski")
```

Definition at line 648 of file rpki\_engine.py.

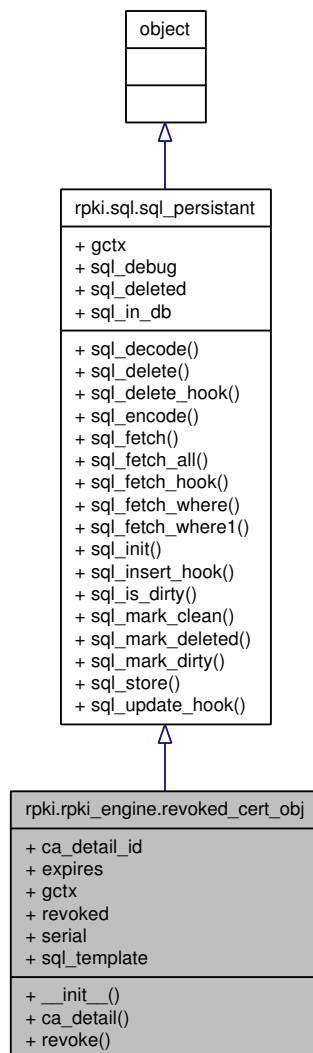
The documentation for this class was generated from the following file:

- [rpki\\_engine.py](#) (2000)



### 3.138 rpki.rpki\_engine.revoked\_cert\_obj Class Reference

Inheritance diagram for rpki.rpki\_engine.revoked\_cert\_obj:



#### Public Member Functions

- def [\\_\\_init\\_\\_](#)
- def [ca\\_detail](#)
- def [revoke](#)

### Public Attributes

- [ca\\_detail\\_id](#)
- [expires](#)
- [gctx](#)
- [revoked](#)
- [serial](#)

### Static Public Attributes

- tuple [sql\\_template](#)

#### 3.138.1 Detailed Description

Tombstone for a revoked certificate.

Definition at line 777 of file rpki\_engine.py.

#### 3.138.2 Member Function Documentation

**3.138.2.1** `def rpki.rpki_engine.revoked_cert_obj.__init__ ( self, gctx = None, serial = None, revoked = None, expires = None, ca_detail_id = None)`

Initialize a revoked\_cert\_obj.

Definition at line 788 of file rpki\_engine.py.

**3.138.2.2** `def rpki.rpki_engine.revoked_cert_obj.ca_detail ( self)`

Fetch ca\_detail object to which this revoked\_cert\_obj links.

Definition at line 798 of file rpki\_engine.py.

**3.138.2.3** `def rpki.rpki_engine.revoked_cert_obj.revoke ( cls, cert, ca_detail)`

Revoke a certificate.

Definition at line 803 of file rpki\_engine.py.

### 3.138.3 Member Data Documentation

#### 3.138.3.1 rpki.rpki\_engine.revoked\_cert\_obj.ca\_detail\_id

Definition at line 794 of file rpki\_engine.py.

#### 3.138.3.2 rpki.rpki\_engine.revoked\_cert\_obj.expires

Definition at line 793 of file rpki\_engine.py.

#### 3.138.3.3 rpki.rpki\_engine.revoked\_cert\_obj.gctx

Reimplemented from [rpki.sql.sql\\_persistent](#).

Definition at line 790 of file rpki\_engine.py.

#### 3.138.3.4 rpki.rpki\_engine.revoked\_cert\_obj.revoked

Definition at line 792 of file rpki\_engine.py.

#### 3.138.3.5 rpki.rpki\_engine.revoked\_cert\_obj.serial

Definition at line 791 of file rpki\_engine.py.

#### 3.138.3.6 tuple rpki.rpki\_engine.revoked\_cert\_obj.sql\_template [static]

**Initial value:**

```
rpki.sql.template(  
    "revoked_cert",  
    "revoked_cert_id",  
    "serial",  
    "ca_detail_id",  
    ("revoked", rpki.sundial.datetime),  
    ("expires", rpki.sundial.datetime))
```

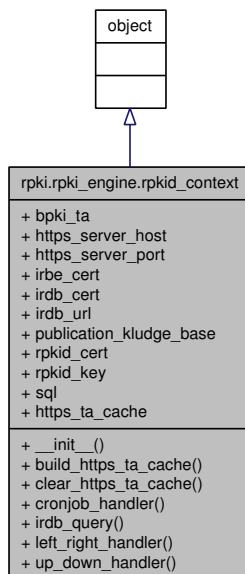
Definition at line 780 of file rpki\_engine.py.

The documentation for this class was generated from the following file:

- [rpki\\_engine.py \(2000\)](#)

### 3.139 rpki.rpki\_engine.rpkid\_context Class Reference

Inheritance diagram for rpki.rpki\_engine.rpkid\_context:



#### Public Member Functions

- def `__init__`
- def `build_https_ta_cache`
- def `clear_https_ta_cache`
- def `cronjob_handler`
- def `irdb_query`
- def `left_right_handler`
- def `up_down_handler`

#### Public Attributes

- `bpki_ta`
- `https_server_host`
- `https_server_port`
- `irbe_cert`
- `irdb_cert`
- `irdb_url`
- `publication_kludge_base`

- [rpki\\_cert](#)
- [rpki\\_key](#)
- [sql](#)

### Static Public Attributes

- [https\\_ta\\_cache](#) = None  
*HTTPS trust anchor cache, to avoid regenerating it for every TLS connection.*

### 3.139.1 Detailed Description

A container for various global rpkid parameters.

Definition at line 24 of file `rpki_engine.py`.

### 3.139.2 Member Function Documentation

#### 3.139.2.1 `def rpki.rpki_engine.rpkid_context.__init__ ( self, cfg)`

Definition at line 27 of file `rpki_engine.py`.

#### 3.139.2.2 `def rpki.rpki_engine.rpkid_context.build_https_ta_cache ( self)`

Build dynamic TLS trust anchors.

Definition at line 142 of file `rpki_engine.py`.

#### 3.139.2.3 `def rpki.rpki_engine.rpkid_context.clear_https_ta_cache ( self)`

Clear dynamic TLS trust anchors.

Definition at line 135 of file `rpki_engine.py`.

#### 3.139.2.4 `def rpki.rpki_engine.rpkid_context.cronjob_handler ( self, query, path)`

Periodic tasks. As simple as possible for now, may need to break this up into separate handlers later.

Definition at line 112 of file `rpki_engine.py`.

**3.139.2.5** `def rpki.rpki_engine.rpkid_context.irdb_query (self, self_id, child_id = None)`

Perform an IRDB callback query. In the long run this should not be a blocking routine, it should instead issue a query and set up a handler to receive the response. For the moment, though, we are doing simple lock step and damn the torpedos. Not yet doing anything useful with subject name. Most likely this function should really be wrapped up in a class that carries both the query result and also the intermediate state needed for the event-driven code that this function will need to become.

Definition at line 44 of file rpki\_engine.py.

**3.139.2.6** `def rpki.rpki_engine.rpkid_context.left_right_handler (self, query, path)`

Process one left-right PDU.

Definition at line 78 of file rpki\_engine.py.

**3.139.2.7** `def rpki.rpki_engine.rpkid_context.up_down_handler (self, query, path)`

Process one up-down PDU.

Definition at line 94 of file rpki\_engine.py.

**3.139.3 Member Data Documentation****3.139.3.1** `rpki.rpki_engine.rpkid_context.bpki_ta`

Definition at line 31 of file rpki\_engine.py.

**3.139.3.2** `rpki.rpki_engine.rpkid_context.https_server_host`

Definition at line 39 of file rpki\_engine.py.

**3.139.3.3** `rpki.rpki_engine.rpkid_context.https_server_port`

Definition at line 40 of file rpki\_engine.py.

**3.139.3.4 rpki.rpki\_engine.rpkid\_context::https\_ta\_cache = None** [static]

HTTPS trust anchor cache, to avoid regenerating it for every TLS connection.

Definition at line 133 of file rpki\_engine.py.

**3.139.3.5 rpki.rpki\_engine.rpkid\_context.irbe\_cert**

Definition at line 33 of file rpki\_engine.py.

**3.139.3.6 rpki.rpki\_engine.rpkid\_context.irdb\_cert**

Definition at line 32 of file rpki\_engine.py.

**3.139.3.7 rpki.rpki\_engine.rpkid\_context.irdb\_url**

Definition at line 37 of file rpki\_engine.py.

**3.139.3.8 rpki.rpki\_engine.rpkid\_context.publication\_kludge\_base**

Definition at line 42 of file rpki\_engine.py.

**3.139.3.9 rpki.rpki\_engine.rpkid\_context.rpkid\_cert**

Definition at line 34 of file rpki\_engine.py.

**3.139.3.10 rpki.rpki\_engine.rpkid\_context.rpkid\_key**

Definition at line 35 of file rpki\_engine.py.

**3.139.3.11 rpki.rpki\_engine.rpkid\_context.sql**

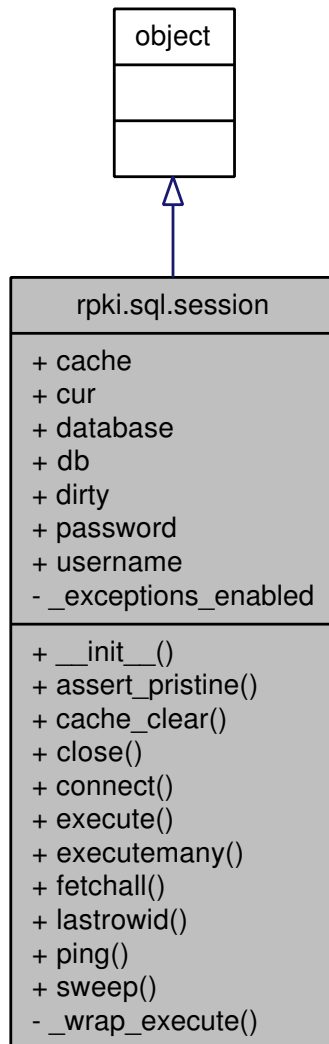
Definition at line 29 of file rpki\_engine.py.

The documentation for this class was generated from the following file:

- [rpki\\_engine.py \(2000\)](#)

### 3.140 rpki.sql.session Class Reference

Inheritance diagram for rpki.sql.session:



#### Public Member Functions

- def [\\_\\_init\\_\\_](#)
- def [assert\\_pristine](#)
- def [cache\\_clear](#)
- def [close](#)



- def [connect](#)
- def [execute](#)
- def [executemany](#)
- def [fetchall](#)
- def [lastrowid](#)
- def [ping](#)
- def [sweep](#)

#### Public Attributes

- [cache](#)
- [cur](#)
- [database](#)
- [db](#)
- [dirty](#)
- [password](#)
- [username](#)

#### Private Member Functions

- def [\\_wrap\\_execute](#)

#### Static Private Attributes

- [\\_exceptions\\_enabled](#) = False

### 3.140.1 Detailed Description

SQL session layer.

Definition at line 23 of file sql.py.

### 3.140.2 Member Function Documentation

#### 3.140.2.1 def rpki.sql.session.\_\_init\_\_ ( *self*, *cfg* )

Definition at line 28 of file sql.py.

#### 3.140.2.2 def rpki.sql.session.\_wrap\_execute ( *self*, *func*, *query*, *args* ) [private]

Definition at line 58 of file sql.py.

**3.140.2.3 def rpki.sql.session.assert\_pristine ( self)**

Assert that there are no dirty objects in the cache.

Definition at line 82 of file sql.py.

**3.140.2.4 def rpki.sql.session.cache\_clear ( self)**

Clear the object cache.

Definition at line 78 of file sql.py.

**3.140.2.5 def rpki.sql.session.close ( self)**

Definition at line 47 of file sql.py.

**3.140.2.6 def rpki.sql.session.connect ( self)**

Definition at line 43 of file sql.py.

**3.140.2.7 def rpki.sql.session.execute ( self, query, args = None)**

Definition at line 66 of file sql.py.

**3.140.2.8 def rpki.sql.session.executemany ( self, query, args)**

Definition at line 69 of file sql.py.

**3.140.2.9 def rpki.sql.session.fetchall ( self)**

Definition at line 72 of file sql.py.

**3.140.2.10 def rpki.sql.session.lastrowid ( self)**

Definition at line 75 of file sql.py.

**3.140.2.11 def rpki.sql.session.ping ( self)**

Definition at line 55 of file sql.py.

**3.140.2.12 def rpki.sql.session.sweep ( self)**

Write any dirty objects out to SQL.

Definition at line 86 of file sql.py.

### 3.140.3 Member Data Documentation

#### 3.140.3.1 rpki.sql.session.\_exceptions\_enabled = False [static, private]

Definition at line 26 of file sql.py.

#### 3.140.3.2 rpki.sql.session.cache

Definition at line 38 of file sql.py.

#### 3.140.3.3 rpki.sql.session.cur

Definition at line 45 of file sql.py.

#### 3.140.3.4 rpki.sql.session.database

Definition at line 35 of file sql.py.

#### 3.140.3.5 rpki.sql.session.db

Definition at line 44 of file sql.py.

#### 3.140.3.6 rpki.sql.session.dirty

Definition at line 39 of file sql.py.

#### 3.140.3.7 rpki.sql.session.password

Definition at line 36 of file sql.py.

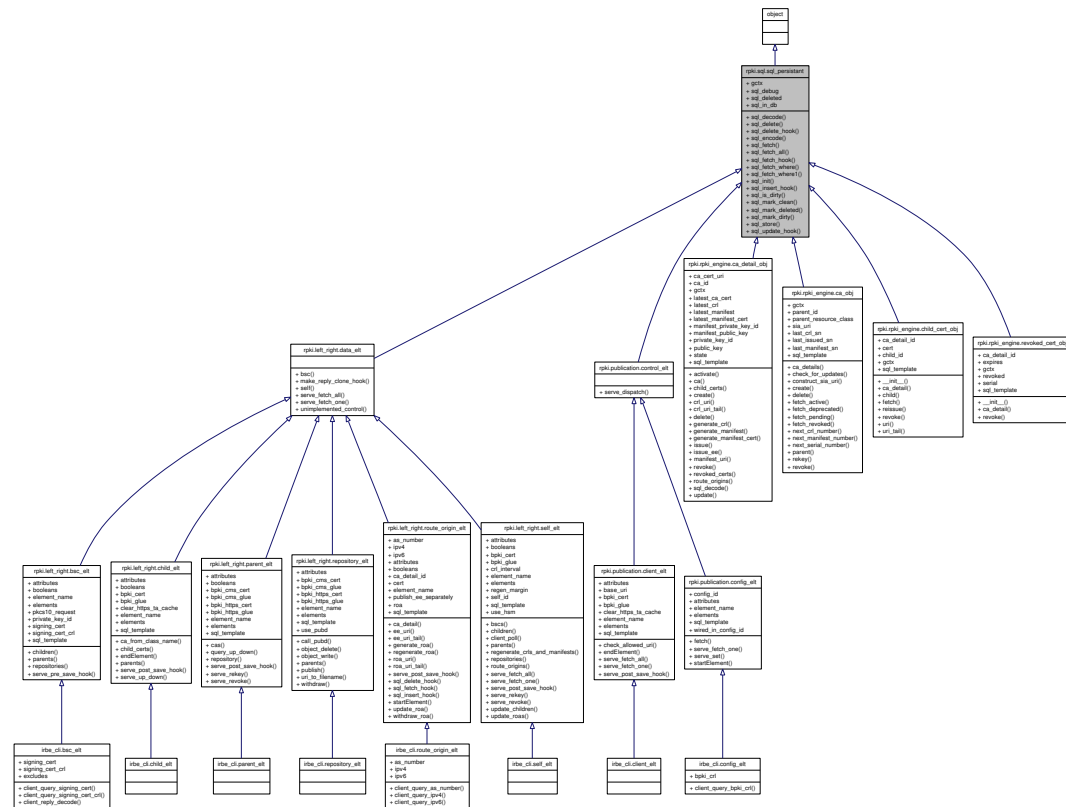
#### 3.140.3.8 rpki.sql.session.username

Definition at line 34 of file sql.py.

The documentation for this class was generated from the following file:

- [sql.py \(1979\)](#)

Inheritance diagram for rpkgi.sql.sql\_persistent:



- def `sql_decode`
- def `sql_delete`
- def `sql_delete_hook`
- def `sql_encode`
- def `sql_fetch`
- def `sql_fetch_all`
- def `sql_fetch_hook`
- def `sql_fetch_where`
- def `sql_fetch_where1`
- def `sql_init`
- def `sql_insert_hook`

- def [sql\\_is\\_dirty](#)
- def [sql\\_mark\\_clean](#)
- def [sql\\_mark\\_deleted](#)
- def [sql\\_mark\\_dirty](#)
- def [sql\\_store](#)
- def [sql\\_update\\_hook](#)

#### Public Attributes

- [gctx](#)

#### Static Public Attributes

- [sql\\_debug](#) = False  
*Enable logging of SQL actions.*
- [sql\\_deleted](#) = False  
*Whether our cached copy of this [object](#) has been deleted.*
- [sql\\_in\\_db](#) = False  
*Whether this [object](#) is already in SQL or not.*

#### 3.141.1 Detailed Description

Mixin for persistent class that needs to be stored in SQL.

Definition at line 115 of file sql.py.

#### 3.141.2 Member Function Documentation

##### 3.141.2.1 def rpki.sql.sql\_persistent.sql\_decode ( *self*, *vals* )

Initialize an object with values returned by `self.sql_fetch()`. This is a default version that assumes a one-to-one mapping between column names in SQL and attribute names in Python. If you need something fancier, override this.

Reimplemented in [rpki.rpki\\_engine.ca\\_detail\\_obj](#).

Definition at line 267 of file sql.py.

**3.141.2.2 def rpki.sql.sql\_persistent.sql\_delete ( self)**

Delete this object from SQL.

Definition at line 243 of file sql.py.

**3.141.2.3 def rpki.sql.sql\_persistent.sql\_delete\_hook ( self)**

Customization hook.

Reimplemented in [rpki.left\\_right.route\\_origin\\_elt](#).

Definition at line 292 of file sql.py.

**3.141.2.4 def rpki.sql.sql\_persistent.sql\_encode ( self)**

Convert object attributes into a dict for use with canned SQL queries. This is a default version that assumes a one-to-one mapping between column names in SQL and attribute names in Python. If you need something fancier, override this.

Definition at line 255 of file sql.py.

**3.141.2.5 def rpki.sql.sql\_persistent.sql\_fetch ( cls, gctx, id)**

Fetch one object from SQL, based on its primary key.

Since in this one case we know that the primary index is also the cache key, we check for a cache hit directly in the hope of bypassing the SQL lookup entirely.

This method is usually called via a one-line class-specific wrapper. As a convenience, we also accept an id of None, and just return None in this case.

Definition at line 135 of file sql.py.

**3.141.2.6 def rpki.sql.sql\_persistent.sql\_fetch\_all ( cls, gctx)**

Fetch all objects of this type from SQL.

Definition at line 170 of file sql.py.

**3.141.2.7 def rpki.sql.sql\_persistent.sql\_fetch\_hook ( self)**

Customization hook.

Reimplemented in [rpki.left\\_right.route\\_origin\\_elt](#).

Definition at line 279 of file sql.py.

**3.141.2.8 def rpki.sql.sql\_persistent.sql\_fetch\_where ( cls, gctx, where, args = None)**

Fetch objects of this type matching an arbitrary SQL WHERE expression.

Definition at line 175 of file sql.py.

**3.141.2.9 def rpki.sql.sql\_persistent.sql\_fetch\_where1 ( cls, gctx, where, args = None)**

Fetch one object from SQL, based on an arbitrary SQL WHERE expression.

Definition at line 157 of file sql.py.

**3.141.2.10 def rpki.sql.sql\_persistent.sql\_init ( cls, gctx, row, key)**

Initialize one Python object from the result of a SQL query.

Definition at line 197 of file sql.py.

**3.141.2.11 def rpki.sql.sql\_persistent.sql\_insert\_hook ( self)**

Customization hook.

Reimplemented in [rpki.left\\_right.route\\_origin\\_elt](#).

Definition at line 283 of file sql.py.

**3.141.2.12 def rpki.sql.sql\_persistent.sql\_is\_dirty ( self)**

Query whether this object needs to be written back to SQL.

Definition at line 215 of file sql.py.

**3.141.2.13 def rpki.sql.sql\_persistent.sql\_mark\_clean ( self)**

Mark this object as not needing to be written back to SQL.

Definition at line 211 of file sql.py.

**3.141.2.14 def rpki.sql.sql\_persistent.sql\_mark\_deleted ( self)**

Mark this object as needing to be deleted in SQL.

Definition at line 219 of file sql.py.

**3.141.2.15 def rpki.sql.sql\_persistent.sql\_mark\_dirty ( self)**

Mark this object as needing to be written back to SQL.

Definition at line 207 of file sql.py.

**3.141.2.16 def rpki.sql.sql\_persistent.sql\_store ( self)**

Store this object to SQL.

Definition at line 223 of file sql.py.

**3.141.2.17 def rpki.sql.sql\_persistent.sql\_update\_hook ( self)**

Customization hook.

Definition at line 287 of file sql.py.

**3.141.3 Member Data Documentation****3.141.3.1 rpki.sql.sql\_persistent.gctx**

Reimplemented in [rpki.rpki\\_engine.ca\\_obj](#), [rpki.rpki\\_engine.ca\\_detail\\_obj](#), [rpki.rpki\\_engine.child\\_cert\\_obj](#), and [rpki.rpki\\_engine.revoked\\_cert\\_obj](#).

Definition at line 200 of file sql.py.

**3.141.3.2 rpki::sql.sql\_persistent::sql\_debug = False [static]**

Enable logging of SQL actions.

Definition at line 132 of file sql.py.



### 3.141.3.3 rpki::sql.sql\_persistent::sql\_deleted = False [static]

Whether our cached copy of this [object](#) has been deleted.

Definition at line 127 of file sql.py.

### 3.141.3.4 rpki::sql.sql\_persistent::sql\_in\_db = False [static]

Whether this [object](#) is already in SQL or not.

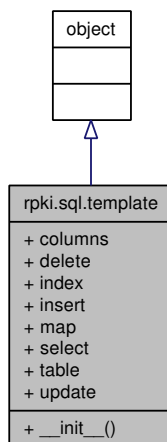
Definition at line 122 of file sql.py.

The documentation for this class was generated from the following file:

- [sql.py \(1979\)](#)

## 3.142 rpki.sql.template Class Reference

Inheritance diagram for rpki.sql.template:



### Public Member Functions

- [def \\_\\_init\\_\\_](#)

### Public Attributes

- [columns](#)
- [delete](#)
- [index](#)

- [insert](#)
- [map](#)
- [select](#)
- [table](#)
- [update](#)

### 3.142.1 Detailed Description

SQL template generator.

Definition at line 96 of file sql.py.

### 3.142.2 Member Function Documentation

#### 3.142.2.1 `def rpki.sql.template.__init__ ( self, table_name, index_column, data_columns)`

Build a SQL template.

Definition at line 98 of file sql.py.

### 3.142.3 Member Data Documentation

#### 3.142.3.1 `rpki.sql.template.columns`

Definition at line 105 of file sql.py.

#### 3.142.3.2 `rpki.sql.template.delete`

Definition at line 113 of file sql.py.

#### 3.142.3.3 `rpki.sql.template.index`

Definition at line 104 of file sql.py.

#### 3.142.3.4 `rpki.sql.template.insert`

Definition at line 108 of file sql.py.

#### 3.142.3.5 `rpki.sql.template.map`

Definition at line 106 of file sql.py.

**3.142.3.6 rpki.sql.template.select**

Definition at line 107 of file sql.py.

**3.142.3.7 rpki.sql.template.table**

Definition at line 103 of file sql.py.

**3.142.3.8 rpki.sql.template.update**

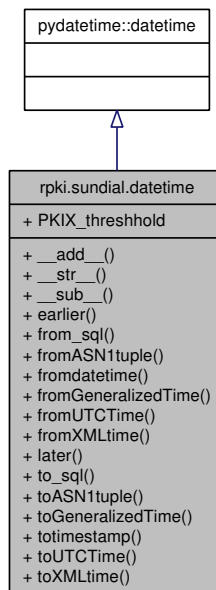
Definition at line 110 of file sql.py.

The documentation for this class was generated from the following file:

- [sql.py \(1979\)](#)

**3.143 rpki.sundial.datetime Class Reference**

Inheritance diagram for rpki.sundial.datetime:

**Public Member Functions**

- [def \\_\\_add\\_\\_](#)
- [def \\_\\_str\\_\\_](#)

- def [\\_\\_sub\\_\\_](#)
- def [earlier](#)
- def [from\\_sql](#)
- def [fromASN1tuple](#)
- def [fromdatetime](#)
- def [fromGeneralizedTime](#)
- def [fromUTCTime](#)
- def [fromXMLtime](#)
- def [later](#)
- def [to\\_sql](#)
- def [toASN1tuple](#)
- def [toGeneralizedTime](#)
- def [totimestamp](#)
- def [toUTCTime](#)
- def [toXMLtime](#)

#### Static Public Attributes

- tuple [PKIX\\_threshold](#) = pydatetime.datetime(2050, 1, 1)  
*Threshold specified in RFC 3280 for switchover from UTCTime to GeneralizedTime.*

### 3.143.1 Detailed Description

RPKI extensions to standard datetime.datetime class. All work here is in UTC, so we use naive datetime objects.

Definition at line 30 of file sundial.py.

### 3.143.2 Member Function Documentation

#### 3.143.2.1 def rpki.sundial.datetime.\_\_add\_\_(self, other)

Force correct class for timedelta results.

Definition at line 102 of file sundial.py.

#### 3.143.2.2 def rpki.sundial.datetime.\_\_str\_\_(self)

Definition at line 92 of file sundial.py.

**3.143.2.3 def rpki.sundial.datetime.\_\_sub\_\_ ( self, other)**

Force correct class for timedelta results.

Definition at line 106 of file sundial.py.

**3.143.2.4 def rpki.sundial.datetime.earlier ( self, other)**

Return the earlier of two timestamps.

Definition at line 133 of file sundial.py.

**3.143.2.5 def rpki.sundial.datetime.from\_sql ( cls, x)**

Convert from SQL storage format.

Definition at line 111 of file sundial.py.

**3.143.2.6 def rpki.sundial.datetime.fromASN1tuple ( cls, x)**

Convert from ASN.1 tuple representation.

Definition at line 60 of file sundial.py.

**3.143.2.7 def rpki.sundial.datetime.fromdatetime ( cls, x)**

Convert a datetime.datetime object into this subclass.  
This is whacky due to the weird constructors for datetime.

Definition at line 96 of file sundial.py.

**3.143.2.8 def rpki.sundial.datetime.fromGeneralizedTime ( cls, x)**

Convert from ASN.1 GeneralizedTime.

Definition at line 51 of file sundial.py.

**3.143.2.9 def rpki.sundial.datetime.fromUTCTime ( cls, x)**

Convert from ASN.1 UTCTime.

Definition at line 42 of file sundial.py.

**3.143.2.10 def rpki.sundial.datetime.fromXMLtime ( cls, x)**

Convert from XML time representation.

Definition at line 81 of file sundial.py.

**3.143.2.11 def rpki.sundial.datetime.later ( self, other)**

Return the later of two timestamps.

Definition at line 129 of file sundial.py.

**3.143.2.12 def rpki.sundial.datetime.to\_sql ( self)**

Convert to SQL storage format.

There's something whacky going on in the MySQLdb module, it throws range errors when storing a derived type into a DATETIME column. Investigate some day, but for now brute force this by copying the relevant fields into a datetime.datetime for MySQLdb's consumption.

Definition at line 115 of file sundial.py.

**3.143.2.13 def rpki.sundial.datetime.toASN1tuple ( self)**

Convert to ASN.1 tuple representation.

Definition at line 73 of file sundial.py.

**3.143.2.14 def rpki.sundial.datetime.toGeneralizedTime ( self)**

Convert to ASN.1 GeneralizedTime.

Definition at line 55 of file sundial.py.

**3.143.2.15 def rpki.sundial.datetime.totimestamp ( self)**

Convert to seconds from epoch (like time.time()). Conversion method is a bit silly, but avoids time module timezone whackiness.

Definition at line 35 of file sundial.py.

**3.143.2.16** def rpki.sundial.datetime.toUTCtime ( *self*)

Convert to ASN.1 UTCTime.

Definition at line 46 of file sundial.py.

**3.143.2.17** def rpki.sundial.datetime.toXMLtime ( *self*)

Convert to XML time representation.

Definition at line 88 of file sundial.py.

**3.143.3** Member Data Documentation**3.143.3.1** rpki::sundial.datetime::PKIX\_threshold = pydate-  
time.datetime(2050, 1, 1) [static]

Threshold specified in RFC 3280 for switchover from UTCTime to GeneralizedTime.

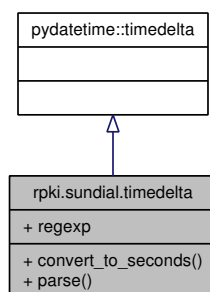
Definition at line 71 of file sundial.py.

The documentation for this class was generated from the following file:

- [sundial.py \(1915\)](#)

**3.144** rpki.sundial.timedelta Class Reference

Inheritance diagram for rpki.sundial.timedelta:

**Public Member Functions**

- def [convert\\_to\\_seconds](#)
- def [parse](#)

## Static Public Attributes

- tuple [regexp](#)

*Hideously ugly regular expression to parse the complex text form.*

### 3.144.1 Detailed Description

Timedelta with text parsing. This accepts two input formats:

- A simple integer, indicating a number of seconds.
- A string of the form "wD xH yM zS" where w, x, y, and z are integers and D, H, M, and S indicate days, hours, minutes, and seconds. All of the fields are optional, but at least one must be specified. Eg, "3D4H" means "three days plus four hours".

Definition at line 137 of file sundial.py.

### 3.144.2 Member Function Documentation

#### 3.144.2.1 def rpki.sundial.timedelta.convert\_to\_seconds ( self)

Convert a timedelta interval to seconds.

Definition at line 176 of file sundial.py.

#### 3.144.2.2 def rpki.sundial.timedelta.parse ( cls, arg)

Parse text into a timedelta object.

Definition at line 162 of file sundial.py.

### 3.144.3 Member Data Documentation

#### 3.144.3.1 rpki::sundial.timedelta::regexp [static]

Initial value:

```
re.compile("\\s*".join(("^",
                        "(?: (?:P<days>\\d+)D) ?",
                        "(?: (?:P<hours>\\d+)H) ?",
                        "(?: (?:P<minutes>\\d+)M) ?",
                        "(?: (?:P<seconds>\\d+)S) ?",
                        "$")),
          re.I)
```



Hideously ugly regular expression to parse the complex text form.

Tags are intended for use with `re.MatchObject.groupdict()` and map directly to the keywords expected by the `timedelta` constructor.

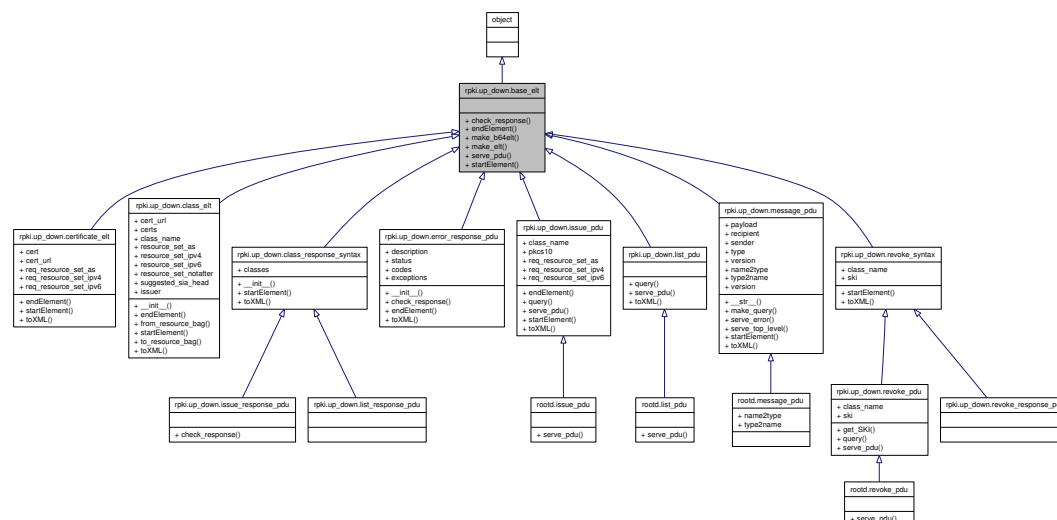
Definition at line 153 of file `sundial.py`.

The documentation for this class was generated from the following file:

- [sundial.py \(1915\)](#)

### 3.145 rpki.up\_down.base\_elt Class Reference

Inheritance diagram for `rpki.up_down.base_elt`:



#### Public Member Functions

- def [check\\_response](#)
- def [endElement](#)
- def [make\\_b64elt](#)
- def [make\\_elt](#)
- def [serve\\_pdu](#)
- def [startElement](#)

#### 3.145.1 Detailed Description

Generic PDU object.

Virtual class, just provides some default methods.

Definition at line 28 of file up\_down.py.

### 3.145.2 Member Function Documentation

#### 3.145.2.1 def rpki.up\_down.base\_elt.check\_response (self)

Placeholder for response checking.

Reimplemented in [rpki.up\\_down.issue\\_response\\_pdu](#), and [rpki.up\\_down.error\\_response\\_pdu](#).

Definition at line 69 of file up\_down.py.

#### 3.145.2.2 def rpki.up\_down.base\_elt.endElement (self, stack, name, text)

Ignore endElement() if there's no specific handler.

If we don't need to do anything else, just pop the stack.

Reimplemented in [rpki.up\\_down.certificate\\_elt](#), [rpki.up\\_down.class\\_elt](#), [rpki.up\\_down.issue\\_pdu](#), and [rpki.up\\_down.error\\_response\\_pdu](#).

Definition at line 42 of file up\_down.py.

#### 3.145.2.3 def rpki.up\_down.base\_elt.make\_b64elt (self, elt, name, value = None)

Construct a sub-element with Base64 text content.

Definition at line 58 of file up\_down.py.

#### 3.145.2.4 def rpki.up\_down.base\_elt.make\_elt (self, name, attrs)

Construct a element, copying over a set of attributes.

Definition at line 49 of file up\_down.py.

### 3.145.2.5 def rpki.up\_down.base\_elt.serve\_pdu (self, q\_msg, r\_msg, child)

Default PDU handler to catch unexpected types.

Reimplemented in [rpki.up\\_down.list\\_pdu](#), [rpki.up\\_down.issue\\_pdu](#), [rpki.up\\_down.revoke\\_pdu](#), [rootd.list\\_pdu](#), [rootd.issue\\_pdu](#), and [rootd.revoke\\_pdu](#).

Definition at line 65 of file up\_down.py.

### 3.145.2.6 def rpki.up\_down.base\_elt.startElement (self, stack, name, attrs)

Ignore startElement() if there's no specific handler.

Some elements have no attributes and we only care about their text content.

Reimplemented in [rpki.up\\_down.certificate\\_elt](#), [rpki.up\\_down.class\\_elt](#), [rpki.up\\_down.class\\_response\\_syntax](#), [rpki.up\\_down.issue\\_pdu](#), [rpki.up\\_down.revoke\\_syntax](#), and [rpki.up\\_down.message\\_pdu](#).

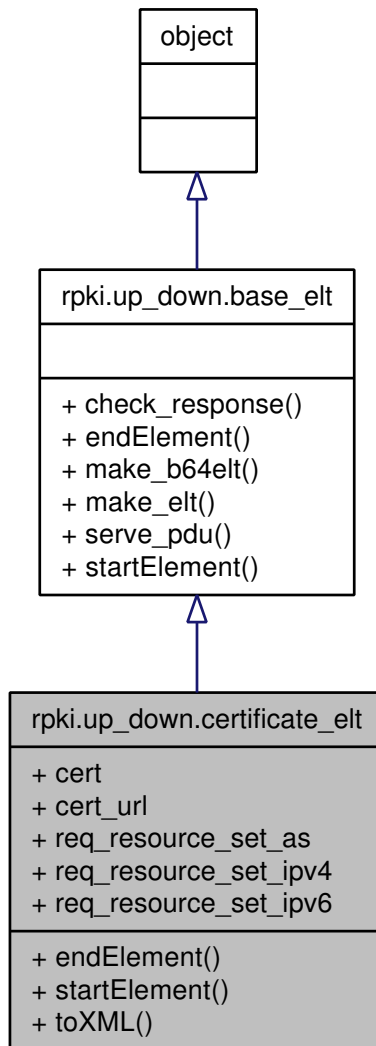
Definition at line 34 of file up\_down.py.

The documentation for this class was generated from the following file:

- [up\\_down.py](#) (2000)

### 3.146 rpki.up\_down.certificate\_elt Class Reference

Inheritance diagram for rpki.up\_down.certificate\_elt:



#### Public Member Functions

- def [endElement](#)
- def [startElement](#)
- def [toXML](#)

## Public Attributes

- [cert](#)
- [cert\\_url](#)
- [req\\_resource\\_set\\_as](#)
- [req\\_resource\\_set\\_ipv4](#)
- [req\\_resource\\_set\\_ipv6](#)

### 3.146.1 Detailed Description

Up-Down protocol representation of an issued certificate.

Definition at line 99 of file up\_down.py.

### 3.146.2 Member Function Documentation

#### 3.146.2.1 `def rpki.up_down.certificate_elt.endElement ( self, stack, name, text)`

Handle text content of a <certificate/> element.

Reimplemented from [rpki.up\\_down.base\\_elt](#).

Definition at line 110 of file up\_down.py.

#### 3.146.2.2 `def rpki.up_down.certificate_elt.startElement ( self, stack, name, attrs)`

Handle attributes of <certificate/> element.

Reimplemented from [rpki.up\\_down.base\\_elt](#).

Definition at line 102 of file up\_down.py.

#### 3.146.2.3 `def rpki.up_down.certificate_elt.toXML ( self)`

Generate a <certificate/> element.

Definition at line 116 of file up\_down.py.

### 3.146.3 Member Data Documentation

#### 3.146.3.1 `rpki.up_down.certificate_elt.cert`

Definition at line 113 of file up\_down.py.

**3.146.3.2 rpki.up\_down.certificate\_elt.cert\_url**

Definition at line 105 of file up\_down.py.

**3.146.3.3 rpki.up\_down.certificate\_elt.req\_resource\_set\_as**

Definition at line 106 of file up\_down.py.

**3.146.3.4 rpki.up\_down.certificate\_elt.req\_resource\_set\_ipv4**

Definition at line 107 of file up\_down.py.

**3.146.3.5 rpki.up\_down.certificate\_elt.req\_resource\_set\_ipv6**

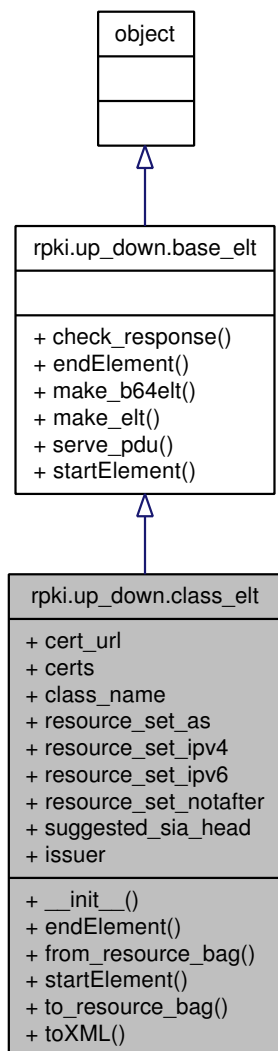
Definition at line 108 of file up\_down.py.

The documentation for this class was generated from the following file:

- [up\\_down.py \(2000\)](#)

### 3.147 rpki.up\_down.class\_elt Class Reference

Inheritance diagram for rpki.up\_down.class\_elt:



#### Public Member Functions

- def [\\_\\_init\\_\\_](#)
- def [endElement](#)
- def [from\\_resource\\_bag](#)
- def [startElement](#)

- def [to\\_resource\\_bag](#)
- def [toXML](#)

#### Public Attributes

- [cert\\_url](#)
- [certs](#)
- [class\\_name](#)
- [resource\\_set\\_as](#)
- [resource\\_set\\_ipv4](#)
- [resource\\_set\\_ipv6](#)
- [resource\\_set\\_notafter](#)
- [suggested\\_sia\\_head](#)

#### Static Public Attributes

- [issuer](#) = None

### 3.147.1 Detailed Description

Up-Down protocol representation of a resource class.

Definition at line 123 of file `up_down.py`.

### 3.147.2 Member Function Documentation

#### 3.147.2.1 `def rpki.up_down.class_elt.__init__ ( self )`

Initialize `class_elt`.

Definition at line 128 of file `up_down.py`.

#### 3.147.2.2 `def rpki.up_down.class_elt.endElement ( self, stack, name, text )`

Handle `<class/>` elements and their children.

Reimplemented from [rpki.up\\_down.base\\_elt](#).

Definition at line 149 of file `up_down.py`.



**3.147.2.3 def rpki.up\_down.class\_elt.from\_resource\_bag ( self, bag)**

Set resources of this class element from a resource\_bag.

Definition at line 174 of file up\_down.py.

**3.147.2.4 def rpki.up\_down.class\_elt.startElement ( self, stack, name, attrs)**

Handle <class/> elements and their children.

Reimplemented from [rpki.up\\_down.base\\_elt](#).

Definition at line 132 of file up\_down.py.

**3.147.2.5 def rpki.up\_down.class\_elt.to\_resource\_bag ( self)**

Build a resource\_bag from from this <class/> element.

Definition at line 167 of file up\_down.py.

**3.147.2.6 def rpki.up\_down.class\_elt.toXML ( self)**

Generate a <class/> element.

Definition at line 157 of file up\_down.py.

**3.147.3 Member Data Documentation****3.147.3.1 rpki.up\_down.class\_elt.cert\_url**

Definition at line 142 of file up\_down.py.

**3.147.3.2 rpki.up\_down.class\_elt.certs**

Definition at line 130 of file up\_down.py.

**3.147.3.3 rpki.up\_down.class\_elt.class\_name**

Definition at line 141 of file up\_down.py.

**3.147.3.4 rpki.up\_down.class\_elt.issuer = None [static]**

Definition at line 126 of file up\_down.py.

**3.147.3.5 rpki.up\_down.class\_elt.resource\_set\_as**

Definition at line 144 of file up\_down.py.

**3.147.3.6 rpki.up\_down.class\_elt.resource\_set\_ipv4**

Definition at line 145 of file up\_down.py.

**3.147.3.7 rpki.up\_down.class\_elt.resource\_set\_ipv6**

Definition at line 146 of file up\_down.py.

**3.147.3.8 rpki.up\_down.class\_elt.resource\_set\_notafter**

Definition at line 147 of file up\_down.py.

**3.147.3.9 rpki.up\_down.class\_elt.suggested\_sia\_head**

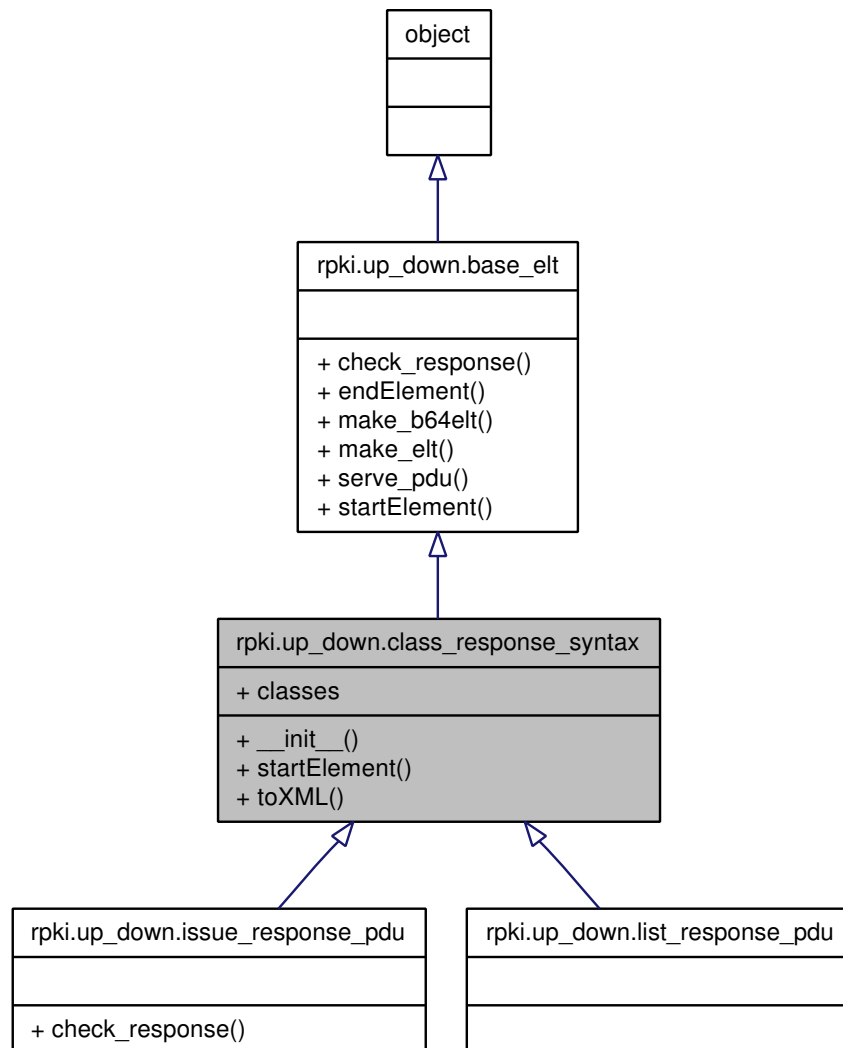
Definition at line 143 of file up\_down.py.

The documentation for this class was generated from the following file:

- [up\\_down.py \(2000\)](#)

### 3.148 rpki.up\_down.class\_response\_syntax Class Reference

Inheritance diagram for rpki.up\_down.class\_response\_syntax:



#### Public Member Functions

- def [\\_\\_init\\_\\_](#)
- def [startElement](#)
- def [toXML](#)

## Public Attributes

- [classes](#)

### 3.148.1 Detailed Description

Syntax for Up-Down protocol "list\_response" and "issue\_response" PDUs.

Definition at line 220 of file up\_down.py.

### 3.148.2 Member Function Documentation

#### 3.148.2.1 def rpki.up\_down.class\_response\_syntax.\_\_init\_\_ ( *self* )

Initialize class\_response\_syntax.

Definition at line 223 of file up\_down.py.

#### 3.148.2.2 def rpki.up\_down.class\_response\_syntax.startElement ( *self*, *stack*, *name*, *attrs* )

Handle "list\_response" and "issue\_response" PDUs.

Reimplemented from [rpki.up\\_down.base\\_elt](#).

Definition at line 227 of file up\_down.py.

#### 3.148.2.3 def rpki.up\_down.class\_response\_syntax.toXML ( *self* )

Generate payload of "list\_response" and "issue\_response" PDUs.

Definition at line 235 of file up\_down.py.

### 3.148.3 Member Data Documentation

#### 3.148.3.1 rpki.up\_down.class\_response\_syntax.classes

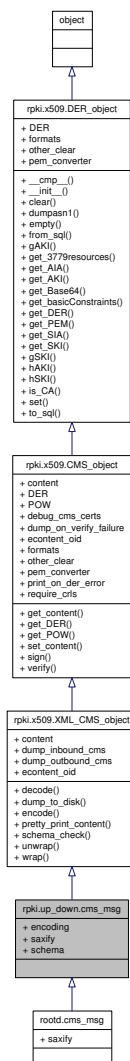
Definition at line 225 of file up\_down.py.

The documentation for this class was generated from the following file:

- [up\\_down.py \(2000\)](#)

### 3.149 rpki.up\_down.cms\_msg Class Reference

Inheritance diagram for rpki.up\_down.cms\_msg:



#### Static Public Attributes

- string `encoding` = "UTF-8"
- `saxify` = `sax_handler.saxify`
- `schema` = `rpki.relaxng.up_down`

### 3.149.1 Detailed Description

Class to hold a CMS-signed up-down PDU.

Definition at line 530 of file up\_down.py.

### 3.149.2 Member Data Documentation

#### 3.149.2.1 `string rpki.up_down.cms_msg.encoding = "UTF-8"` [static]

Definition at line 533 of file up\_down.py.

#### 3.149.2.2 `rpki.up_down.cms_msg.saxify = sax_handler.saxify` [static]

Reimplemented in [rootd.cms\\_msg](#).

Definition at line 535 of file up\_down.py.

#### 3.149.2.3 `rpki.up_down.cms_msg.schema = rpki.relaxng.up_down` [static]

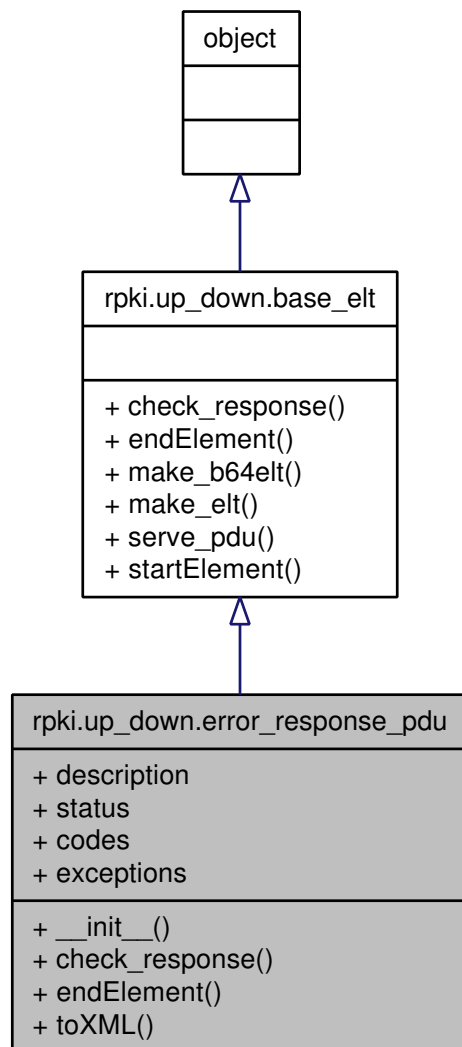
Definition at line 534 of file up\_down.py.

The documentation for this class was generated from the following file:

- [up\\_down.py](#) (2000)

### 3.150 rpki.up\_down.error\_response\_pdu Class Reference

Inheritance diagram for rpki.up\_down.error\_response\_pdu:



#### Public Member Functions

- def [\\_\\_init\\_\\_](#)
- def [check\\_response](#)
- def [endElement](#)
- def [toXML](#)

## Public Attributes

- [description](#)
- [status](#)

## Static Public Attributes

- dictionary [codes](#)
- dictionary [exceptions](#) = { }

### 3.150.1 Detailed Description

Up-Down protocol "error\_response" PDU.

Definition at line 391 of file up\_down.py.

### 3.150.2 Member Function Documentation

**3.150.2.1** `def rpki.up_down.error_response_pdu.__init__ ( self, exception = None)`

Initialize an error\_response PDU from an exception object.

Definition at line 407 of file up\_down.py.

**3.150.2.2** `def rpki.up_down.error_response_pdu.check_response ( self)`

Handle an error response. For now, just raise an exception, perhaps figure out something more clever to do later.

Reimplemented from [rpki.up\\_down.base\\_elt](#).

Definition at line 443 of file up\_down.py.

**3.150.2.3** `def rpki.up_down.error_response_pdu.endElement ( self, stack, name, text)`

Handle "error\_response" PDU.

Reimplemented from [rpki.up\\_down.base\\_elt](#).

Definition at line 416 of file up\_down.py.



### 3.150.2.4 def rpki.up\_down.error\_response\_pdu.toXML ( self)

Generate payload of "error\_response" PDU.

Definition at line 430 of file up\_down.py.

## 3.150.3 Member Data Documentation

### 3.150.3.1 dictionary rpki.up\_down.error\_response\_pdu.codes [static]

Initial value:

```
{
    1101 : "Already processing request",
    1102 : "Version number error",
    1103 : "Unrecognised request type",
    1201 : "Request - no such resource class",
    1202 : "Request - no resources allocated in resource class",
    1203 : "Request - badly formed certificate request",
    1301 : "Revoke - no such resource class",
    1302 : "Revoke - no such key",
    2001 : "Internal Server Error - Request not performed" }
```

Definition at line 394 of file up\_down.py.

### 3.150.3.2 rpki.up\_down.error\_response\_pdu.description

Definition at line 414 of file up\_down.py.

### 3.150.3.3 dictionary rpki.up\_down.error\_response\_pdu.exceptions = {} [static]

Definition at line 405 of file up\_down.py.

### 3.150.3.4 rpki.up\_down.error\_response\_pdu.status

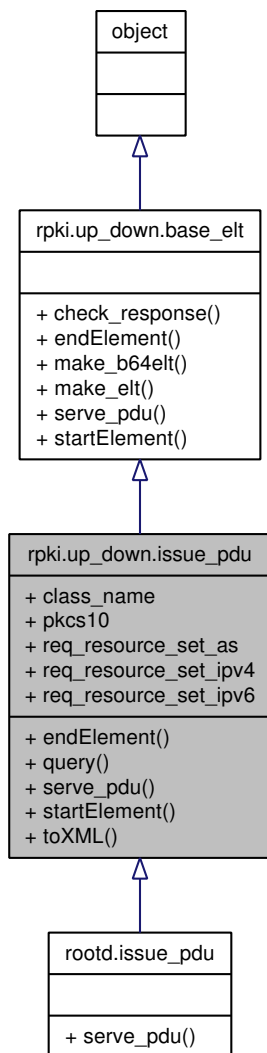
Definition at line 411 of file up\_down.py.

The documentation for this class was generated from the following file:

- [up\\_down.py \(2000\)](#)

### 3.151 rpki.up\_down.issue\_pdu Class Reference

Inheritance diagram for rpki.up\_down.issue\_pdu:



#### Public Member Functions

- def [endElement](#)
- def [query](#)
- def [serve\\_pdu](#)
- def [startElement](#)

- def [toXML](#)

#### Public Attributes

- [class\\_name](#)
- [pkcs10](#)
- [req\\_resource\\_set\\_as](#)
- [req\\_resource\\_set\\_ipv4](#)
- [req\\_resource\\_set\\_ipv6](#)

#### 3.151.1 Detailed Description

Up-Down protocol "issue" PDU.

Definition at line 244 of file up\_down.py.

#### 3.151.2 Member Function Documentation

##### 3.151.2.1 def rpki.up\_down.issue\_pdu.endElement ( *self*, *stack*, *name*, *text*)

Handle "issue" PDU.

Reimplemented from [rpki.up\\_down.base\\_elt](#).

Definition at line 255 of file up\_down.py.

##### 3.151.2.2 def rpki.up\_down.issue\_pdu.query ( *cls*, *parent*, *ca*, *ca\_detail*)

Send an "issue" request to parent associated with ca.

Definition at line 327 of file up\_down.py.

##### 3.151.2.3 def rpki.up\_down.issue\_pdu.serve\_pdu ( *self*, *q\_msg*, *r\_msg*, *child*)

Serve one issue request PDU.

Reimplemented from [rpki.up\\_down.base\\_elt](#).

Reimplemented in [rootd.issue\\_pdu](#).

Definition at line 268 of file up\_down.py.

#### 3.151.2.4 def rpki.up\_down.issue\_pdu.startElement ( self, stack, name, attrs)

Handle "issue" PDU.

Reimplemented from [rpki.up\\_down.base\\_elt](#).

Definition at line 247 of file up\_down.py.

#### 3.151.2.5 def rpki.up\_down.issue\_pdu.toXML ( self)

Generate payload of "issue" PDU.

Definition at line 261 of file up\_down.py.

### 3.151.3 Member Data Documentation

#### 3.151.3.1 rpki.up\_down.issue\_pdu.class\_name

Definition at line 250 of file up\_down.py.

#### 3.151.3.2 rpki.up\_down.issue\_pdu.pkcs10

Definition at line 258 of file up\_down.py.

#### 3.151.3.3 rpki.up\_down.issue\_pdu.req\_resource\_set\_as

Definition at line 251 of file up\_down.py.

#### 3.151.3.4 rpki.up\_down.issue\_pdu.req\_resource\_set\_ipv4

Definition at line 252 of file up\_down.py.

#### 3.151.3.5 rpki.up\_down.issue\_pdu.req\_resource\_set\_ipv6

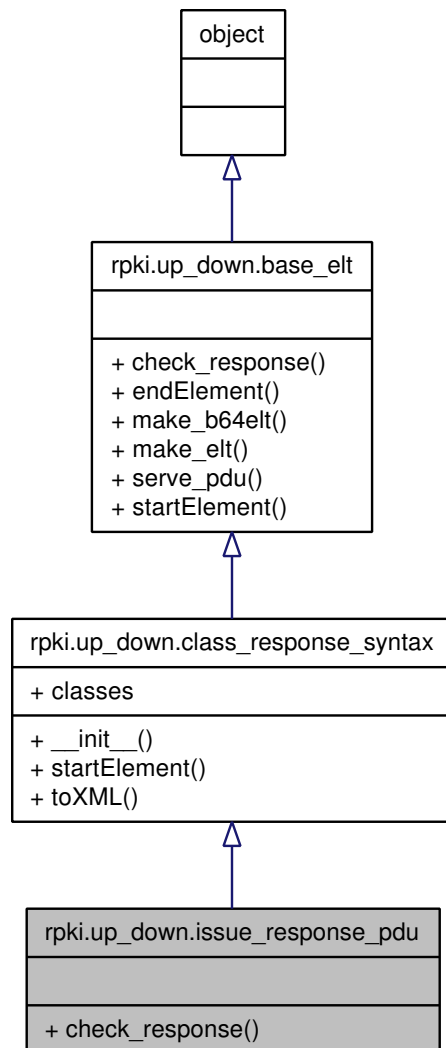
Definition at line 253 of file up\_down.py.

The documentation for this class was generated from the following file:

- [up\\_down.py \(2000\)](#)

### 3.152 rpki.up\_down.issue\_response\_pdu Class Reference

Inheritance diagram for rpki.up\_down.issue\_response\_pdu:



#### Public Member Functions

- def [check\\_response](#)

### 3.152.1 Detailed Description

Up-Down protocol "issue\_response" PDU.

Definition at line 337 of file up\_down.py.

### 3.152.2 Member Function Documentation

#### 3.152.2.1 def rpki.up\_down.issue\_response\_pdu.check\_response ( *self* )

Check whether this looks like a reasonable issue\_response PDU.  
XML schema should be tighter for this response.

Reimplemented from [rpki.up\\_down.base\\_elt](#).

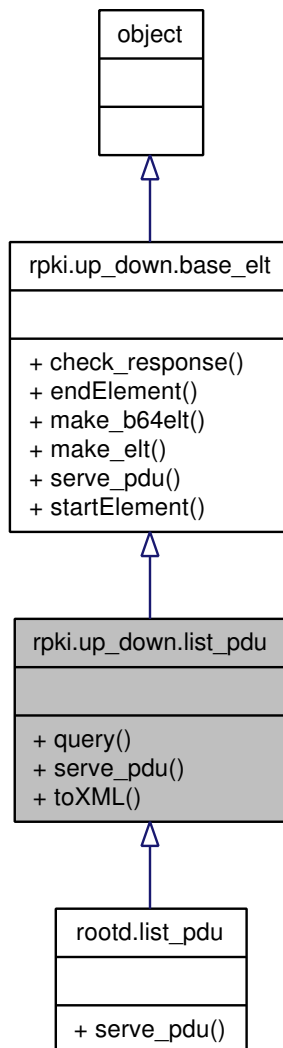
Definition at line 340 of file up\_down.py.

The documentation for this class was generated from the following file:

- [up\\_down.py](#) (2000)

### 3.153 rpki.up\_down.list\_pdu Class Reference

Inheritance diagram for rpki.up\_down.list\_pdu:



#### Public Member Functions

- def [query](#)
- def [serve\\_pdu](#)
- def [toXML](#)

### 3.153.1 Detailed Description

Up-Down protocol "list" PDU.

Definition at line 181 of file up\_down.py.

### 3.153.2 Member Function Documentation

#### 3.153.2.1 `def rpki.up_down.list_pdu.query ( cls, parent )`

Send a "list" query to parent.

Definition at line 216 of file up\_down.py.

#### 3.153.2.2 `def rpki.up_down.list_pdu.serve_pdu ( self, q_msg, r_msg, child )`

Serve one "list" PDU.

Reimplemented from [rpki.up\\_down.base\\_elt](#).

Reimplemented in [rootd.list\\_pdu](#).

Definition at line 188 of file up\_down.py.

#### 3.153.2.3 `def rpki.up_down.list_pdu.toXML ( self )`

Generate (empty) payload of "list" PDU.

Definition at line 184 of file up\_down.py.

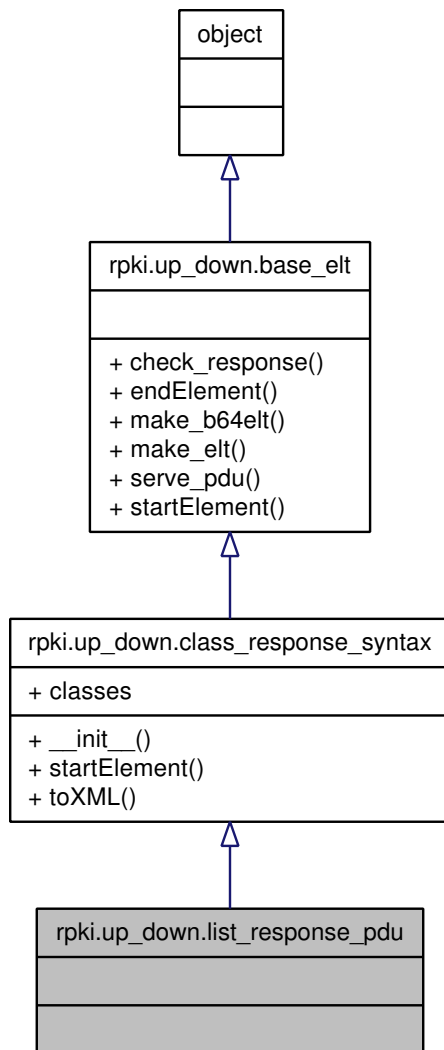
The documentation for this class was generated from the following file:

- [up\\_down.py \(2000\)](#)



### 3.154 rpki.up\_down.list\_response\_pdu Class Reference

Inheritance diagram for rpki.up\_down.list\_response\_pdu:



#### 3.154.1 Detailed Description

Up-Down protocol "list\_response" PDU.

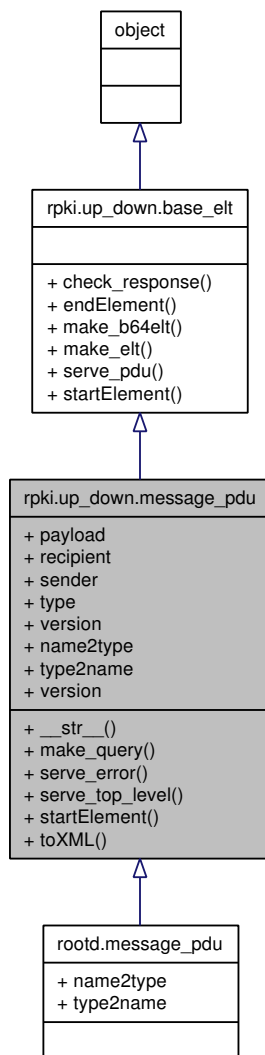
Definition at line 239 of file `up_down.py`.

The documentation for this class was generated from the following file:

- [up\\_down.py \(2000\)](#)

### 3.155 rpki.up\_down.message\_pdu Class Reference

Inheritance diagram for rpki.up\_down.message\_pdu:



### Public Member Functions

- def `__str__`
- def `make_query`
- def `serve_error`
- def `serve_top_level`
- def `startElement`
- def `toXML`

### Public Attributes

- `payload`
- `recipient`
- `sender`
- `type`
- `version`

### Static Public Attributes

- dictionary `name2type`
- tuple `type2name` = dict((v,k) for k,v in name2type.items())
- int `version` = 1

#### 3.155.1 Detailed Description

Up-Down protocol message wrapper PDU.

Definition at line 449 of file up\_down.py.

#### 3.155.2 Member Function Documentation

##### 3.155.2.1 def rpki.up\_down.message\_pdu.\_\_str\_\_ ( *self* )

Convert a message PDU to a string.

Definition at line 486 of file up\_down.py.

##### 3.155.2.2 def rpki.up\_down.message\_pdu.make\_query ( *cls*, *payload*, *sender*, *recipient* )

Construct one message PDU.

Definition at line 509 of file up\_down.py.

### 3.155.2.3 def rpki.up\_down.message\_pdu.serve\_error ( self, exception)

Generate an error\_response message PDU.

Definition at line 499 of file up\_down.py.

### 3.155.2.4 def rpki.up\_down.message\_pdu.serve\_top\_level ( self, child)

Serve one message request PDU.

Definition at line 490 of file up\_down.py.

### 3.155.2.5 def rpki.up\_down.message\_pdu.startElement ( self, stack, name, attrs)

Handle message PDU.

Payload of the <message/> element varies depending on the "type" attribute, so after some basic checks we have to instantiate the right class object to handle whatever kind of PDU this is.

Reimplemented from [rpki.up\\_down.base\\_elt](#).

Definition at line 471 of file up\_down.py.

### 3.155.2.6 def rpki.up\_down.message\_pdu.toXML ( self)

Generate payload of message PDU.

Definition at line 465 of file up\_down.py.

## 3.155.3 Member Data Documentation

### 3.155.3.1 dictionary rpki.up\_down.message\_pdu.name2type [static]

Initial value:

```
{
    "list"           : list_pdu,
    "list_response"  : list_response_pdu,
    "issue"          : issue_pdu,
    "issue_response" : issue_response_pdu,
    "revoke"         : revoke_pdu,
    "revoke_response" : revoke_response_pdu,
    "error_response" : error_response_pdu }
```

Reimplemented in [rootd.message\\_pdu](#).

Definition at line 454 of file up\_down.py.

**3.155.3.2 `rpki.up_down.message_pdu.payload`**

Definition at line 483 of file `up_down.py`.

**3.155.3.3 `rpki.up_down.message_pdu.recipient`**

Definition at line 481 of file `up_down.py`.

**3.155.3.4 `rpki.up_down.message_pdu.sender`**

Definition at line 480 of file `up_down.py`.

**3.155.3.5 `rpki.up_down.message_pdu.type`**

Definition at line 482 of file `up_down.py`.

**3.155.3.6 `tuple rpki.up_down.message_pdu.type2name = dict((v,k) for k,v in name2type.items())` `[static]`**

Reimplemented in [rootd.message\\_pdu](#).

Definition at line 463 of file `up_down.py`.

**3.155.3.7 `rpki.up_down.message_pdu.version`**

Definition at line 479 of file `up_down.py`.

**3.155.3.8 `int rpki.up_down.message_pdu.version = 1` `[static]`**

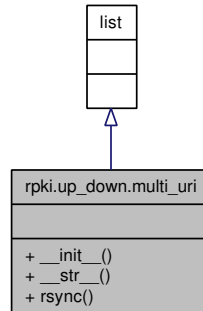
Definition at line 452 of file `up_down.py`.

The documentation for this class was generated from the following file:

- [up\\_down.py](#) (2000)

## 3.156 rpki.up\_down.multi\_uri Class Reference

Inheritance diagram for rpki.up\_down.multi\_uri:



### Public Member Functions

- def [\\_\\_init\\_\\_](#)
- def [\\_\\_str\\_\\_](#)
- def [rsync](#)

#### 3.156.1 Detailed Description

Container for a set of URIs.

Definition at line 73 of file up\_down.py.

#### 3.156.2 Member Function Documentation

##### 3.156.2.1 def rpki.up\_down.multi\_uri.\_\_init\_\_ ( self, ini)

Initialize a set of URIs, which includes basic some syntax checking.

Definition at line 76 of file up\_down.py.

##### 3.156.2.2 def rpki.up\_down.multi\_uri.\_\_str\_\_ ( self)

Convert a multi\_uri back to a string representation.

Definition at line 88 of file up\_down.py.

### 3.156.2.3 def rpki.up\_down.multi\_uri.rsync ( *self* )

Find first rsync://... URI in self.

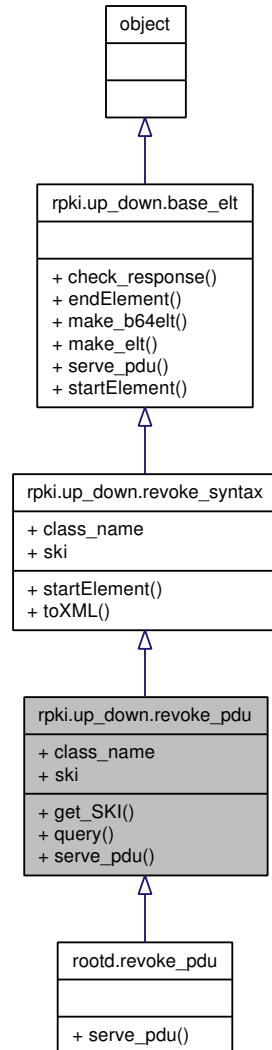
Definition at line 92 of file up\_down.py.

The documentation for this class was generated from the following file:

- [up\\_down.py \(2000\)](#)

### 3.157 rpki.up\_down.revoke\_pdu Class Reference

Inheritance diagram for rpki.up\_down.revoke\_pdu:



#### Public Member Functions

- def [get\\_SKI](#)
- def [query](#)
- def [serve\\_pdu](#)



## Public Attributes

- [class\\_name](#)
- [ski](#)

### 3.157.1 Detailed Description

Up-Down protocol "revoke" PDU.

Definition at line 359 of file up\_down.py.

### 3.157.2 Member Function Documentation

#### 3.157.2.1 `def rpki.up_down.revoke_pdu.get_SKI ( self )`

Convert `g(SKI)` encoding from PDU back to raw SKI.

Definition at line 362 of file up\_down.py.

#### 3.157.2.2 `def rpki.up_down.revoke_pdu.query ( cls, ca_detail )`

Send a "revoke" request to parent associated with `ca_detail`.

Definition at line 377 of file up\_down.py.

#### 3.157.2.3 `def rpki.up_down.revoke_pdu.serve_pdu ( self, q_msg, r_msg, child )`

Serve one revoke request PDU.

Reimplemented from [rpki.up\\_down.base\\_elt](#).

Reimplemented in [rootd.revoke\\_pdu](#).

Definition at line 366 of file up\_down.py.

### 3.157.3 Member Data Documentation

#### 3.157.3.1 `rpki.up_down.revoke_pdu.class_name`

Reimplemented from [rpki.up\\_down.revoke\\_syntax](#).

Definition at line 382 of file up\_down.py.

### 3.157.3.2 `rpki.up_down.revoke_pdu.ski`

Reimplemented from [rpki.up\\_down.revoke\\_syntax](#).

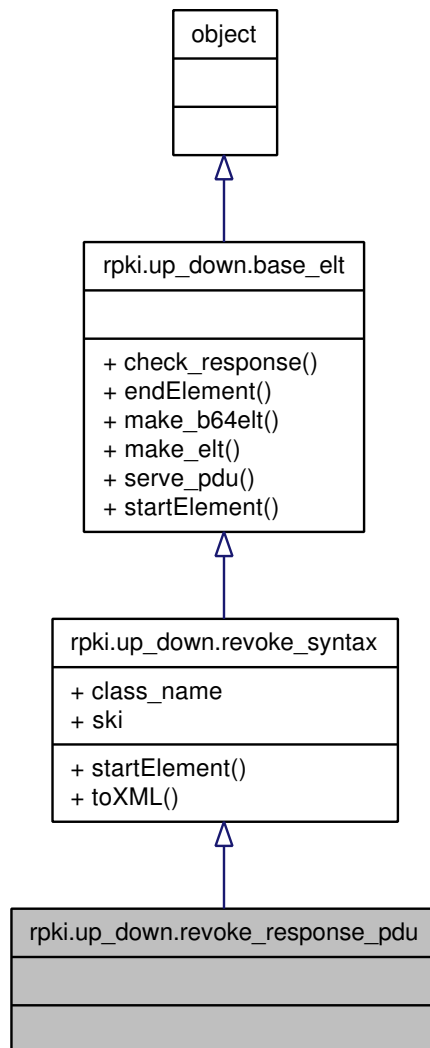
Definition at line 383 of file `up_down.py`.

The documentation for this class was generated from the following file:

- [up\\_down.py](#) (2000)

### 3.158 rpki.up\_down.revoke\_response\_pdu Class Reference

Inheritance diagram for rpki.up\_down.revoke\_response\_pdu:



#### 3.158.1 Detailed Description

Up-Down protocol "revoke\_response" PDU.

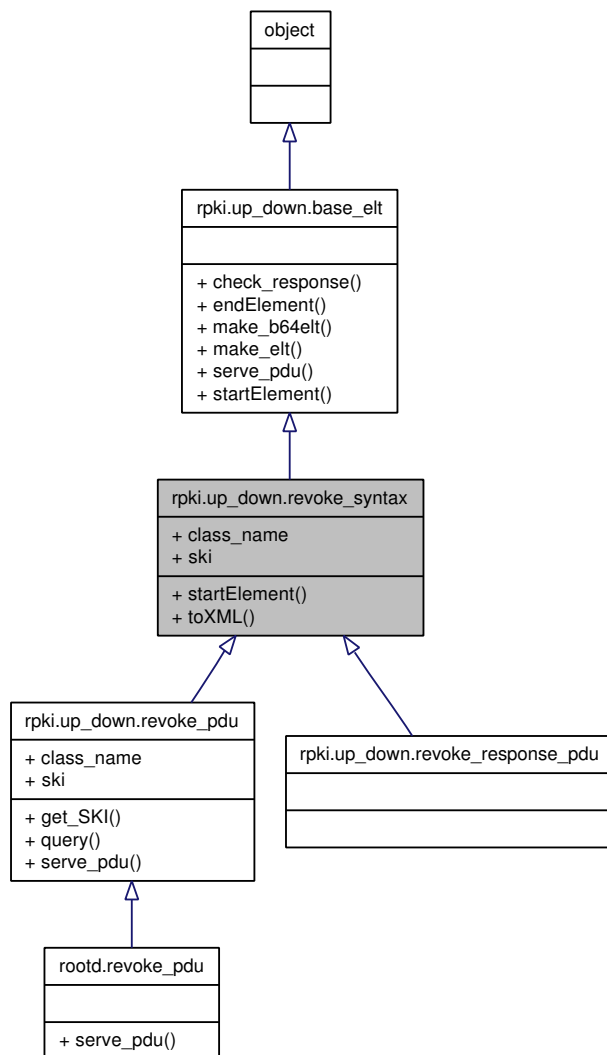
Definition at line 386 of file `up_down.py`.

The documentation for this class was generated from the following file:

- [up\\_down.py \(2000\)](#)

### 3.159 rpki.up\_down.revoke\_syntax Class Reference

Inheritance diagram for rpki.up\_down.revoke\_syntax:



## Public Member Functions

- def [startElement](#)
- def [toXML](#)

## Public Attributes

- [class\\_name](#)
- [ski](#)

### 3.159.1 Detailed Description

Syntax for Up-Down protocol "revoke" and "revoke\_response" PDUs.

Definition at line 347 of file up\_down.py.

### 3.159.2 Member Function Documentation

#### 3.159.2.1 def rpki.up\_down.revoke\_syntax.startElement ( *self*, *stack*, *name*, *attrs*)

Handle "revoke" PDU.

Reimplemented from [rpki.up\\_down.base\\_elt](#).

Definition at line 350 of file up\_down.py.

#### 3.159.2.2 def rpki.up\_down.revoke\_syntax.toXML ( *self*)

Generate payload of "revoke" PDU.

Definition at line 355 of file up\_down.py.

### 3.159.3 Member Data Documentation

#### 3.159.3.1 rpki.up\_down.revoke\_syntax.class\_name

Reimplemented in [rpki.up\\_down.revoke\\_pdu](#).

Definition at line 352 of file up\_down.py.

### 3.159.3.2 `rpki.up_down.revoke_syntax.ski`

Reimplemented in [rpki.up\\_down.revoke\\_pdu](#).

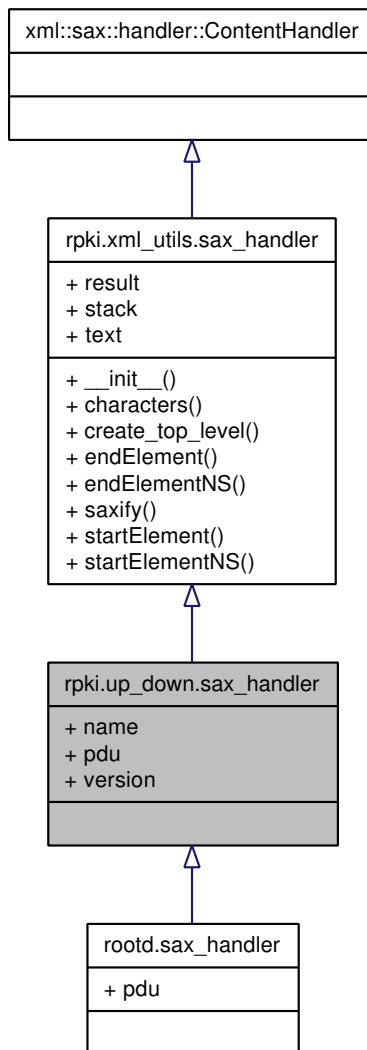
Definition at line 353 of file `up_down.py`.

The documentation for this class was generated from the following file:

- [up\\_down.py](#) (2000)

### 3.160 rpki.up\_down.sax\_handler Class Reference

Inheritance diagram for rpki.up\_down.sax\_handler:



#### Static Public Attributes

- string `name` = "message"
- `pdu` = `message_pdu`
- string `version` = "1"

### 3.160.1 Detailed Description

SAX handler for Up-Down protocol.

Definition at line 523 of file up\_down.py.

### 3.160.2 Member Data Documentation

#### 3.160.2.1 string rpki.up\_down.sax\_handler.name = "message" [static]

Definition at line 527 of file up\_down.py.

#### 3.160.2.2 rpki.up\_down.sax\_handler.pdu = message\_pdu [static]

Reimplemented in [rootd.sax\\_handler](#).

Definition at line 526 of file up\_down.py.

#### 3.160.2.3 string rpki.up\_down.sax\_handler.version = "1" [static]

Definition at line 528 of file up\_down.py.

The documentation for this class was generated from the following file:

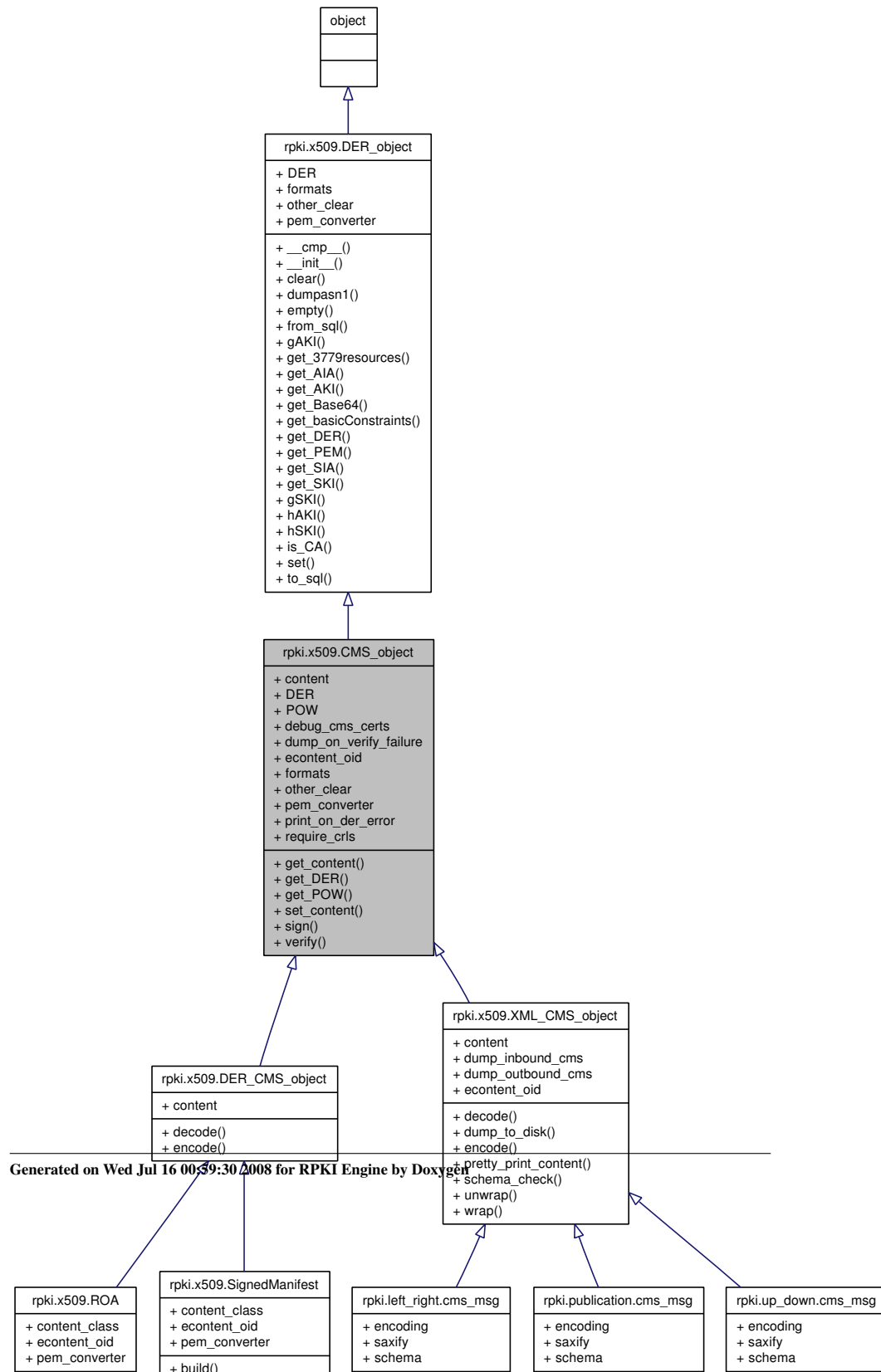
- [up\\_down.py](#) (2000)





### 3.161 rpki.x509.CMS\_object Class Reference

Inheritance diagram for rpki.x509.CMS\_object:



### Public Member Functions

- def [get\\_content](#)
- def [get\\_DER](#)
- def [get\\_POW](#)
- def [set\\_content](#)
- def [sign](#)
- def [verify](#)

### Public Attributes

- [content](#)
- [DER](#)  
*DER value of this [object](#).*
- [POW](#)

### Static Public Attributes

- [debug\\_cms\\_certs](#) = False  
*Set this to True to [log](#) a lot of chatter about CMS certificates.*
- [dump\\_on\\_verify\\_failure](#) = True  
*Set this to True to get `dumpasn1` dumps of ASN.1 on CMS verify failures.*
- tuple [econtent\\_oid](#) = POWify\_OID("id-data")
- tuple [formats](#) = ("DER", "[POW](#)")  
*Formats supported in this [object](#).*
- tuple [other\\_clear](#) = ("content",)  
*Other attributes that `self.clear()` should whack.*
- tuple [pem\\_converter](#) = [PEM\\_converter](#)("CMS")  
*PEM converter for this [object](#).*
- [print\\_on\\_der\\_error](#) = True  
*Set this to True to [log](#) alleged DER when we have trouble parsing it, in case it's really a Perl backtrace or something.*
- [require\\_crls](#) = False  
*Set this to False to make CMS CRLs optional in the cases where we would otherwise require them.*

### 3.161.1 Detailed Description

Class to hold a CMS-wrapped object.

CMS-wrapped objects are a little different from the other DER\_object types because the signed object is CMS wrapping inner content that's also ASN.1, and due to our current minimal support for CMS we can't just handle this as a pretty composite object. So, for now anyway, a CMS\_object is the outer CMS wrapped object so that the usual DER and PEM operations do the obvious things, and the inner content is handle via separate methods.

Definition at line 583 of file x509.py.

### 3.161.2 Member Function Documentation

#### 3.161.2.1 def rpki.x509.CMS\_object.get\_content ( self)

Get the inner content of this CMS\_object.

Definition at line 640 of file x509.py.

#### 3.161.2.2 def rpki.x509.CMS\_object.get\_DER ( self)

Get the DER value of this CMS\_object.

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 623 of file x509.py.

#### 3.161.2.3 def rpki.x509.CMS\_object.get\_POW ( self)

Get the POW value of this CMS\_object.

Definition at line 633 of file x509.py.

#### 3.161.2.4 def rpki.x509.CMS\_object.set\_content ( self, content)

Set the (inner) content of this CMS\_object, clearing the wrapper.

Definition at line 645 of file x509.py.

**3.161.2.5** `def rpki.x509.CMS_object.sign ( self, keypair, certs, crls = None, no_certs = False)`

Sign and wrap inner content.

Definition at line 719 of file x509.py.

**3.161.2.6** `def rpki.x509.CMS_object.verify ( self, ta)`

Verify CMS wrapper and store inner content.

Definition at line 650 of file x509.py.

### 3.161.3 Member Data Documentation

#### 3.161.3.1 `rpki.x509.CMS_object.content`

Reimplemented in [rpki.x509.DER\\_CMS\\_object](#), and [rpki.x509.XML\\_CMS\\_object](#).

Definition at line 648 of file x509.py.

**3.161.3.2** `rpki::x509.CMS_object::debug_cms_certs = False` `[static]`

Set this to True to [log](#) a lot of chatter about CMS certificates.

Definition at line 608 of file x509.py.

#### 3.161.3.3 `rpki.x509.CMS_object.DER`

DER value of this [object](#).

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 629 of file x509.py.

**3.161.3.4** `rpki::x509.CMS_object::dump_on_verify_failure = True` `[static]`

Set this to True to get dumpasn1 dumps of ASN.1 on CMS verify failures.

Definition at line 603 of file x509.py.

**3.161.3.5** `tuple rpki.x509.CMS_object.econtent_oid = POWify_OID("id-data")`  
`[static]`

Reimplemented in [rpki.x509.SignedManifest](#), [rpki.x509.ROA](#), and [rpki.x509.XML\\_CMS\\_object](#).

Definition at line 597 of file x509.py.

**3.161.3.6 tuple rpki.x509.CMS\_object.formats = ("DER", "POW")**  
[static]

Formats supported in this [object](#).

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 595 of file x509.py.

**3.161.3.7 tuple rpki.x509.CMS\_object.other\_clear = ("content",)** [static]

Other attributes that self.clear() should whack.

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 596 of file x509.py.

**3.161.3.8 tuple rpki.x509.CMS\_object.pem\_converter = PEM\_converter("CMS")** [static]

PEM converter for this [object](#).

Reimplemented from [rpki.x509.DER\\_object](#).

Reimplemented in [rpki.x509.SignedManifest](#), and [rpki.x509.ROA](#).

Definition at line 598 of file x509.py.

**3.161.3.9 rpki.x509.CMS\_object.POW**

Definition at line 637 of file x509.py.

**3.161.3.10 rpki::x509.CMS\_object::print\_on\_der\_error = True** [static]

Set this to True to [log](#) alleged DER when we have trouble parsing it, in case it's really a Perl backtrace or something.

Definition at line 621 of file x509.py.

**3.161.3.11 rpki::x509.CMS\_object::require\_crls = False** [static]

Set this to False to make CMS CRLs optional in the cases where we would otherwise require them.

Some day this option should go away and CRLs should be unconditionally mandatory in such cases.

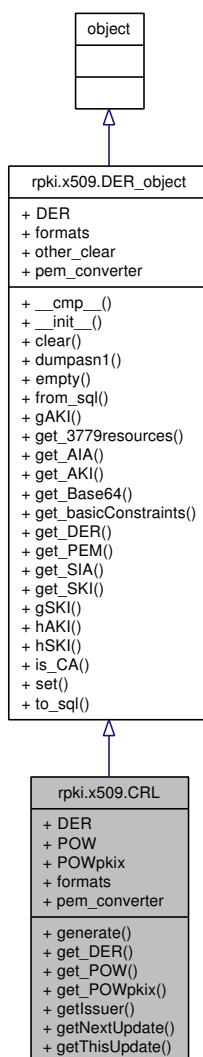
Definition at line 615 of file x509.py.

The documentation for this class was generated from the following file:

- [x509.py \(1916\)](#)

### 3.162 rpki.x509.CRL Class Reference

Inheritance diagram for rpki.x509.CRL:



### Public Member Functions

- def [generate](#)
- def [get\\_DER](#)
- def [get\\_POW](#)
- def [get\\_POWpkix](#)
- def [getIssuer](#)
- def [getNextUpdate](#)
- def [getThisUpdate](#)

### Public Attributes

- [DER](#)  
*DER value of this [object](#).*
- [POW](#)
- [POWpkix](#)

### Static Public Attributes

- tuple [formats](#) = ("DER", "POW", "POWpkix")  
*Formats supported in this [object](#).*
- tuple [pem\\_converter](#) = [PEM\\_converter](#)("X509 CRL")  
*PEM converter for this [object](#).*

#### 3.162.1 Detailed Description

Class to hold a Certificate Revocation List.

Definition at line 890 of file x509.py.

#### 3.162.2 Member Function Documentation

**3.162.2.1** def [rpki.x509.CRL.generate](#) ( *cls*, *keypair*, *issuer*, *serial*, *thisUpdate*, *nextUpdate*, *revokedCertificates*, *version* = 1, *digestType* = "sha256WithRSAEncryption")

Definition at line 938 of file x509.py.



**3.162.2.2 def rpki.x509.CRL.get\_DER ( self)**

Get the DER value of this CRL.

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 896 of file x509.py.

**3.162.2.3 def rpki.x509.CRL.get\_POW ( self)**

Get the POW value of this CRL.

Definition at line 909 of file x509.py.

**3.162.2.4 def rpki.x509.CRL.get\_POWpkix ( self)**

Get the POW.pkix value of this CRL.

Definition at line 916 of file x509.py.

**3.162.2.5 def rpki.x509.CRL.getIssuer ( self)**

Get issuer value of this CRL.

Definition at line 933 of file x509.py.

**3.162.2.6 def rpki.x509.CRL.getNextUpdate ( self)**

Get nextUpdate value from this CRL.

Definition at line 929 of file x509.py.

**3.162.2.7 def rpki.x509.CRL.getThisUpdate ( self)**

Get thisUpdate value from this CRL.

Definition at line 925 of file x509.py.

### 3.162.3 Member Data Documentation

#### 3.162.3.1 rpki.x509.CRL.DER

DER value of this [object](#).

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 902 of file x509.py.

#### 3.162.3.2 tuple rpki.x509.CRL.formats = ("DER", "POW", "POWpkix") [static]

Formats supported in this [object](#).

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 893 of file x509.py.

#### 3.162.3.3 tuple rpki.x509.CRL.pem\_converter = PEM\_converter("X509 CRL") [static]

PEM converter for this [object](#).

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 894 of file x509.py.

#### 3.162.3.4 rpki.x509.CRL.POW

Definition at line 913 of file x509.py.

#### 3.162.3.5 rpki.x509.CRL.POWpkix

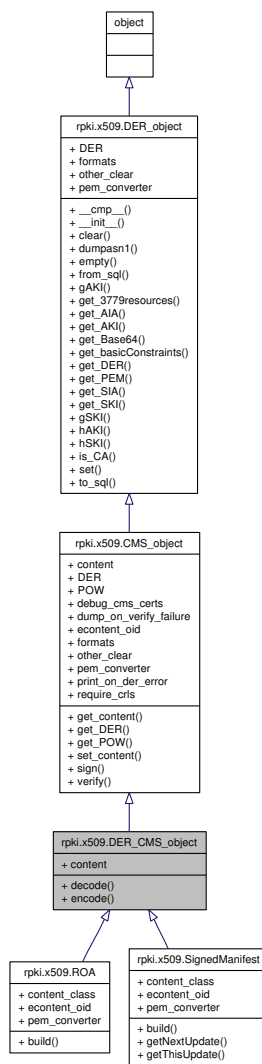
Definition at line 922 of file x509.py.

The documentation for this class was generated from the following file:

- [x509.py \(1916\)](#)

### 3.163 rpki.x509.DER\_CMS\_object Class Reference

Inheritance diagram for rpki.x509.DER\_CMS\_object:



#### Public Member Functions

- def [decode](#)
- def [encode](#)

## Public Attributes

- [content](#)

### 3.163.1 Detailed Description

Class to hold CMS objects with DER-based content.

Definition at line 748 of file x509.py.

### 3.163.2 Member Function Documentation

#### 3.163.2.1 `def rpki.x509.DER_CMS_object.decode ( self, der )`

Decode DER and set inner content.

Definition at line 755 of file x509.py.

#### 3.163.2.2 `def rpki.x509.DER_CMS_object.encode ( self )`

Encode inner content for signing.

Definition at line 751 of file x509.py.

### 3.163.3 Member Data Documentation

#### 3.163.3.1 `rpki.x509.DER_CMS_object.content`

Reimplemented from [rpki.x509.CMS\\_object](#).

Definition at line 759 of file x509.py.

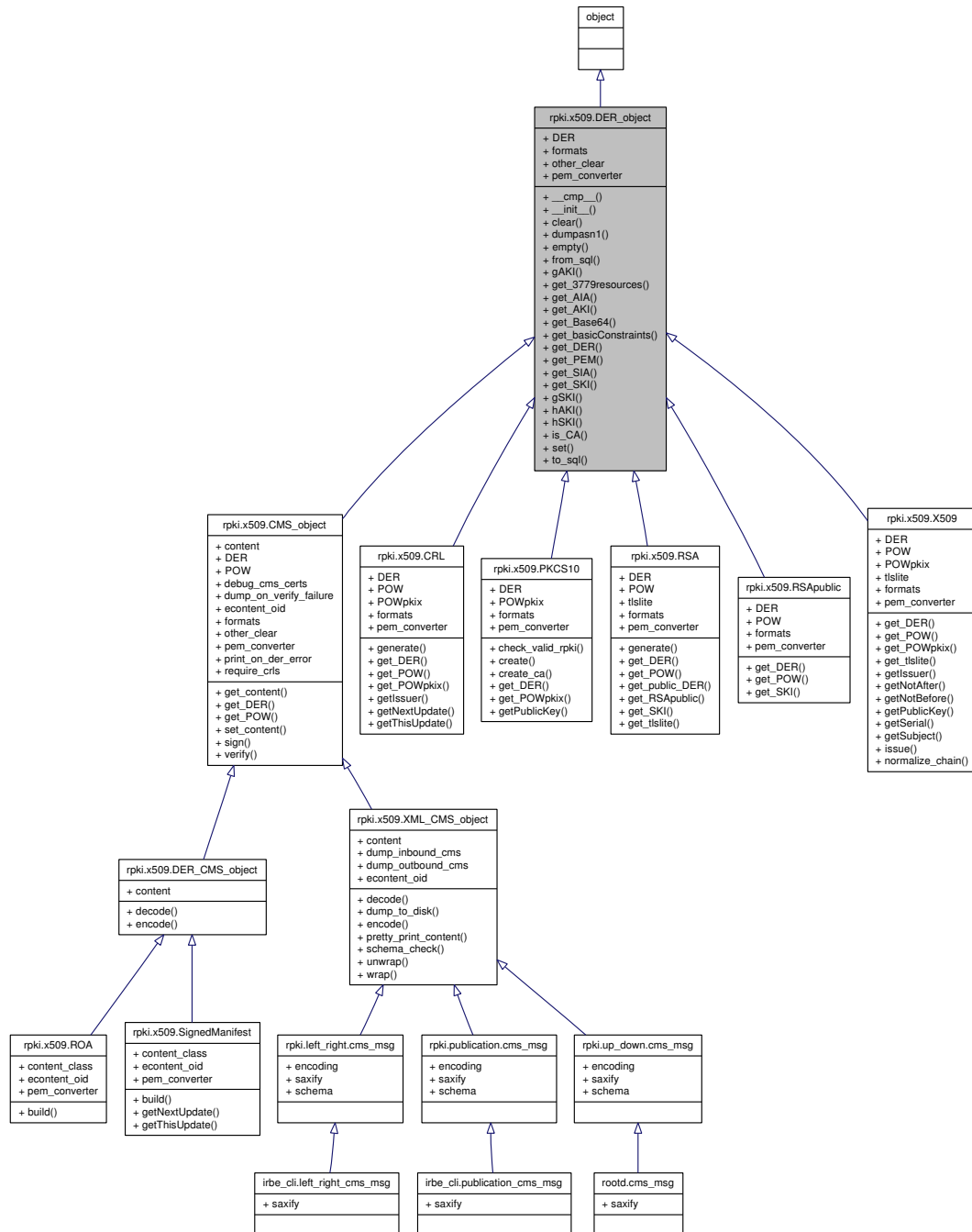
The documentation for this class was generated from the following file:

- [x509.py \(1916\)](#)



## 3.164 rpki.x509.DER\_object Class Reference

Inheritance diagram for rpki.x509.DER\_object:



### Public Member Functions

- def `__cmp__`
- def `__init__`
- def `clear`
- def `dumpasn1`
- def `empty`
- def `from_sql`
- def `gAKI`
- def `get_3779resources`
- def `get_AIA`
- def `get_AKI`
- def `get_Base64`
- def `get_basicConstraints`
- def `get_DER`
- def `get_PEM`
- def `get_SIA`
- def `get_SKI`
- def `gSKI`
- def `hAKI`
- def `hSKI`
- def `is_CA`
- def `set`
- def `to_sql`

### Public Attributes

- `DER`  
*DER value of this [object](#).*

### Static Public Attributes

- tuple `formats` = ("DER",)  
*Formats supported in this [object](#).*
- tuple `other_clear` = ()  
*Other attributes that `self.clear()` should whack.*
- `pem_converter` = None  
*PEM converter for this [object](#).*

### 3.164.1 Detailed Description

Virtual class to hold a generic DER object.

Definition at line 76 of file x509.py.

### 3.164.2 Member Function Documentation

#### 3.164.2.1 `def rpki.x509.DER_object.__cmp__ (self, other)`

Compare two DER-encoded objects.

Definition at line 160 of file x509.py.

#### 3.164.2.2 `def rpki.x509.DER_object.__init__ (self, kw)`

Initialize a DER\_object.

Definition at line 103 of file x509.py.

#### 3.164.2.3 `def rpki.x509.DER_object.clear (self)`

Make this object empty.

Definition at line 98 of file x509.py.

#### 3.164.2.4 `def rpki.x509.DER_object.dumpasn1 (self)`

Pretty print an ASN.1 DER object using cryptlib dumpasn1 tool.  
Use a temporary file rather than popen4() because dumpasn1 uses  
seek() when decoding ASN.1 content nested in OCTET STRING values.

Definition at line 236 of file x509.py.

#### 3.164.2.5 `def rpki.x509.DER_object.empty (self)`

Test whether this object is empty.

Definition at line 91 of file x509.py.



**3.164.2.6 def rpki.x509.DER\_object.from\_sql ( cls, x )**

Convert from SQL storage format.

Definition at line 228 of file x509.py.

**3.164.2.7 def rpki.x509.DER\_object.gAKI ( self )**

Calculate g(AKI) for this object. Only work for subclasses that implement get\_AKI().

Definition at line 184 of file x509.py.

**3.164.2.8 def rpki.x509.DER\_object.get\_3779resources ( self )**

Get RFC 3779 resources as rpki.resource\_set objects. Only works for subclasses that support getExtensions().

Definition at line 216 of file x509.py.

**3.164.2.9 def rpki.x509.DER\_object.get\_AIA ( self )**

Get the SIA extension from this object. Only works for subclasses that support getExtension().

Definition at line 203 of file x509.py.

**3.164.2.10 def rpki.x509.DER\_object.get\_AKI ( self )**

Get the AKI extension from this object. Only works for subclasses that support getExtension().

Definition at line 190 of file x509.py.

**3.164.2.11 def rpki.x509.DER\_object.get\_Base64 ( self )**

Get the Base64 encoding of the DER value of this object.

Definition at line 152 of file x509.py.

**3.164.2.12 def rpki.x509.DER\_object.get\_basicConstraints ( self )**

Get the basicConstraints extension from this object. Only works for subclasses that support getExtension().

Definition at line 207 of file x509.py.

**3.164.2.13 def rpki.x509.DER\_object.get\_DER ( self)**

Get the DER value of this object.

Subclasses will almost certainly override this method.

Reimplemented in [rpki.x509.X509](#), [rpki.x509.PKCS10](#), [rpki.x509.RSA](#), [rpki.x509.RSAPublic](#), [rpki.x509.CMS\\_object](#), and [rpki.x509.CRL](#).

Definition at line 142 of file x509.py.

**3.164.2.14 def rpki.x509.DER\_object.get\_PEM ( self)**

Get the PEM representation of this object.

Definition at line 156 of file x509.py.

**3.164.2.15 def rpki.x509.DER\_object.get\_SIA ( self)**

Get the SIA extension from this object. Only works for subclasses that support getExtension().

Definition at line 199 of file x509.py.

**3.164.2.16 def rpki.x509.DER\_object.get\_SKI ( self)**

Get the SKI extension from this object. Only works for subclasses that support getExtension().

Reimplemented in [rpki.x509.RSA](#), and [rpki.x509.RSAPublic](#).

Definition at line 195 of file x509.py.

**3.164.2.17 def rpki.x509.DER\_object.gSKI ( self)**

Calculate g(SKI) for this object. Only work for subclasses that implement get\_SKI().

Definition at line 171 of file x509.py.

**3.164.2.18 def rpki.x509.DER\_object.hAKI ( self)**

Return hexadecimal string representation of AKI for this object. Only work for subclasses that implement get\_AKI().

Definition at line 177 of file x509.py.

**3.164.2.19 def rpki.x509.DER\_object.hSKI ( self)**

Return hexadecimal string representation of SKI for this object. Only work for subclasses that implement get\_SKI().

Definition at line 164 of file x509.py.

**3.164.2.20 def rpki.x509.DER\_object.is\_CA ( self)**

Return True if and only if object has the basicConstraints extension and its cA value is true.

Definition at line 211 of file x509.py.

**3.164.2.21 def rpki.x509.DER\_object.set ( self, kw)**

Set this object by setting one of its known formats.

This method only allows one to set one format at a time. Subsequent calls will clear the object first. The point of all this is to let the object's internal converters handle mustering the object into whatever format you need at the moment.

Definition at line 109 of file x509.py.

**3.164.2.22 def rpki.x509.DER\_object.to\_sql ( self)**

Convert to SQL storage format.

Definition at line 232 of file x509.py.

**3.164.3 Member Data Documentation****3.164.3.1 rpki::x509.DER\_object::DER**

DER value of this [object](#).

Reimplemented in [rpki.x509.X509](#), [rpki.x509.PKCS10](#), [rpki.x509.RSA](#), [rpki.x509.RSAPublic](#), [rpki.x509.CMS\\_object](#), and [rpki.x509.CRL](#).

Definition at line 125 of file x509.py.

**3.164.3.2 tuple rpki.x509.DER\_object.formats = ("DER",) [static]**

Formats supported in this [object](#).

Reimplemented in [rpki.x509.X509](#), [rpki.x509.PKCS10](#), [rpki.x509.RSA](#), [rpki.x509.RSAPublic](#), [rpki.x509.CMS\\_object](#), and [rpki.x509.CRL](#).

Definition at line 80 of file x509.py.

**3.164.3.3 tuple rpki.x509.DER\_object.other\_clear = () [static]**

Other attributes that self.clear() should whack.

Reimplemented in [rpki.x509.CMS\\_object](#).

Definition at line 86 of file x509.py.

**3.164.3.4 rpki.x509.DER\_object.pem\_converter = None [static]**

PEM converter for this [object](#).

Reimplemented in [rpki.x509.X509](#), [rpki.x509.PKCS10](#), [rpki.x509.RSA](#), [rpki.x509.RSAPublic](#), [rpki.x509.CMS\\_object](#), [rpki.x509.SignedManifest](#), [rpki.x509.ROA](#), and [rpki.x509.CRL](#).

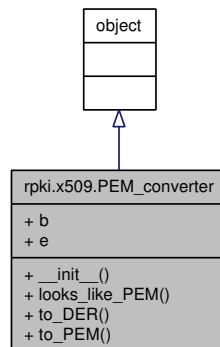
Definition at line 83 of file x509.py.

The documentation for this class was generated from the following file:

- [x509.py \(1916\)](#)

**3.165 rpki.x509.PEM\_converter Class Reference**

Inheritance diagram for rpki.x509.PEM\_converter:



## Public Member Functions

- [def \\_\\_init\\_\\_](#)
- [def looks\\_like\\_PEM](#)
- [def to\\_DER](#)
- [def to\\_PEM](#)

## Public Attributes

- [b](#)
- [e](#)

### 3.165.1 Detailed Description

Convert between DER and PEM encodings for various kinds of ASN.1 data.

Definition at line 43 of file x509.py.

### 3.165.2 Member Function Documentation

#### 3.165.2.1 `def rpki.x509.PEM_converter.__init__ ( self, kind)`

Initialize PEM\_converter.

Definition at line 46 of file x509.py.

#### 3.165.2.2 `def rpki.x509.PEM_converter.looks_like_PEM ( self, text)`

Guess whether text looks like a PEM encoding.

Definition at line 51 of file x509.py.

#### 3.165.2.3 `def rpki.x509.PEM_converter.to_DER ( self, pem)`

Convert from PEM to DER.

Definition at line 56 of file x509.py.

#### 3.165.2.4 `def rpki.x509.PEM_converter.to_PEM ( self, der)`

Convert from DER to PEM.

Definition at line 67 of file x509.py.

### 3.165.3 Member Data Documentation

#### 3.165.3.1 rpki.x509.PEM\_converter.b

Definition at line 48 of file x509.py.

#### 3.165.3.2 rpki.x509.PEM\_converter.e

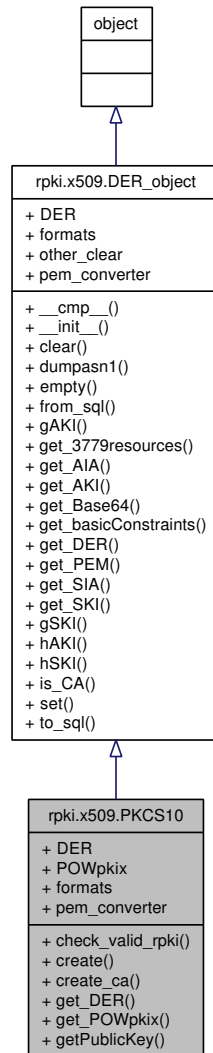
Definition at line 49 of file x509.py.

The documentation for this class was generated from the following file:

- [x509.py \(1916\)](#)

### 3.166 rpki.x509.PKCS10 Class Reference

Inheritance diagram for rpki.x509.PKCS10:



#### Public Member Functions

- def [check\\_valid\\_rpki](#)
- def [create](#)
- def [create\\_ca](#)
- def [get\\_DER](#)

- def [get\\_POWpkix](#)
- def [getPublicKey](#)

#### Public Attributes

- [DER](#)  
*DER value of this [object](#).*
- [POWpkix](#)

#### Static Public Attributes

- tuple [formats](#) = ("DER", "[POWpkix](#)")  
*Formats supported in this [object](#).*
- tuple [pem\\_converter](#) = [PEM\\_converter](#)("CERTIFICATE REQUEST")  
*PEM converter for this [object](#).*

### 3.166.1 Detailed Description

Class to hold a PKCS #10 request.

Definition at line 402 of file x509.py.

### 3.166.2 Member Function Documentation

#### 3.166.2.1 def rpki.x509.PKCS10.check\_valid\_rpki ( self)

Check this certification request to see whether it's a valid request for an RPKI certificate. This is broken out of the up-down protocol code because it's somewhat involved and the up-down code doesn't need to know the details.

Throws an exception if the request isn't valid, so if this method returns at all, the request is ok.

Definition at line 431 of file x509.py.

#### 3.166.2.2 def rpki.x509.PKCS10.create ( cls, keypair, exts = None)

Create a new request for a given keypair, including given extensions.

Definition at line 488 of file x509.py.



**3.166.2.3 def rpki.x509.PKCS10.create\_ca ( cls, keypair, sia = None)**

Create a new request for a given keypair, including given SIA value.

Definition at line 477 of file x509.py.

**3.166.2.4 def rpki.x509.PKCS10.get\_DER ( self)**

Get the DER value of this certification request.

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 408 of file x509.py.

**3.166.2.5 def rpki.x509.PKCS10.get\_POWpkix ( self)**

Get the POW.pkix value of this certification request.

Definition at line 418 of file x509.py.

**3.166.2.6 def rpki.x509.PKCS10.getPublicKey ( self)**

Extract the public key from this certification request.

Definition at line 427 of file x509.py.

**3.166.3 Member Data Documentation****3.166.3.1 rpki.x509.PKCS10.DER**

DER value of this [object](#).

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 414 of file x509.py.

**3.166.3.2 tuple rpki.x509.PKCS10.formats = ("DER", "POWpkix")  
[static]**

Formats supported in this [object](#).

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 405 of file x509.py.

**3.166.3.3 tuple rpki.x509.PKCS10.pem\_converter = PEM\_converter("CERTIFICATE REQUEST")** [static]

PEM converter for this [object](#).

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 406 of file x509.py.

#### **3.166.3.4 rpki.x509.PKCS10.POWpkix**

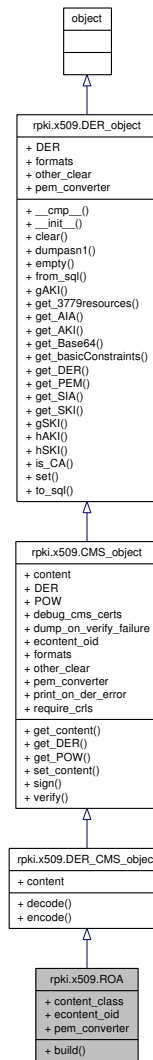
Definition at line 424 of file x509.py.

The documentation for this class was generated from the following file:

- [x509.py \(1916\)](#)

### 3.167 rpki.x509.ROA Class Reference

Inheritance diagram for rpki.x509.ROA:



#### Public Member Functions

- def [build](#)

### Static Public Attributes

- `content_class` = [rpki.roa.RouteOriginAttestation](#)
- tuple `econtent_oid` = `POWify_OID("id-ct-routeOriginAttestation")`
- tuple `pem_converter` = `PEM_converter("ROUTE ORIGIN ATTESTATION")`  
*PEM converter for this [object](#).*

#### 3.167.1 Detailed Description

Class to hold a signed ROA.

Definition at line 797 of file x509.py.

#### 3.167.2 Member Function Documentation

##### 3.167.2.1 `def rpki.x509.ROA.build ( cls, as_number, ipv4, ipv6, keypair, certs, version = 0 )`

Build a ROA.

Definition at line 805 of file x509.py.

#### 3.167.3 Member Data Documentation

##### 3.167.3.1 `rpki.x509.ROA.content_class = rpki.roa.RouteOriginAttestation` `[static]`

Definition at line 801 of file x509.py.

##### 3.167.3.2 tuple `rpki.x509.ROA.econtent_oid = POWify_OID("id-ct-routeOriginAttestation")` `[static]`

Reimplemented from [rpki.x509.CMS\\_object](#).

Definition at line 802 of file x509.py.

##### 3.167.3.3 tuple `rpki.x509.ROA.pem_converter = PEM_converter("ROUTE ORIGIN ATTESTATION")` `[static]`

PEM converter for this [object](#).

Reimplemented from [rpki.x509.CMS\\_object](#).

Definition at line 800 of file x509.py.

The documentation for this class was generated from the following file:

- [x509.py \(1916\)](#)

### 3.168 rpki.x509.RSA Class Reference

Inheritance diagram for rpki.x509.RSA:



### Public Member Functions

- def [generate](#)
- def [get\\_DER](#)
- def [get\\_POW](#)
- def [get\\_public\\_DER](#)
- def [get\\_RSAPublic](#)
- def [get\\_SKI](#)
- def [get\\_tslite](#)

### Public Attributes

- [DER](#)  
*DER value of this [object](#).*
- [POW](#)
- [tslite](#)

### Static Public Attributes

- tuple [formats](#) = ("DER", "POW", "tslite")  
*Formats supported in this [object](#).*
- tuple [pem\\_converter](#) = [PEM\\_converter](#)("RSA PRIVATE KEY")  
*PEM converter for this [object](#).*

#### 3.168.1 Detailed Description

Class to hold an RSA key pair.

Definition at line 500 of file x509.py.

#### 3.168.2 Member Function Documentation

##### 3.168.2.1 def rpki.x509.RSA.generate ( cls, keylength = 2048)

Generate a new keypair.

Definition at line 531 of file x509.py.

**3.168.2.2 def rpki.x509.RSA.get\_DER ( self)**

Get the DER value of this keypair.

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 506 of file x509.py.

**3.168.2.3 def rpki.x509.RSA.get\_POW ( self)**

Get the POW value of this keypair.

Definition at line 516 of file x509.py.

**3.168.2.4 def rpki.x509.RSA.get\_public\_DER ( self)**

Get the DER encoding of the public key from this keypair.

Definition at line 535 of file x509.py.

**3.168.2.5 def rpki.x509.RSA.get\_RSAPublic ( self)**

Convert the public key of this keypair into a RSAPublic object.

Definition at line 543 of file x509.py.

**3.168.2.6 def rpki.x509.RSA.get\_SKI ( self)**

Calculate the SKI of this keypair.

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 539 of file x509.py.

**3.168.2.7 def rpki.x509.RSA.get\_tlslite ( self)**

Get the tlslite value of this keypair.

Definition at line 523 of file x509.py.

### 3.168.3 Member Data Documentation

#### 3.168.3.1 rpki.x509.RSA.DER

DER value of this [object](#).

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 512 of file x509.py.

#### 3.168.3.2 tuple rpki.x509.RSA.formats = ("DER", "POW", "tlslite") [static]

Formats supported in this [object](#).

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 503 of file x509.py.

#### 3.168.3.3 tuple rpki.x509.RSA.pem\_converter = PEM\_converter("RSA PRIVATE KEY") [static]

PEM converter for this [object](#).

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 504 of file x509.py.

#### 3.168.3.4 rpki.x509.RSA.POW

Definition at line 520 of file x509.py.

#### 3.168.3.5 rpki.x509.RSA.tlslite

Definition at line 527 of file x509.py.

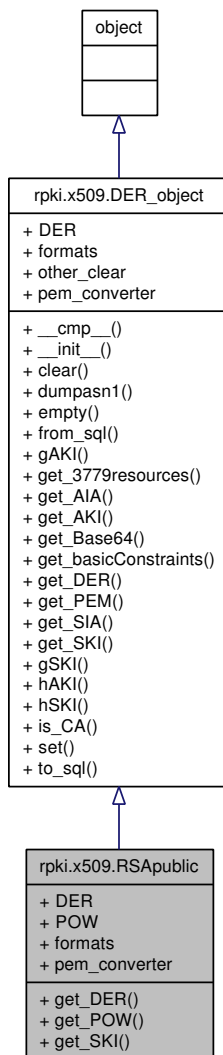
The documentation for this class was generated from the following file:

- [x509.py \(1916\)](#)



### 3.169 rpki.x509.RSAPublic Class Reference

Inheritance diagram for rpki.x509.RSAPublic:



#### Public Member Functions

- def [get\\_DER](#)
- def [get\\_POW](#)
- def [get\\_SKI](#)

### Public Attributes

- [DER](#)  
*DER value of this [object](#).*
- [POW](#)

### Static Public Attributes

- tuple [formats](#) = ("DER", "[POW](#)")  
*Formats supported in this [object](#).*
- tuple [pem\\_converter](#) = [PEM\\_converter](#)("RSA PUBLIC KEY")  
*PEM converter for this [object](#).*

#### 3.169.1 Detailed Description

Class to hold an RSA public key.

Definition at line 547 of file x509.py.

#### 3.169.2 Member Function Documentation

##### 3.169.2.1 `def rpki.x509.RSAPublic.get_DER ( self )`

Get the DER value of this public key.

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 553 of file x509.py.

##### 3.169.2.2 `def rpki.x509.RSAPublic.get_POW ( self )`

Get the POW value of this public key.

Definition at line 563 of file x509.py.

##### 3.169.2.3 `def rpki.x509.RSAPublic.get_SKI ( self )`

Calculate the SKI of this public key.

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 570 of file x509.py.

### 3.169.3 Member Data Documentation

#### 3.169.3.1 rpki.x509.RSAPublic.DER

DER value of this [object](#).

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 559 of file x509.py.

#### 3.169.3.2 tuple rpki.x509.RSAPublic.formats = ("DER", "POW") `[static]`

Formats supported in this [object](#).

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 550 of file x509.py.

#### 3.169.3.3 tuple rpki.x509.RSAPublic.pem\_converter = PEM\_converter("RSA PUBLIC KEY") `[static]`

PEM converter for this [object](#).

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 551 of file x509.py.

#### 3.169.3.4 rpki.x509.RSAPublic.POW

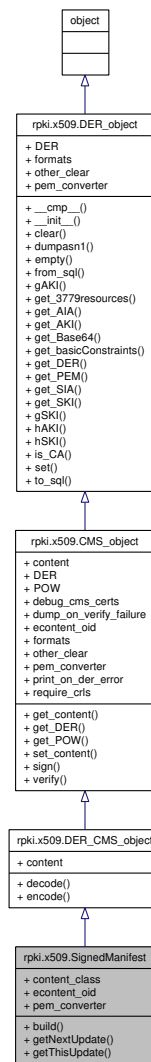
Definition at line 567 of file x509.py.

The documentation for this class was generated from the following file:

- [x509.py \(1916\)](#)

### 3.170 rpki.x509.SignedManifest Class Reference

Inheritance diagram for rpki.x509.SignedManifest:



#### Public Member Functions

- def [build](#)
- def [getNextUpdate](#)
- def [getThisUpdate](#)

### Static Public Attributes

- `content_class` = `rpki.manifest.Manifest`
- tuple `econtent_oid` = `POWify_OID("id-ct-rpkiManifest")`
- tuple `pem_converter` = `PEM_converter("RPKI MANIFEST")`  
*PEM converter for this [object](#).*

#### 3.170.1 Detailed Description

Class to hold a signed manifest.

Definition at line 761 of file x509.py.

#### 3.170.2 Member Function Documentation

##### 3.170.2.1 `def rpki.x509.SignedManifest.build ( cls, serial, thisUpdate, nextUpdate, names_and_objs, keypair, certs, version = 0 )`

Build a signed manifest.

Definition at line 777 of file x509.py.

##### 3.170.2.2 `def rpki.x509.SignedManifest.getNextUpdate ( self )`

Get nextUpdate value from this manifest.

Definition at line 772 of file x509.py.

##### 3.170.2.3 `def rpki.x509.SignedManifest.getThisUpdate ( self )`

Get thisUpdate value from this manifest.

Definition at line 768 of file x509.py.

#### 3.170.3 Member Data Documentation

##### 3.170.3.1 `rpki.x509.SignedManifest.content_class = rpki.manifest.Manifest [static]`

Definition at line 765 of file x509.py.

**3.170.3.2 tuple** `rpki.x509.SignedManifest.econtent_oid = POWify_OID("id-ct-rpkiManifest")` `[static]`

Reimplemented from [rpki.x509.CMS\\_object](#).

Definition at line 766 of file x509.py.

**3.170.3.3 tuple** `rpki.x509.SignedManifest.pem_converter = PEM_converter("RPKI MANIFEST")` `[static]`

PEM converter for this [object](#).

Reimplemented from [rpki.x509.CMS\\_object](#).

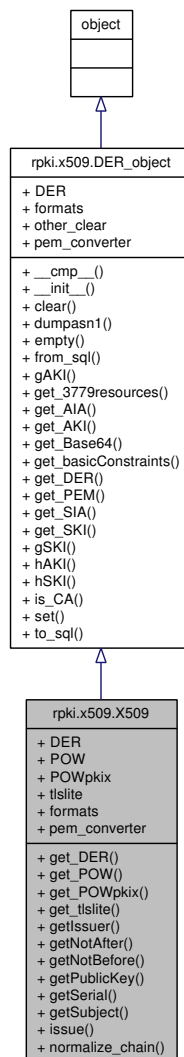
Definition at line 764 of file x509.py.

The documentation for this class was generated from the following file:

- [x509.py \(1916\)](#)

### 3.171 rpki.x509.X509 Class Reference

Inheritance diagram for rpki.x509.X509:



#### Public Member Functions

- def [get\\_DER](#)
- def [get\\_POW](#)
- def [get\\_POWpkix](#)
- def [get\\_tlsite](#)

- def [getIssuer](#)
- def [getNotAfter](#)
- def [getNotBefore](#)
- def [getPublicKey](#)
- def [getSerial](#)
- def [getSubject](#)
- def [issue](#)
- def [normalize\\_chain](#)

### Public Attributes

- [DER](#)  
*DER value of this [object](#).*
- [POW](#)
- [POWpkix](#)
- [tlsite](#)

### Static Public Attributes

- tuple [formats](#) = ("DER", "POW", "POWpkix", "tlsite")  
*Formats supported in this [object](#).*
- tuple [pem\\_converter](#) = [PEM\\_converter](#)("CERTIFICATE")  
*PEM converter for this [object](#).*

#### 3.171.1 Detailed Description

X.509 certificates.

This class is designed to hold all the different representations of X.509 certs we're using and convert between them. X.509 support in Python a nasty maze of half-cooked stuff (except perhaps for cryptlib, which is just different). Users of this module should not have to care about this implementation nightmare.

Definition at line 255 of file x509.py.

#### 3.171.2 Member Function Documentation

##### 3.171.2.1 def rpki.x509.X509.get\_DER ( *self* )



Get the DER value of this certificate.

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 268 of file x509.py.

#### 3.171.2.2 def rpki.x509.X509.get\_POW ( *self* )

Get the POW value of this certificate.

Definition at line 287 of file x509.py.

#### 3.171.2.3 def rpki.x509.X509.get\_POWpkix ( *self* )

Get the POW.pkix value of this certificate.

Definition at line 294 of file x509.py.

#### 3.171.2.4 def rpki.x509.X509.get\_tlslite ( *self* )

Get the tlslite value of this certificate.

Definition at line 303 of file x509.py.

#### 3.171.2.5 def rpki.x509.X509.getIssuer ( *self* )

Get the issuer of this certificate.

Definition at line 312 of file x509.py.

#### 3.171.2.6 def rpki.x509.X509.getNotAfter ( *self* )

Get the expiration time of this certificate.

Definition at line 324 of file x509.py.

#### 3.171.2.7 def rpki.x509.X509.getNotBefore ( *self* )

Get the inception time of this certificate.

Definition at line 320 of file x509.py.

**3.171.2.8 def rpki.x509.X509.getPublicKey (self)**

Extract the public key from this certificate.

Definition at line 332 of file x509.py.

**3.171.2.9 def rpki.x509.X509.getSerial (self)**

Get the serial number of this certificate.

Definition at line 328 of file x509.py.

**3.171.2.10 def rpki.x509.X509.getSubject (self)**

Get the subject of this certificate.

Definition at line 316 of file x509.py.

**3.171.2.11 def rpki.x509.X509.issue (self, keypair, subject\_key, serial, sia, aia, crldp, notAfter, cn = None, resources = None, is\_ca = True)**

Issue a certificate.

Definition at line 336 of file x509.py.

**3.171.2.12 def rpki.x509.X509.normalize\_chain (cls, chain)**

Normalize a chain of certificates into a tuple of X509 objects. Given all the glue certificates needed for BPKI cross certification, it's easiest to allow sloppy arguments to the HTTPS and CMS validation methods and provide a single method that normalizes the allowed cases. So this method allows X509, None, lists, and tuples, and returns a tuple of X509 objects.

Definition at line 390 of file x509.py.

**3.171.3 Member Data Documentation****3.171.3.1 rpki.x509.X509.DER**

DER value of this [object](#).

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 274 of file x509.py.

**3.171.3.2** tuple `rpki.x509.X509.formats` = ("DER", "POW", "POWpkix", "tlslite") [static]

Formats supported in this [object](#).

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 265 of file x509.py.

**3.171.3.3** tuple `rpki.x509.X509.pem_converter` = `PEM_converter("CERTIFICATE")` [static]

PEM converter for this [object](#).

Reimplemented from [rpki.x509.DER\\_object](#).

Definition at line 266 of file x509.py.

**3.171.3.4** `rpki.x509.X509.POW`

Definition at line 291 of file x509.py.

**3.171.3.5** `rpki.x509.X509.POWpkix`

Definition at line 300 of file x509.py.

**3.171.3.6** `rpki.x509.X509.tlslite`

Definition at line 309 of file x509.py.

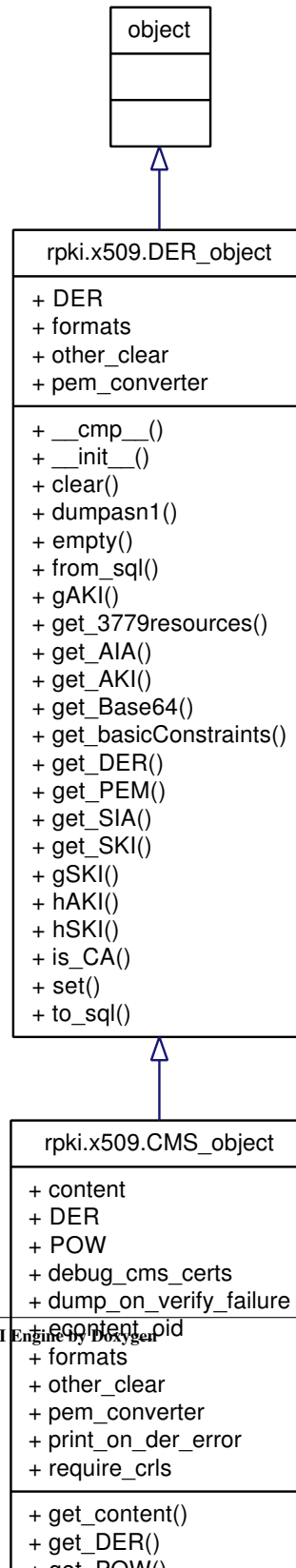
The documentation for this class was generated from the following file:

- [x509.py \(1916\)](#)



### 3.172 rpki.x509.XML\_CMS\_object Class Reference

Inheritance diagram for rpki.x509.XML\_CMS\_object:



### Public Member Functions

- def [decode](#)
- def [dump\\_to\\_disk](#)
- def [encode](#)
- def [pretty\\_print\\_content](#)
- def [schema\\_check](#)
- def [unwrap](#)
- def [wrap](#)

### Public Attributes

- [content](#)

### Static Public Attributes

- [dump\\_inbound\\_cms](#) = None
- [dump\\_outbound\\_cms](#) = None  
*If set, we write all outbound XML-CMS PDUs to disk, for debugging.*
- tuple [econtent\\_oid](#) = POWify\_OID("id-ct-xml")

#### 3.172.1 Detailed Description

Class to hold CMS-wrapped XML protocol data.

Definition at line 816 of file x509.py.

#### 3.172.2 Member Function Documentation

##### 3.172.2.1 def rpki.x509.XML\_CMS\_object.decode ( self, xml)

Decode XML and set inner content.

Definition at line 839 of file x509.py.

##### 3.172.2.2 def rpki.x509.XML\_CMS\_object.dump\_to\_disk ( self, prefix)

Write DER of current message to disk, for debugging.

Definition at line 855 of file x509.py.

### 3.172.2.3 def rpki.x509.XML\_CMS\_object.encode ( self)

Encode inner content for signing.

Definition at line 835 of file x509.py.

### 3.172.2.4 def rpki.x509.XML\_CMS\_object.pretty\_print\_content ( self)

Pretty print XML content of this message.

Definition at line 843 of file x509.py.

### 3.172.2.5 def rpki.x509.XML\_CMS\_object.schema\_check ( self)

Handle XML RelaxNG schema check.

Definition at line 847 of file x509.py.

### 3.172.2.6 def rpki.x509.XML\_CMS\_object.unwrap ( cls, der, ta, pretty\_print = False)

Unwrap a CMS-wrapped XML PDU and return Python objects.

Definition at line 877 of file x509.py.

### 3.172.2.7 def rpki.x509.XML\_CMS\_object.wrap ( cls, msg, keypair, certs, crls = None, pretty\_print = False)

Build a CMS-wrapped XML PDU and return its DER encoding.

Definition at line 862 of file x509.py.

## 3.172.3 Member Data Documentation

### 3.172.3.1 rpki.x509.XML\_CMS\_object.content

Reimplemented from [rpki.x509.CMS\\_object](#).

Definition at line 841 of file x509.py.

**3.172.3.2** `rpki.x509.XML_CMS_object.dump_inbound_cms` = `None`  
[static]

Definition at line 833 of file x509.py.

**3.172.3.3** `rpki::x509.XML_CMS_object::dump_outbound_cms` = `None`  
[static]

If set, we write all outbound XML-CMS PDUs to disk, for debugging.

If set, we write all inbound XML-CMS PDUs to disk, for debugging.

Value of this variable is prefix portion of filename, tail will be a timestamp.

Definition at line 826 of file x509.py.

**3.172.3.4** `tuple rpki.x509.XML_CMS_object.econtent_oid = POWify_OID("id-ct-xml")` [static]

Reimplemented from [rpki.x509.CMS\\_object](#).

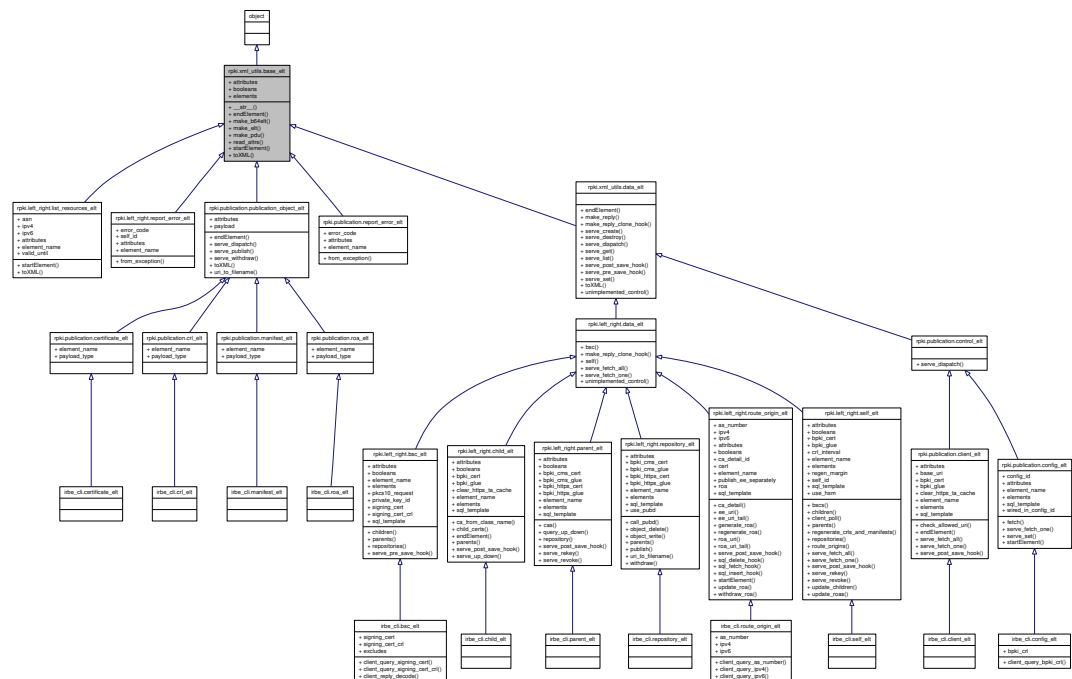
Definition at line 819 of file x509.py.

The documentation for this class was generated from the following file:

- [x509.py \(1916\)](#)



Inheritance diagram for `rpki.xml_utils.base_elt`:



- def `__str__`
- def `endElement`
- def `make_b64elt`
- def `make_elt`
- def `make_pdu`
- def `read_attr`
- def `startElement`
- def `toXML`

- tuple **attributes** = ()  
*XML attributes for this element.*

- tuple `booleans` = ()  
*Boolean attributes (value "yes" or "no") for this element.*
- tuple `elements` = ()  
*XML elements contained by this element.*

### 3.173.1 Detailed Description

Virtual base class for XML message elements. The left-right and publication protocols use this. At least for now, the up-down protocol does not, due to different design assumptions.

Definition at line 101 of file `xml_utils.py`.

### 3.173.2 Member Function Documentation

#### 3.173.2.1 `def rpki.xml_utils.base_elt.__str__ (self)`

Convert a `base_elt` object to string format.

Definition at line 163 of file `xml_utils.py`.

#### 3.173.2.2 `def rpki.xml_utils.base_elt.endElement (self, stack, name, text)`

Default `endElement()` handler: just pop the stack.

Reimplemented in `rpki.left_right.child_elt`, `rpki.publication.client_elt`, `rpki.publication.publication_object_elt`, and `rpki.xml_utils.data_elt`.

Definition at line 125 of file `xml_utils.py`.

#### 3.173.2.3 `def rpki.xml_utils.base_elt.make_b64elt (self, elt, name, value = None)`

Constructor for Base64-encoded subelement.

Definition at line 156 of file `xml_utils.py`.

#### 3.173.2.4 `def rpki.xml_utils.base_elt.make_elt (self)`

XML element constructor.

Definition at line 144 of file `xml_utils.py`.

### 3.173.2.5 def rpki.xml\_utils.base\_elt.make\_pdu ( cls, kargs)

Generic PDU constructor.

Definition at line 168 of file xml\_utils.py.

### 3.173.2.6 def rpki.xml\_utils.base\_elt.read\_attrs ( self, attrs)

Template-driven attribute reader.

Definition at line 134 of file xml\_utils.py.

### 3.173.2.7 def rpki.xml\_utils.base\_elt.startElement ( self, stack, name, attrs)

Default startElement() handler: just process attributes.

Reimplemented in [rpki.left\\_right.route\\_origin\\_elt](#), [rpki.left\\_right.list\\_resources\\_elt](#), and [rpki.publication.config\\_elt](#).

Definition at line 119 of file xml\_utils.py.

### 3.173.2.8 def rpki.xml\_utils.base\_elt.toXML ( self)

Default toXML() element generator.

Reimplemented in [rpki.left\\_right.list\\_resources\\_elt](#), [rpki.publication.publication\\_object\\_elt](#), and [rpki.xml\\_utils.data\\_elt](#).

Definition at line 130 of file xml\_utils.py.

## 3.173.3 Member Data Documentation

### 3.173.3.1 rpki::xml\_utils.base\_elt::attributes = () [static]

XML attributes for this element.

Reimplemented in [rpki.left\\_right.self\\_elt](#), [rpki.left\\_right.bsc\\_elt](#), [rpki.left\\_right.parent\\_elt](#), [rpki.left\\_right.child\\_elt](#), [rpki.left\\_right.repository\\_elt](#), [rpki.left\\_right.route\\_origin\\_elt](#), [rpki.left\\_right.list\\_resources\\_elt](#), [rpki.left\\_right.report\\_error\\_elt](#), [rpki.publication.config\\_elt](#), [rpki.publication.client\\_elt](#), [rpki.publication.publication\\_object\\_elt](#), and [rpki.publication.report\\_error\\_elt](#).

Definition at line 109 of file xml\_utils.py.

### 3.173.3.2 rpki::xml\_utils.base\_elt::booleans = () [static]

Boolean attributes (value "yes" or "no") for this element.

Reimplemented in [rpki.left\\_right.self\\_elt](#), [rpki.left\\_right.bsc\\_elt](#), [rpki.left\\_right.parent\\_elt](#), [rpki.left\\_right.child\\_elt](#), and [rpki.left\\_right.route\\_origin\\_elt](#).

Definition at line 117 of file [xml\\_utils.py](#).

### 3.173.3.3 rpki::xml\_utils.base\_elt::elements = () [static]

XML elements contained by this element.

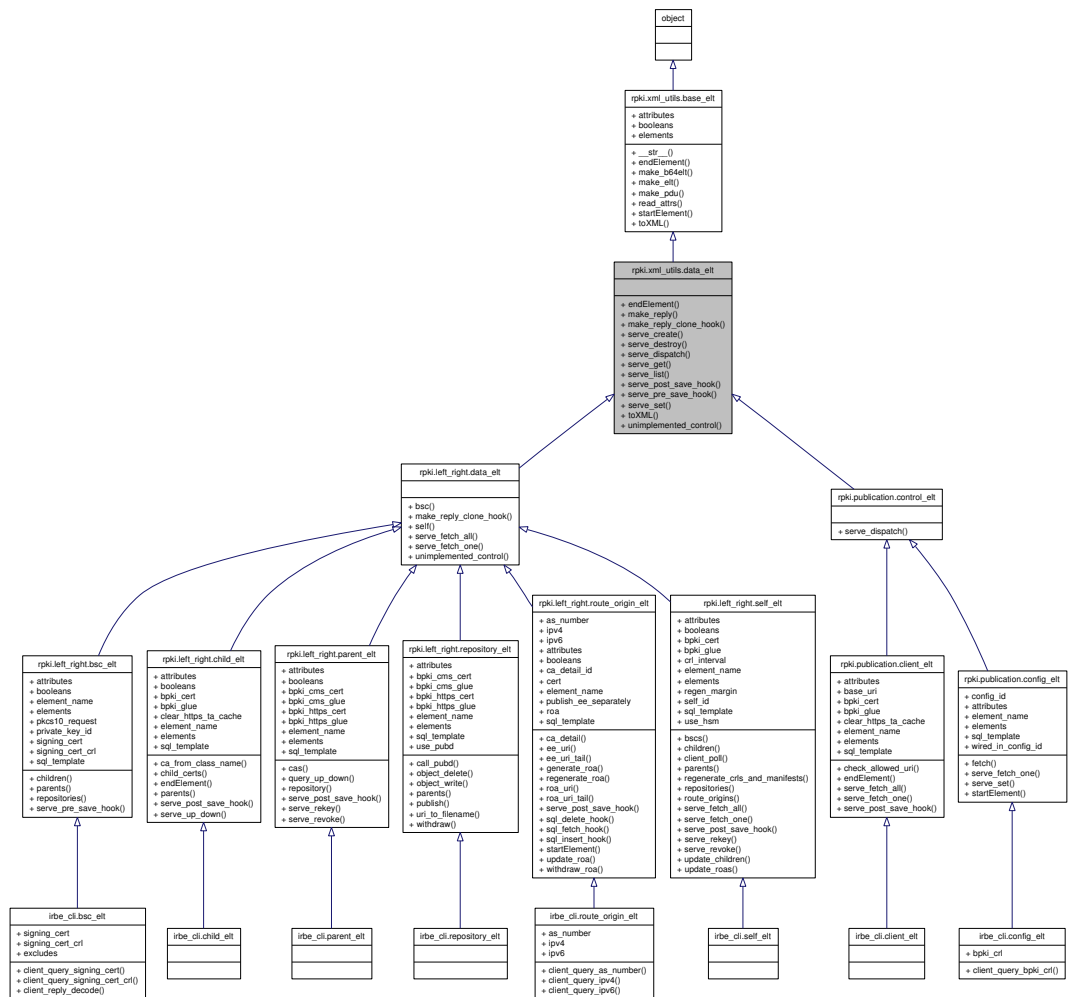
Reimplemented in [rpki.left\\_right.self\\_elt](#), [rpki.left\\_right.bsc\\_elt](#), [rpki.left\\_right.parent\\_elt](#), [rpki.left\\_right.child\\_elt](#), [rpki.left\\_right.repository\\_elt](#), [rpki.publication.config\\_elt](#), and [rpki.publication.client\\_elt](#).

Definition at line 113 of file [xml\\_utils.py](#).

The documentation for this class was generated from the following file:

- [xml\\_utils.py](#) (1873)

Inheritance diagram for `rpki.xml_utils.data_elt`:



- def `endElement`
- def `make_reply`
- def `make_reply_clone_hook`
- def `serve_create`
- def `serve_destroy`

- def [serve\\_dispatch](#)
- def [serve\\_get](#)
- def [serve\\_list](#)
- def [serve\\_post\\_save\\_hook](#)
- def [serve\\_pre\\_save\\_hook](#)
- def [serve\\_set](#)
- def [toXML](#)
- def [unimplemented\\_control](#)

### 3.174.1 Detailed Description

Virtual base class for PDUs that map to SQL objects. These objects all implement the create/set/get/list/destroy action attribute.

Definition at line 177 of file `xml_utils.py`.

### 3.174.2 Member Function Documentation

#### 3.174.2.1 def rpki.xml\_utils.data\_elt.endElement (*self*, *stack*, *name*, *text*)

Default endElement handler for SQL-based objects. This assumes that sub-elements are Base64-encoded using the `sql_template` mechanism.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Reimplemented in [rpki.left\\_right.child\\_elt](#), and [rpki.publication.client\\_elt](#).

Definition at line 183 of file `xml_utils.py`.

#### 3.174.2.2 def rpki.xml\_utils.data\_elt.make\_reply (*self*, *r\_pdu* = None)

Construct a reply PDU.

Definition at line 206 of file `xml_utils.py`.

#### 3.174.2.3 def rpki.xml\_utils.data\_elt.make\_reply\_clone\_hook (*self*, *r\_pdu*)

Overridable hook.

Reimplemented in [rpki.left\\_right.data\\_elt](#).

Definition at line 219 of file `xml_utils.py`.

**3.174.2.4 def rpki.xml\_utils.data\_elt.serve\_create ( self, r\_msg)**

Handle a create action.

Definition at line 231 of file xml\_utils.py.

**3.174.2.5 def rpki.xml\_utils.data\_elt.serve\_destroy ( self, r\_msg)**

Handle a destroy action.

Definition at line 266 of file xml\_utils.py.

**3.174.2.6 def rpki.xml\_utils.data\_elt.serve\_dispatch ( self, r\_msg)**

Action dispatch handler.

Definition at line 272 of file xml\_utils.py.

**3.174.2.7 def rpki.xml\_utils.data\_elt.serve\_get ( self, r\_msg)**

Handle a get action.

Definition at line 254 of file xml\_utils.py.

**3.174.2.8 def rpki.xml\_utils.data\_elt.serve\_list ( self, r\_msg)**

Handle a list action for non-self objects.

Definition at line 260 of file xml\_utils.py.

**3.174.2.9 def rpki.xml\_utils.data\_elt.serve\_post\_save\_hook ( self, q\_pdu, r\_pdu)**

Overridable hook.

Reimplemented in [rpki.left\\_right.self\\_elt](#), [rpki.left\\_right.parent\\_elt](#), [rpki.left\\_right.child\\_elt](#), [rpki.left\\_right.route\\_origin\\_elt](#), and [rpki.publication.client\\_elt](#).

Definition at line 227 of file xml\_utils.py.

**3.174.2.10** `def rpki.xml_utils.data_elt.serve_pre_save_hook ( self, q_pdu, r_pdu)`

Overridable hook.

Reimplemented in [rpki.left\\_right.bsc\\_elt](#).

Definition at line 223 of file xml\_utils.py.

**3.174.2.11** `def rpki.xml_utils.data_elt.serve_set ( self, r_msg)`

Handle a set action.

Reimplemented in [rpki.publication.config\\_elt](#).

Definition at line 240 of file xml\_utils.py.

**3.174.2.12** `def rpki.xml_utils.data_elt.toXML ( self)`

Default element generator for SQL-based objects. This assumes that sub-elements are Base64-encoded DER objects.

Reimplemented from [rpki.xml\\_utils.base\\_elt](#).

Definition at line 195 of file xml\_utils.py.

**3.174.2.13** `def rpki.xml_utils.data_elt.unimplemented_control ( self, controls)`

Uniform handling for unimplemented control operations.

Reimplemented in [rpki.left\\_right.data\\_elt](#).

Definition at line 283 of file xml\_utils.py.

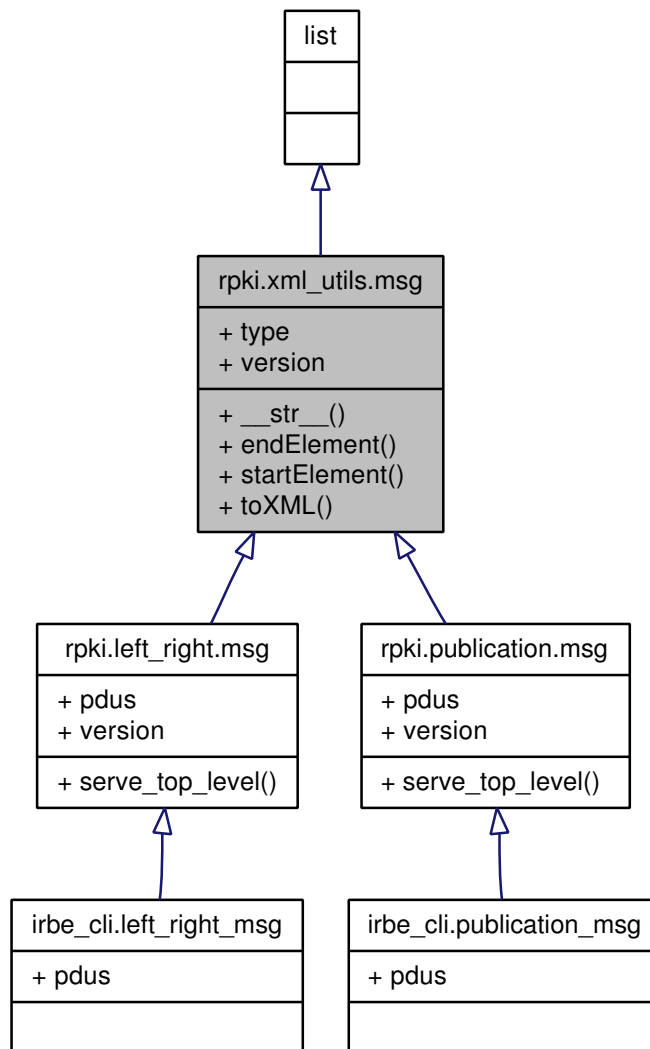
The documentation for this class was generated from the following file:

- [xml\\_utils.py](#) (1873)



### 3.175 rpki.xml\_utils.msg Class Reference

Inheritance diagram for rpki.xml\_utils.msg:



#### Public Member Functions

- def [\\_\\_str\\_\\_](#)
- def [endElement](#)
- def [startElement](#)
- def [toXML](#)

## Public Attributes

- [type](#)
- [version](#)

### 3.175.1 Detailed Description

Generic top-level PDU.

Definition at line 289 of file xml\_utils.py.

### 3.175.2 Member Function Documentation

#### 3.175.2.1 def rpki.xml\_utils.msg.\_\_str\_\_ ( *self* )

Convert msg object to string.

Definition at line 309 of file xml\_utils.py.

#### 3.175.2.2 def rpki.xml\_utils.msg.endElement ( *self*, *stack*, *name*, *text* )

Handle top-level PDU.

Definition at line 303 of file xml\_utils.py.

#### 3.175.2.3 def rpki.xml\_utils.msg.startElement ( *self*, *stack*, *name*, *attrs* )

Handle top-level PDU.

Definition at line 292 of file xml\_utils.py.

#### 3.175.2.4 def rpki.xml\_utils.msg.toXML ( *self* )

Generate top-level PDU.

Definition at line 313 of file xml\_utils.py.

### 3.175.3 Member Data Documentation

#### 3.175.3.1 rpki.xml\_utils.msg.type

Definition at line 296 of file xml\_utils.py.

### 3.175.3.2 `rpki.xml_utils.msg.version`

Reimplemented in [rpki.left\\_right.msg](#), and [rpki.publication.msg](#).

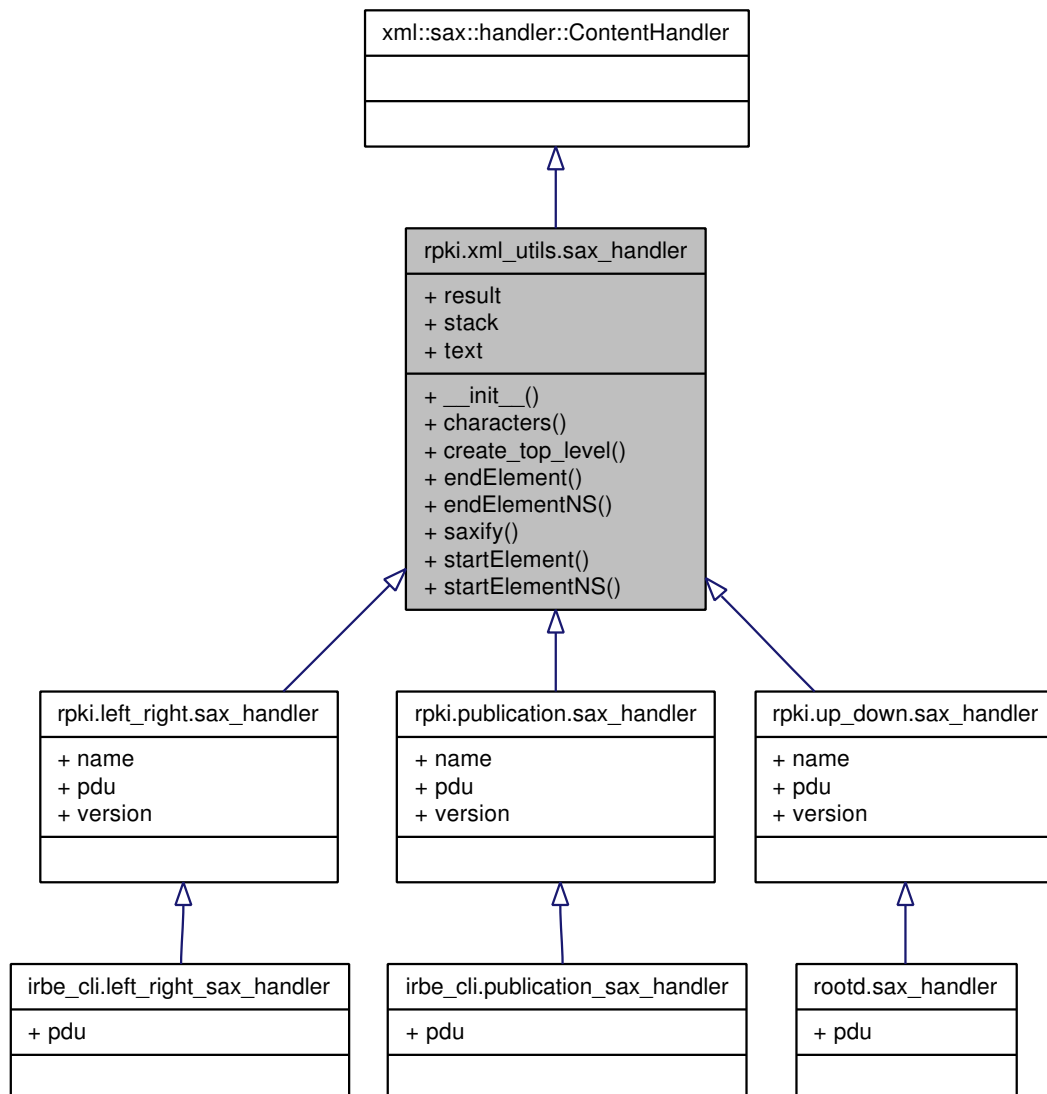
Definition at line 295 of file `xml_utils.py`.

The documentation for this class was generated from the following file:

- [xml\\_utils.py \(1873\)](#)

### 3.176 rpki.xml\_utils.sax\_handler Class Reference

Inheritance diagram for rpki.xml\_utils.sax\_handler:



#### Public Member Functions

- def `\_\_init\_\_`
- def `characters`

- def [create\\_top\\_level](#)
- def [endElement](#)
- def [endElementNS](#)
- def [saxify](#)
- def [startElement](#)
- def [startElementNS](#)

### Public Attributes

- [result](#)
- [stack](#)
- [text](#)

#### 3.176.1 Detailed Description

SAX handler for RPKI protocols.

This class provides some basic amenities for parsing protocol XML of the kind we use in the RPKI protocols, including whacking all the protocol element text into US-ASCII, simplifying accumulation of text fields, and hiding some of the fun relating to XML namespaces.

General assumption: by the time this parsing code gets invoked, the XML has already passed RelaxNG validation, so we only have to check for errors that the schema can't catch, and we don't have to play as many XML namespace games.

Definition at line 22 of file `xml_utils.py`.

#### 3.176.2 Member Function Documentation

##### 3.176.2.1 `def rpki.xml_utils.sax_handler.__init__ (self)`

Initialize SAX handler.

Definition at line 36 of file `xml_utils.py`.

##### 3.176.2.2 `def rpki.xml_utils.sax_handler.characters (self, content)`

Accumulate a chunk of element content (text).

Definition at line 49 of file `xml_utils.py`.

**3.176.2.3 def rpki.xml\_utils.sax\_handler.create\_top\_level ( self, name, attrs)**

Handle top-level PDU for this protocol.

Definition at line 96 of file xml\_utils.py.

**3.176.2.4 def rpki.xml\_utils.sax\_handler.endElement ( self, name)**

Handle endElement() events.

Mostly this means handling any accumulated element text.

Definition at line 79 of file xml\_utils.py.

**3.176.2.5 def rpki.xml\_utils.sax\_handler.endElementNS ( self, name, qname)**

Redirect endElementNS() events to endElement().

Definition at line 45 of file xml\_utils.py.

**3.176.2.6 def rpki.xml\_utils.sax\_handler.saxify ( cls, elt)**

Create a one-off SAX parser, parse an ETree, return the result.

Definition at line 89 of file xml\_utils.py.

**3.176.2.7 def rpki.xml\_utils.sax\_handler.startElement ( self, name, attrs)**

Handle startElement() events.

We maintain a stack of nested elements under construction so that we can feed events directly to the current element rather than having to pass them through all the nesting elements.

If the stack is empty, this event is for the outermost element, so we call a virtual method to create the corresponding object and that's the object we'll be returning as our final result.

Definition at line 53 of file xml\_utils.py.

**3.176.2.8 def rpki.xml\_utils.sax\_handler.startElementNS ( self, name, qname, attrs)**

Redirect startElementNS() events to startElement().

Definition at line 41 of file xml\_utils.py.

### 3.176.3 Member Data Documentation

#### 3.176.3.1 rpki.xml\_utils.sax\_handler.result

Definition at line 75 of file xml\_utils.py.

#### 3.176.3.2 rpki.xml\_utils.sax\_handler.stack

Definition at line 39 of file xml\_utils.py.

#### 3.176.3.3 rpki.xml\_utils.sax\_handler.text

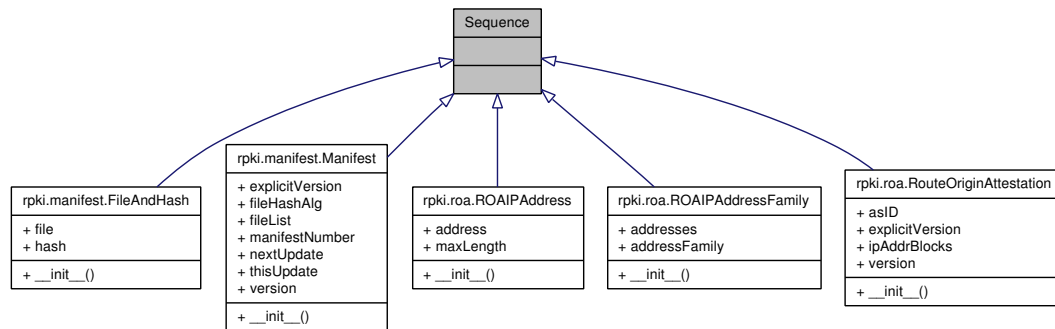
Definition at line 38 of file xml\_utils.py.

The documentation for this class was generated from the following file:

- [xml\\_utils.py \(1873\)](#)

## 3.177 Sequence Class Reference

Inheritance diagram for Sequence:

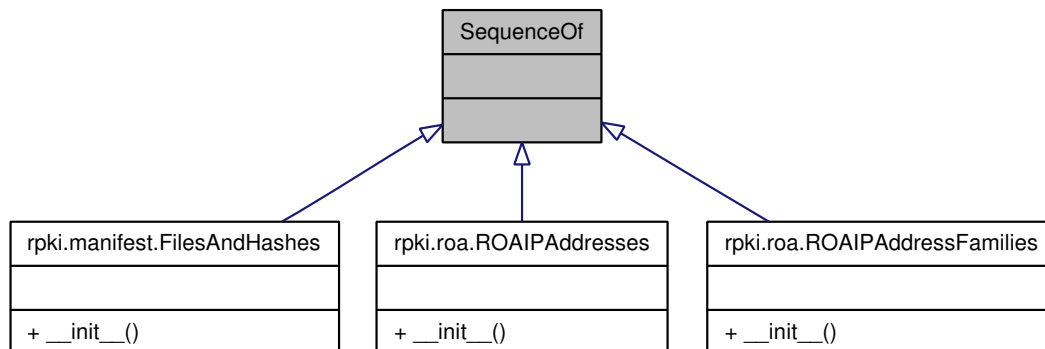


The documentation for this class was generated from the following file:

- [roa.py \(1975\)](#)

### 3.178 SequenceOf Class Reference

Inheritance diagram for SequenceOf:

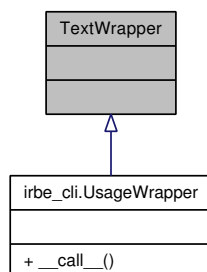


The documentation for this class was generated from the following file:

- [roa.py \(1975\)](#)

### 3.179 TextWrapper Class Reference

Inheritance diagram for TextWrapper:



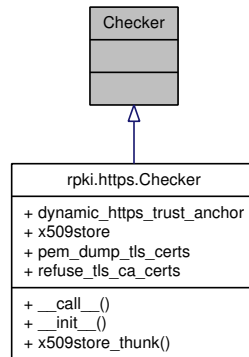
The documentation for this class was generated from the following file:

- [irbe\\_cli.py \(1995\)](#)



### 3.180 Checker Class Reference

Inheritance diagram for Checker:

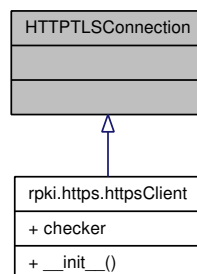


The documentation for this class was generated from the following file:

- [https.py \(1873\)](#)

### 3.181 HTTPTLSConnection Class Reference

Inheritance diagram for HTTPTLSConnection:

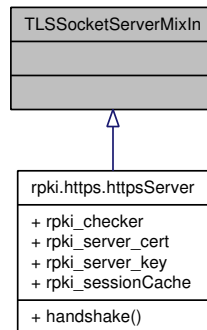


The documentation for this class was generated from the following file:

- [https.py \(1873\)](#)

### 3.182 TLSSocketServerMixIn Class Reference

Inheritance diagram for TLSSocketServerMixIn:

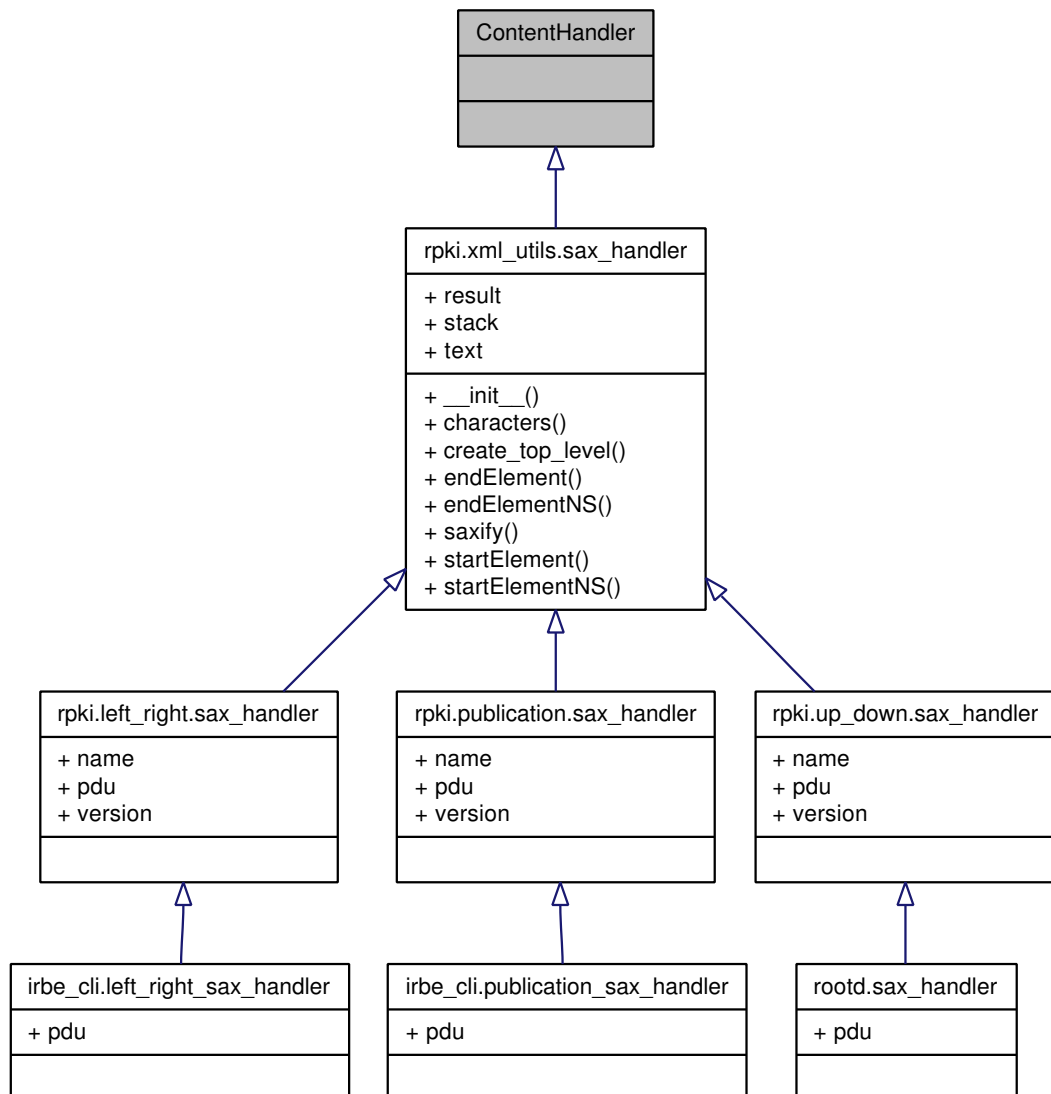


The documentation for this class was generated from the following file:

- [https.py \(1873\)](#)

### 3.183 ContentHandler Class Reference

Inheritance diagram for ContentHandler:



The documentation for this class was generated from the following file:

- [xml\\_utils.py \(1873\)](#)

## 4 File Documentation

### 4.1 `__init__.py` File Reference

#### Namespaces

- namespace [rpki](#)

### 4.2 `config.py` File Reference

#### Namespaces

- namespace [rpki.config](#)

#### Classes

- class [rpki.config.parser](#)

### 4.3 `cross_certify.py` File Reference

#### Namespaces

- namespace [cross\\_certify](#)

#### Functions

- def [cross\\_certify.usage](#)

#### Variables

- tuple [cross\\_certify.cert](#) = [rpki.x509.X509](#)(POWpkix = x)
- tuple [cross\\_certify.child](#) = [rpki.x509.X509](#)(Auto\_file = a)
- tuple [cross\\_certify.f](#) = [open](#)(serial\_file, "r")
- tuple [cross\\_certify.keypair](#) = [rpki.x509.RSA](#)(Auto\_file = a)
- tuple [cross\\_certify.lifetime](#) = [rpki.sundial.timedelta](#)(days = 30)
- [cross\\_certify.notAfter](#) = now+lifetime
- tuple [cross\\_certify.now](#) = [rpki.sundial.now](#)()
- [cross\\_certify.output](#) = None
- tuple [cross\\_certify.parent](#) = [rpki.x509.X509](#)(Auto\_file = a)
- tuple [cross\\_certify.serial](#) = f.read()
- [cross\\_certify.serial\\_file](#) = a
- tuple [cross\\_certify.x](#) = POW.pkix.Certificate()

## 4.4 exceptions.py File Reference

### Namespaces

- namespace [rpki.exceptions](#)

### Classes

- class [rpki.exceptions.BadClassNameSyntax](#)
- class [rpki.exceptions.BadContactURL](#)
- class [rpki.exceptions.BadIRDBReply](#)
- class [rpki.exceptions.BadIssueResponse](#)
- class [rpki.exceptions.BadPKCS10](#)
- class [rpki.exceptions.BadQuery](#)
- class [rpki.exceptions.BadSender](#)
- class [rpki.exceptions.BadStatusCode](#)
- class [rpki.exceptions.BadURISyntax](#)
- class [rpki.exceptions.BSCNotFound](#)
- class [rpki.exceptions.ChildNotFound](#)
- class [rpki.exceptions.ClassNameMismatch](#)
- class [rpki.exceptions.CMSCRLNotSet](#)
- class [rpki.exceptions.CMSVerificationFailed](#)
- class [rpki.exceptions.DBConsistencyError](#)
- class [rpki.exceptions.DERObjectConversionError](#)
- class [rpki.exceptions.EmptyPEM](#)
- class [rpki.exceptions.HTTPRequestFailed](#)
- class [rpki.exceptions.MissingCMSCRL](#)
- class [rpki.exceptions.MissingCMSEECert](#)
- class [rpki.exceptions.MultipleTLSEECert](#)
- class [rpki.exceptions.MustBePrefix](#)
- class [rpki.exceptions.NoActiveCA](#)
- class [rpki.exceptions.NotACertificateChain](#)
- class [rpki.exceptions.NotFound](#)
- class [rpki.exceptions.NotImplementedYet](#)
- class [rpki.exceptions.NotInDatabase](#)
- class [rpki.exceptions.ReceivedTLSCACert](#)
- class [rpki.exceptions.RPKI\\_Exception](#)
- class [rpki.exceptions.ServerShuttingDown](#)
- class [rpki.exceptions.SKIMismatch](#)
- class [rpki.exceptions.SubprocessError](#)
- class [rpki.exceptions.TLSValidationError](#)
- class [rpki.exceptions.UnexpectedCMSCerts](#)
- class [rpki.exceptions.UnexpectedCMSCRLs](#)

- class [rpki.exceptions.UnparsableCMSDER](#)
- class [rpki.exceptions.UpstreamError](#)
- class [rpki.exceptions.WrongEContentType](#)

## 4.5 https.py File Reference

### Namespaces

- namespace [rpki.https](#)

### Classes

- class [rpki.https.Checker](#)
- class [rpki.https.httpsClient](#)
- class [rpki.https.httpsServer](#)
- class [rpki.https.requestHandler](#)

### Functions

- def [rpki::https.build\\_https\\_ta\\_cache](#)
- def [rpki::https.client](#)
- def [rpki::https.server](#)
- def [rpki::https.tlsite\\_certChain](#)

### Variables

- [rpki::https.debug\\_tls\\_certs](#) = False
- [rpki::https.disable\\_tls\\_certificate\\_validation\\_exceptions](#) = False
- string [rpki::https.rpki\\_content\\_type](#) = "application/x-rpki"

## 4.6 ipaddrs.py File Reference

### Namespaces

- namespace [rpki.ipaddrs](#)

### Classes

- class [rpki.ipaddrs.v4addr](#)
- class [rpki.ipaddrs.v6addr](#)

## 4.7 irbe\_cli.py File Reference

### Namespaces

- namespace [irbe\\_cli](#)

### Classes

- class [irbe\\_cli.bsc\\_elt](#)
- class [irbe\\_cli.certificate\\_elt](#)
- class [irbe\\_cli.child\\_elt](#)
- class [irbe\\_cli.client\\_elt](#)
- class [irbe\\_cli.cmd\\_elt\\_mixin](#)
- class [irbe\\_cli.cmd\\_msg\\_mixin](#)
- class [irbe\\_cli.config\\_elt](#)
- class [irbe\\_cli.crl\\_elt](#)
- class [irbe\\_cli.left\\_right\\_cms\\_msg](#)
- class [irbe\\_cli.left\\_right\\_msg](#)
- class [irbe\\_cli.left\\_right\\_sax\\_handler](#)
- class [irbe\\_cli.manifest\\_elt](#)
- class [irbe\\_cli.parent\\_elt](#)
- class [irbe\\_cli.publication\\_cms\\_msg](#)
- class [irbe\\_cli.publication\\_msg](#)
- class [irbe\\_cli.publication\\_sax\\_handler](#)
- class [irbe\\_cli.repository\\_elt](#)
- class [irbe\\_cli.roa\\_elt](#)
- class [irbe\\_cli.route\\_origin\\_elt](#)
- class [irbe\\_cli.self\\_elt](#)
- class [irbe\\_cli.UsageWrapper](#)

### Functions

- def [irbe\\_cli.call\\_daemon](#)
- def [irbe\\_cli.usage](#)

### Variables

- list [irbe\\_cli.argv](#) = sys.argv[1:]
- tuple [irbe\\_cli.cfg](#) = [rpki.config.parser](#)(cfg\_file, "irbe\_cli")
- string [irbe\\_cli.cfg\\_file](#) = "irbe.conf"
- tuple [irbe\\_cli.client\\_cert](#) = [rpki.x509.X509](#)(Auto\_file = cfg.get("rpkid-irbe-cert"))

- tuple `irbe_cli.client_key` = `rpki.x509.RSA`( `Auto_file` = `cfg.get("rpkid-irbe-key")`)
- `irbe_cli.cms_class` = `left_right_cms_msg`,
- `irbe_cli.pem_out` = `None`
- `irbe_cli.q_msg` = `q_msg_left_right`
- tuple `irbe_cli.q_msg_left_right` = `left_right_msg()`
- tuple `irbe_cli.q_msg_publication` = `publication_msg()`
- list `irbe_cli.q_pdu` = `left_right_msg.pdus[argv[0]]`
- tuple `irbe_cli.server_ta`
- list `irbe_cli.top_opts` = [`"config="`, `"help"`, `"pem_out="`, `"verbose"`]
- tuple `irbe_cli.url` = `cfg.get("rpkid-url")`
- tuple `irbe_cli.usage_fill` = `UsageWrapper(subsequent_indent = " " * 4)`
- `irbe_cli.verbose` = `False`

## 4.8 irdbd.py File Reference

### Namespaces

- namespace `irdbd`

### Functions

- def `irdbd.handler`

### Variables

- tuple `irdbd.bpki_ta` = `rpki.x509.X509`(`Auto_file` = `cfg.get("bpki-ta")`)
- tuple `irdbd.cfg` = `rpki.config.parser`(`cfg_file`, `"irdbd"`)
- string `irdbd.cfg_file` = `"irdbd.conf"`
- tuple `irdbd.client_ta` = (`bpki_ta`, `rpkid_cert`)
- tuple `irdbd.cur` = `db.cursor()`
- tuple `irdbd.db`
- tuple `irdbd.handlers` = ((`u.path`, `handler`),)
- string `irdbd.host` = `"localhost"`
- tuple `irdbd.irdbd_cert` = `rpki.x509.X509`(`Auto_file` = `cfg.get("irdbd-cert")`)
- tuple `irdbd.irdbd_key` = `rpki.x509.RSA`( `Auto_file` = `cfg.get("irdbd-key")`)
- int `irdbd.port` = `443`
- tuple `irdbd.rpkid_cert` = `rpki.x509.X509`(`Auto_file` = `cfg.get("rpkid-cert")`)
- `irdbd.server_cert` = `irdbd_cert`,
- tuple `irdbd.startup_msg` = `cfg.get("startup-message", "")`
- tuple `irdbd.u` = `urlparse.urlparse`(`cfg.get("https-url")`)



## 4.9 left\_right.py File Reference

### Namespaces

- namespace [rpki.left\\_right](#)

### Classes

- class [rpki.left\\_right.bsc\\_elt](#)
- class [rpki.left\\_right.child\\_elt](#)
- class [rpki.left\\_right.cms\\_msg](#)
- class [rpki.left\\_right.data\\_elt](#)
- class [rpki.left\\_right.left\\_right\\_namespace](#)
- class [rpki.left\\_right.list\\_resources\\_elt](#)
- class [rpki.left\\_right.msg](#)
- class [rpki.left\\_right.parent\\_elt](#)
- class [rpki.left\\_right.report\\_error\\_elt](#)
- class [rpki.left\\_right.repository\\_elt](#)
- class [rpki.left\\_right.route\\_origin\\_elt](#)
- class [rpki.left\\_right.sax\\_handler](#)
- class [rpki.left\\_right.self\\_elt](#)

### Variables

- [rpki::left\\_right.enforce\\_strict\\_up\\_down\\_xml\\_sender](#) = False

## 4.10 log.py File Reference

### Namespaces

- namespace [rpki.log](#)

### Classes

- class [rpki.log.logger](#)

### Functions

- def [rpki::log.init](#)
- def [rpki::log.set\\_trace](#)
- def [rpki::log.trace](#)

### Variables

- tuple `rpki::log.debug` = `logger(syslog.LOG_DEBUG)`
- `rpki::log.enable_trace` = `False`  
*Whether call tracing is enabled.*
- tuple `rpki::log.error` = `logger(syslog.LOG_ERR)`
- tuple `rpki::log.info` = `logger(syslog.LOG_INFO)`
- tuple `rpki::log.note` = `logger(syslog.LOG_NOTICE)`
- tuple `rpki::log.warn` = `logger(syslog.LOG_WARNING)`

## 4.11 manifest.py File Reference

### Namespaces

- namespace `rpki.manifest`

### Classes

- class `rpki.manifest.FileAndHash`
- class `rpki.manifest.FilesAndHashes`
- class `rpki.manifest.Manifest`

## 4.12 oids.py File Reference

### Namespaces

- namespace `rpki.oids`

### Variables

- tuple `rpki::oids.name2oid` = `dict((v,k) for k,v in oid2name.items())`  
*Mapping table of string names to OIDs.*
- dictionary `rpki::oids.oid2name`  
*Mapping table of OIDs to conventional string names.*

## 4.13 pubd.py File Reference

### Namespaces

- namespace [pubd](#)

### Classes

- class [pubd.pubd\\_context](#)

### Functions

- def [pubd.main](#)

### Variables

- string [pubd.cfg\\_file](#) = "pubd.conf"
- [pubd.profile](#) = False

## 4.14 publication.py File Reference

### Namespaces

- namespace [rpki.publication](#)

### Classes

- class [rpki.publication.certificate\\_elt](#)
- class [rpki.publication.client\\_elt](#)
- class [rpki.publication.cms\\_msg](#)
- class [rpki.publication.config\\_elt](#)
- class [rpki.publication.control\\_elt](#)
- class [rpki.publication.crl\\_elt](#)
- class [rpki.publication.manifest\\_elt](#)
- class [rpki.publication.msg](#)
- class [rpki.publication.publication\\_namespace](#)
- class [rpki.publication.publication\\_object\\_elt](#)
- class [rpki.publication.report\\_error\\_elt](#)
- class [rpki.publication.roa\\_elt](#)
- class [rpki.publication.sax\\_handler](#)

### Variables

- tuple `rpki::publication.obj2elt` = dict((e.payload\_type, e) for e in (certificate\_elt, crl\_elt, manifest\_elt, roa\_elt))  
*Map of data types to `publication` element wrapper types.*

## 4.15 relaxng.py File Reference

### Namespaces

- namespace `rpki.relaxng`

### Variables

- tuple `rpki::relaxng.left_right`  
*Parsed RelaxNG `left_right` schema.*
- tuple `rpki::relaxng.publication`  
*Parsed RelaxNG `publication` schema.*
- tuple `rpki::relaxng.up_down`  
*Parsed RelaxNG `up_down` schema.*

## 4.16 resource\_set.py File Reference

### Namespaces

- namespace `rpki.resource_set`

### Classes

- class `rpki.resource_set.resource_bag`
- class `rpki.resource_set.resource_range`
- class `rpki.resource_set.resource_range_as`
- class `rpki.resource_set.resource_range_ip`
- class `rpki.resource_set.resource_range_ipv4`
- class `rpki.resource_set.resource_range_ipv6`
- class `rpki.resource_set.resource_set`
- class `rpki.resource_set.resource_set_as`
- class `rpki.resource_set.resource_set_ip`

- class [rpki.resource\\_set.resource\\_set\\_ipv4](#)
- class [rpki.resource\\_set.resource\\_set\\_ipv6](#)
- class [rpki.resource\\_set.roa\\_prefix](#)
- class [rpki.resource\\_set.roa\\_prefix\\_ipv4](#)
- class [rpki.resource\\_set.roa\\_prefix\\_ipv6](#)
- class [rpki.resource\\_set.roa\\_prefix\\_set](#)
- class [rpki.resource\\_set.roa\\_prefix\\_set\\_ipv4](#)
- class [rpki.resource\\_set.roa\\_prefix\\_set\\_ipv6](#)

### Functions

- def [rpki::resource\\_set.\\_bs2long](#)
- def [rpki::resource\\_set.\\_long2bs](#)
- def [rpki::resource\\_set.\\_rsplit](#)
- def [rpki::resource\\_set.test1](#)
- def [rpki::resource\\_set.test2](#)

### Variables

- string [rpki::resource\\_set.inherit\\_token](#) = "<inherit>"  
*Token used to indicate inheritance in read and print syntax.*

## 4.17 roa.py File Reference

### Namespaces

- namespace [rpki.roa](#)

### Classes

- class [rpki.roa.ROAIPAddress](#)
- class [rpki.roa.ROAIPAddresses](#)
- class [rpki.roa.ROAIPAddressFamilies](#)
- class [rpki.roa.ROAIPAddressFamily](#)
- class [rpki.roa.RouteOriginAttestation](#)

## 4.18 rootd.py File Reference

### Namespaces

- namespace [rootd](#)

## Classes

- class `rootd.cms_msg`
- class `rootd.issue_pdu`
- class `rootd.list_pdu`
- class `rootd.message_pdu`
- class `rootd.revoke_pdu`
- class `rootd.sax_handler`

## Functions

- def `rootd.compose_response`
- def `rootd.del_subject_cert`
- def `rootd.get_subject_cert`
- def `rootd.set_subject_cert`
- def `rootd.stash_subject_pkcs10`
- def `rootd.up_down_handler`

## Variables

- tuple `rootd.bpki_ta` = `rpki.x509.X509`(Auto\_file = `cfg.get("bpki-ta")`)
- tuple `rootd.cfg` = `rpki.config.parser`(`cfg_file`, "rootd")
- string `rootd.cfg_file` = "rootd.conf"
- tuple `rootd.child_bpki_cert` = `rpki.x509.X509`(Auto\_file = `cfg.get("child-bpki-cert")`)
- tuple `rootd.client_ta` = (`bpki_ta`, `child_bpki_cert`)
- `rootd.handlers` = `up_down_handler`
- `rootd.host` = `https_server_host`,
- tuple `rootd.https_server_host` = `cfg.get("server-host", "")`
- tuple `rootd.https_server_port` = `int(cfg.get("server-port"))`
- `rootd.port` = `https_server_port`,
- tuple `rootd.rootd_bpki_cert` = `rpki.x509.X509`(Auto\_file = `cfg.get("rootd-bpki-cert")`)
- tuple `rootd.rootd_bpki_crl` = `rpki.x509.CRL`( Auto\_file = `cfg.get("rootd-bpki-crl")`)
- tuple `rootd.rootd_bpki_key` = `rpki.x509.RSA`( Auto\_file = `cfg.get("rootd-bpki-key")`)
- tuple `rootd.rpki_base_uri` = `cfg.get("rpki-base-uri", "rsync://") + rpki_class_name + ".invalid/"`)
- tuple `rootd.rpki_class_name` = `cfg.get("rpki-class-name", "wombat")`
- tuple `rootd.rpki_root_cert` = `rpki.x509.X509`(Auto\_file = `cfg.get("rpki-root-cert")`)

- tuple `rootd.rpki_root_cert_uri` = `cfg.get("rpki-root-cert-uri", rpki_base_uri + "Root.cer")`
- tuple `rootd.rpki_root_crl` = `cfg.get("rpki-root-crl", "Root.crl")`
- tuple `rootd.rpki_root_dir` = `cfg.get("rpki-root-dir")`
- tuple `rootd.rpki_root_key` = `rpki.x509.RSA( Auto_file = cfg.get("rpki-root-key"))`
- tuple `rootd.rpki_root_manifest` = `cfg.get("rpki-root-manifest", "Root.mnf")`
- tuple `rootd.rpki_subject_cert` = `cfg.get("rpki-subject-cert", "Subroot.cer")`
- tuple `rootd.rpki_subject_lifetime` = `rpki.sundial.timedelta(days = 30)`
- tuple `rootd.rpki_subject_pkcs10` = `cfg.get("rpki-subject-pkcs10", "")`
- `rootd.server_cert` = `rootd_bpki_cert`,

## 4.19 rpki\_engine.py File Reference

### Namespaces

- namespace `rpki.rpki_engine`

### Classes

- class `rpki.rpki_engine.ca_detail_obj`
- class `rpki.rpki_engine.ca_obj`
- class `rpki.rpki_engine.child_cert_obj`
- class `rpki.rpki_engine.revoked_cert_obj`
- class `rpki.rpki_engine.rpkid_context`

## 4.20 rpkid.py File Reference

### Namespaces

- namespace `rpkid`

### Functions

- def `rpkid.main`

### Variables

- string `rpkid.cfg_file` = "rpkid.conf"
- `rpkid.profile` = None

## 4.21 sql.py File Reference

### Namespaces

- namespace [rpki.sql](#)

### Classes

- class [rpki.sql.session](#)
- class [rpki.sql.sql\\_persistent](#)
- class [rpki.sql.template](#)

## 4.22 sundial.py File Reference

### Namespaces

- namespace [rpki.sundial](#)

### Classes

- class [rpki.sundial.datetime](#)
- class [rpki.sundial.timedelta](#)

### Functions

- def [rpki::sundial.now](#)
- def [rpki::sundial.test](#)

## 4.23 up\_down.py File Reference

### Namespaces

- namespace [rpki.up\\_down](#)

### Classes

- class [rpki.up\\_down.base\\_elt](#)
- class [rpki.up\\_down.certificate\\_elt](#)
- class [rpki.up\\_down.class\\_elt](#)
- class [rpki.up\\_down.class\\_response\\_syntax](#)
- class [rpki.up\\_down.cms\\_msg](#)



- class [rpki.up\\_down.error\\_response\\_pdu](#)
- class [rpki.up\\_down.issue\\_pdu](#)
- class [rpki.up\\_down.issue\\_response\\_pdu](#)
- class [rpki.up\\_down.list\\_pdu](#)
- class [rpki.up\\_down.list\\_response\\_pdu](#)
- class [rpki.up\\_down.message\\_pdu](#)
- class [rpki.up\\_down.multi\\_uri](#)
- class [rpki.up\\_down.revoke\\_pdu](#)
- class [rpki.up\\_down.revoke\\_response\\_pdu](#)
- class [rpki.up\\_down.revoke\\_syntax](#)
- class [rpki.up\\_down.sax\\_handler](#)

#### Variables

- dictionary [rpki::up\\_down.nsmap](#) = { None : xmlns }
- string [rpki::up\\_down.xmlns](#) = "http://www.apnic.net/specs/rescerts/up-down/"

## 4.24 x509.py File Reference

#### Namespaces

- namespace [rpki.x509](#)

#### Classes

- class [rpki.x509.CMS\\_object](#)
- class [rpki.x509.CRL](#)
- class [rpki.x509.DER\\_CMS\\_object](#)
- class [rpki.x509.DER\\_object](#)
- class [rpki.x509.PEM\\_converter](#)
- class [rpki.x509.PKCS10](#)
- class [rpki.x509.ROA](#)
- class [rpki.x509.RSA](#)
- class [rpki.x509.RSAPublic](#)
- class [rpki.x509.SignedManifest](#)
- class [rpki.x509.X509](#)
- class [rpki.x509.XML\\_CMS\\_object](#)

#### Functions

- def [rpki::x509.calculate\\_SKI](#)
- def [rpki::x509.POWify\\_OID](#)

## 4.25 xml\_utils.py File Reference

### Namespaces

- namespace [rpki.xml\\_utils](#)

### Classes

- class [rpki.xml\\_utils.base\\_elt](#)
- class [rpki.xml\\_utils.data\\_elt](#)
- class [rpki.xml\\_utils.msg](#)
- class [rpki.xml\\_utils.sax\\_handler](#)

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