Hosting Environmnet (Daemon) Chain Components Reference Manual

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Here is a list of all documented namespaces with brief descriptions:

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2.1 Hosting Environmnet (Daemon) Chain Components Class Hierarchy

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Chapter 3

Hosting Environmnet (Daemon) Chain Components Class Index

3.1 Hosting Environmnet (Daemon) Chain Components Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

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Hosting Environmnet (Daemon) Chain Components Namespace Documentation

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ArcRequest, Parsing the specified Arc request format.

Classes

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- class AllowPDP

  This PDP always return true (allow).

- class ArcAuthZ

  Tests message against list of PDPs.

- class ArcAlgFactory

  Algorithm factory class for Arc.

- class ArcAttributeFactory

  Attribute factory class for Arc specified attributes.

- class ArcEvaluator

  Execute the policy evaluation, based on the request and policy.

- class ArcFnFactory

  Function factory class for Arc specified attributes.

- class ArcPDP

  ArcPDP - PDP which can handle the Arc specific request and policy schema.

- class ArcPolicy

  ArcPolicy class to parse and operate Arc specific <Policy> node.

- class **ArcRequest**
- class ArcRequestItem

  Container, <Subjects, Actions, Objects, Contexts> tuple.

- class ArcRule

  ArcRule class to parse Arc specific <Rule> node.

- class **AttributeDesignator**
- class **AttributeSelector**
- class CountPDP

  CountPDP - PDP which can handle the Arc specific request and policy schema.

- class DelegationPDP
- class DenyPDP

  This PDP always returns false (deny).

- class **GACLEvaluator**
- class **GACLPDP**
- class **GACLPolicy**
- class **GACLRequest**
- class ArcPDPServiceInvoker

  ArcPDPServiceInvoker - client which will invoke pdpservice.

- class SimpleListPDP

  Tests X509 subject against list of subjects in file.

- class UsernameTokenSH

  Adds WS-Security Username Token into SOAP Header.

- class X509TokenSH

  Adds WS-Security X509 Token into SOAP Header.

- class XACMLPolicy

  XACMLPolicy class to parse and operate XACML specific <Policy> node.

- class **XACMLRequest**
- class XACMLRule

  XACMLRule class to parse XACML specific <Rule> node.

- class **XACMLTargetMatch**
- class **XACMLTargetMatchGroup**
- class **XACMLTargetSection**
- class XACMLTarget

  XACMLTarget class to parse and operate XACML specific <Target> node.

Typedefs

- typedef std::pair< AttributeValue ∗, Function ∗ > Match
- typedef std::list< Match > AndList
- typedef std::list< AndList > OrList

Enumerations

- enum **Id_MatchResult** { **ID_MATCH** = 0, **ID_PARTIAL_MATCH** = 1, **ID_NO_MATCH** = 2 }

4.1.1 Detailed Description

ArcRequest, Parsing the specified Arc request format.

4.1.2 Typedef Documentation

4.1.2.1 typedef std::pair<AttributeValue∗, Function∗> ArcSec::Match

pair Match include the AttributeValue object in <Rule> and the Function which is used to handle the AttributeValue, default function is "Equal", if some other function is used, it should be explicitly specified, e.g. Subject Type="string" Function="Match">/vo.knowarc/usergroupA</Subject>Subjects> example inside <Rule>: <Subjects> <Subject type="X500Name">/O=NorduGrid/OU=UIO/CN=test</Subject> <Subject type="string">/vo.knowarc/usergroupA</Subject> <Subject> <SubFraction type="string">/O=Grid/OU=KnowARC/CN=XYZ</SubFraction> <SubFraction type="string">urn:mace:shibboleth:examples</SubFraction> </Subject> <GroupIdRef location="./subjectgroup.xml">subgrpexample1</GroupIdRef> </Subjects>

4.1.2.2 typedef std::list<Match> ArcSec::AndList

AndList - include items inside one <Subject> (or <Resource> <Action> <Condition>).

"Or" relationship meand the request should satisfy any of the items <Subjects> <Subject type="X500DN">/O=Grid/OU=KnowARC/CN=ABC</Subject> <Subject type="VOMSAttribute">/vo.knowarc/usergroupA</Subject> <Subject> <SubFraction type="X500DN">/O=Grid/OU=KnowARC/CN=XYZ</SubFraction> <SubFraction type="ShibName">urn:mace:shibboleth:examples</SubFraction> </Subject> <GroupIdRef location="./subjectgroup.xml">subgrpexample1</GroupIdRef> </Subjects>

4.1.2.3 typedef std::list<AndList> ArcSec::OrList

OrList - include items inside one <Subjects> (or <Resources> <Actions> <Conditions>).

Chapter 5

Hosting Environmnet (Daemon) Chain Components Class Documentation

5.1 ArcSec::AllowPDP Class Reference

This PDP always return true (allow).

`#include <AllowPDP.h>`

Public Member Functions

- **AllowPDP** (Arc::Config ∗cfg)
- virtual bool **isPermitted** (Arc::Message ∗msg)

Static Public Member Functions

- static PDP ∗ **get_allow_pdp** (Arc::Config ∗cfg, Arc::ChainContext ∗ctx)

5.1.1 Detailed Description

This PDP always return true (allow).

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

- AllowPDP.h

5.2 ArcSec::ArcAlgFactory Class Reference

Algorithm factory class for Arc.

`#include <ArcAlgFactory.h>`

Public Member Functions

- virtual CombiningAlg $*$ createAlg (const std::string &type)

5.2.1 Detailed Description

Algorithm factory class for Arc.

5.2.2 Member Function Documentation

5.2.2.1 virtual CombiningAlg$*$ ArcSec::ArcAlgFactory::createAlg (const std::string & *type*) `[virtual]`

return a Alg object according to the "CombiningAlg" attribute in the <Policy> node; The ArcAlgFactory itself will release the Alg objects

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

- ArcAlgFactory.h

5.3 ArcSec::ArcAttributeFactory Class Reference

Attribute factory class for Arc specified attributes.

`#include <ArcAttributeFactory.h>`

Public Member Functions

- virtual AttributeValue * createValue (const Arc::XMLNode &node, const std::string &type)

5.3.1 Detailed Description

Attribute factory class for Arc specified attributes.

5.3.2 Member Function Documentation

5.3.2.1 virtual AttributeValue* ArcSec::ArcAttributeFactory::createValue (const Arc::XMLNode & *node*, const std::string & *type*) `[virtual]`

creat a AttributeValue according to the value in the XML node and the type; It should be the caller to release the AttributeValue Object

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

- ArcAttributeFactory.h

5.4 ArcSec::ArcAuthZ Class Reference

Tests message against list of PDPs.

`#include <ArcAuthZ.h>`

Public Member Functions

- **ArcAuthZ** (Arc::Config ∗cfg, Arc::ChainContext ∗ctx)
- virtual bool Handle (Arc::Message ∗msg)

Static Public Member Functions

- static SecHandler ∗ **get_sechandler** (Arc::Config ∗cfg, Arc::ChainContext ∗ctx)

Protected Member Functions

- bool MakePDPs (Arc::Config ∗cfg)

Classes

- class **PDPDesc**

5.4.1 Detailed Description

Tests message against list of PDPs.

This class implements SecHandler interface. It's Handle() method runs provided Message instance against all PDPs specified in configuration. If any of PDPs returns positive result Handle() return true, otherwise false. This class is the main entry for configuring authorization, and could include different PDP configured inside.

5.4.2 Member Function Documentation

5.4.2.1 virtual bool ArcSec::ArcAuthZ::Handle (Arc::Message ∗ *msg*) `[virtual]`

Get authorization decision

5.4.2.2 bool ArcSec::ArcAuthZ::MakePDPs (Arc::Config ∗ *cfg*) `[protected]`

Create PDP according to conf info

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

- ArcAuthZ.h

5.5 ArcSec::ArcEvaluator Class Reference

Execute the policy evaluation, based on the request and policy.

`#include <ArcEvaluator.h>`

Public Member Functions

- **ArcEvaluator** (Arc::XMLNode ∗cfg)
- **ArcEvaluator** (const char ∗cfgfile)
- virtual Response ∗ evaluate (Request ∗request)
- virtual Response ∗ **evaluate** (const Source &request)
- virtual Response ∗ **evaluate** (Request ∗request, const Source &policy)
- virtual Response ∗ **evaluate** (const Source &request, const Source &policy)
- virtual Response ∗ **evaluate** (Request ∗request, Policy ∗policyobj)
- virtual Response ∗ **evaluate** (const Source &request, Policy ∗policyobj)
- virtual AttributeFactory ∗ **getAttrFactory** ()
- virtual FnFactory ∗ **getFnFactory** ()
- virtual AlgFactory ∗ **getAlgFactory** ()
- virtual void **addPolicy** (const Source &policy, const std::string &id="")
- virtual void **addPolicy** (Policy ∗policy, const std::string &id="")
- virtual void **removePolicies** (void)
- virtual void **setCombiningAlg** (EvaluatorCombiningAlg alg)

Protected Member Functions

- virtual Response ∗ **evaluate** (EvaluationCtx ∗ctx)

Friends

- class **EvaluatorContext**

5.5.1 Detailed Description

Execute the policy evaluation, based on the request and policy.

5.5.2 Member Function Documentation

5.5.2.1 virtual Response∗ ArcSec::ArcEvaluator::evaluate (Request ∗ *request*) `[virtual]`

Evaluate the request based on the policy information inside PolicyStore

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

- ArcEvaluator.h

5.6 ArcSec::ArcFnFactory Class Reference

Function factory class for Arc specified attributes.

```
#include <ArcFnFactory.h>
```

Public Member Functions

- virtual Function $*$ createFn (const std::string &type)

5.6.1 Detailed Description

Function factory class for Arc specified attributes.

5.6.2 Member Function Documentation

5.6.2.1 virtual Function$*$ ArcSec::ArcFnFactory::createFn (const std::string & *type*) `[virtual]`

return a Function object according to the "Function" attribute in the XML node; The ArcFnFactory itself will release the Function objects

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

- ArcFnFactory.h

5.7 ArcSec::ArcPDP Class Reference

ArcPDP - PDP which can handle the Arc specific request and policy schema.

```
#include <ArcPDP.h>
```

Public Member Functions

- **ArcPDP** (Arc::Config ∗cfg)
- virtual bool **isPermitted** (Arc::Message ∗msg)

Static Public Member Functions

- static PDP ∗ **get_arc_pdp** (Arc::Config ∗cfg, Arc::ChainContext ∗ctx)

Static Protected Attributes

- static Arc::Logger **logger**

5.7.1 Detailed Description

ArcPDP - PDP which can handle the Arc specific request and policy schema.

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

- ArcPDP.h

5.8 ArcSec::ArcPDPServiceInvoker Class Reference

ArcPDPServiceInvoker - client which will invoke pdpservice.

```
#include <ArcPDPServiceInvoker.h>
```

Public Member Functions

- **ArcPDPServiceInvoker** (Arc::Config ∗cfg)
- virtual bool **isPermitted** (Arc::Message ∗msg)

Static Public Member Functions

- static PDP ∗ **get_pdpservice_invoker** (Arc::Config ∗cfg, Arc::ChainContext ∗ctx)

Static Protected Attributes

- static Arc::Logger **logger**

5.8.1 Detailed Description

ArcPDPServiceInvoker - client which will invoke pdpservice.

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

- ArcPDPServiceInvoker.h

5.9 ArcSec::ArcPolicy Class Reference

ArcPolicy class to parse and operate Arc specific <Policy> node.

```
#include <ArcPolicy.h>
```

Public Member Functions

- ArcPolicy (Arc::XMLNode ∗node)
- ArcPolicy (Arc::XMLNode ∗node, EvaluatorContext ∗ctx)
- virtual Result **eval** (EvaluationCtx ∗ctx)
- virtual void **setEvaluatorContext** (EvaluatorContext ∗evaluatorcontext)
- virtual void make_policy ()
- virtual MatchResult **match** (EvaluationCtx ∗ctx)
- virtual std::string **getEffect** ()
- virtual EvalResult & **getEvalResult** ()
- virtual void **setEvalResult** (EvalResult &res)

Static Protected Attributes

- static Arc::Logger **logger**

5.9.1 Detailed Description

ArcPolicy class to parse and operate Arc specific <Policy> node.

5.9.2 Constructor & Destructor Documentation

5.9.2.1 ArcSec::ArcPolicy::ArcPolicy (Arc::XMLNode ∗ *node*)

Constructor

5.9.2.2 ArcSec::ArcPolicy::ArcPolicy (Arc::XMLNode ∗ *node*, EvaluatorContext ∗ *ctx*)

Constructor

5.9.3 Member Function Documentation

5.9.3.1 virtual void ArcSec::ArcPolicy::make_policy () `[virtual]`

Parse XMLNode, and construct the low-level Rule object

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

- ArcPolicy.h

5.10 ArcSec::ArcRequestItem Class Reference

Container, <Subjects, Actions, Objects, Contexts> tuple.

```
#include <ArcRequestItem.h>
```

Public Member Functions

- **ArcRequestItem** (Arc::XMLNode &node, AttributeFactory ∗attrfactory)
- virtual SubList **getSubjects** () const
- virtual void **setSubjects** (const SubList &sl)
- virtual ResList **getResources** () const
- virtual void **setResources** (const ResList &rl)
- virtual ActList **getActions** () const
- virtual void **setActions** (const ActList &actions)
- virtual CtxList **getContexts** () const
- virtual void **setContexts** (const CtxList &ctx)

5.10.1 Detailed Description

Container, <Subjects, Actions, Objects, Contexts> tuple.

Specified ArcRequestItem which can parse Arc request formate

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

- ArcRequestItem.h

5.11 ArcSec::ArcRule Class Reference

ArcRule class to parse Arc specific <Rule> node.

```
#include <ArcRule.h>
```

Public Member Functions

- **ArcRule** (Arc::XMLNode ∗node, EvaluatorContext ∗ctx)
- virtual std::string **getEffect** ()
- virtual Result **eval** (EvaluationCtx ∗ctx)
- virtual MatchResult **match** (EvaluationCtx ∗ctx)
- virtual EvalResult & **getEvalResult** ()
- virtual void **setEvalResult** (EvalResult &res)

Static Protected Attributes

- static Arc::Logger **logger**

5.11.1 Detailed Description

ArcRule class to parse Arc specific <Rule> node.

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

- ArcRule.h

5.12 ArcSec::CountPDP Class Reference

CountPDP - PDP which can handle the Arc specific request and policy schema.

```
#include <CountPDP.h>
```

Public Member Functions

- **CountPDP** (Arc::Config ∗cfg)
- virtual bool **isPermitted** (Arc::Message ∗msg)

Static Public Member Functions

- static PDP ∗ **get_count_pdp** (Arc::Config ∗cfg, Arc::ChainContext ∗ctx)

Static Protected Attributes

- static Arc::Logger **logger**

5.12.1 Detailed Description

CountPDP - PDP which can handle the Arc specific request and policy schema.

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

- CountPDP.h

5.13 ArcSec::DelegationPDP Class Reference

`#include <DelegationPDP.h>`

Public Member Functions

- **DelegationPDP** (Arc::Config ∗cfg)
- virtual bool **isPermitted** (Arc::Message ∗msg)

Static Public Member Functions

- static PDP ∗ **get_delegation_pdp** (Arc::Config ∗cfg, Arc::ChainContext ∗ctx)

Static Protected Attributes

- static Arc::Logger **logger**

5.13.1 Detailed Description

DeleagtionPDP - PDP which can handle the Arc specific request and policy provided as identity delegation policy.

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

- DelegationPDP.h

5.14 ArcSec::DenyPDP Class Reference

This PDP always returns false (deny).

```
#include <DenyPDP.h>
```

Public Member Functions

- **DenyPDP** (Arc::Config ∗cfg)
- virtual bool **isPermitted** (Arc::Message ∗msg)

Static Public Member Functions

- static PDP ∗ **get_deny_pdp** (Arc::Config ∗cfg, Arc::ChainContext ∗ctx)

5.14.1 Detailed Description

This PDP always returns false (deny).

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

- DenyPDP.h

5.15 Arc::LDAPQuery Class Reference

```
#include <LDAPQuery.h>
```

Public Member Functions

- LDAPQuery (const std::string &ldaphost, int ldapport, bool anonymous=true, const std::string &usersn="", int timeout=TIMEOUT)
- ∼LDAPQuery ()
- bool Query (const std::string &base, const std::string &filter="(objectclass=∗)", const std::list< std::string > &attributes=std::list< std::string >(), URL::Scope scope=URL::subtree)
- bool Result (ldap_callback callback, void ∗ref)

Friends

- int **my_sasl_interact** (ldap ∗, unsigned int, void ∗, void ∗)

5.15.1 Detailed Description

LDAPQuery class; querying of LDAP servers.

5.15.2 Constructor & Destructor Documentation

5.15.2.1 Arc::LDAPQuery::LDAPQuery (const std::string & *ldaphost*, int *ldapport*, bool *anonymous* = `true`, const std::string & *usersn* = `""`, int *timeout* = `TIMEOUT`)

Constructs a new LDAPQuery object and sets connection options. The connection is first established when calling Query.

5.15.2.2 Arc::LDAPQuery::∼LDAPQuery ()

Destructor. Will disconnect from the ldapserver if still connected.

5.15.3 Member Function Documentation

5.15.3.1 bool Arc::LDAPQuery::Query (const std::string & *base*, const std::string & *filter* = `"(objectclass=∗)"`, const std::list< std::string > & *attributes* = `std::list< std::string >()`, URL::Scope *scope* = `URL::subtree`)

Queries the ldap server.

5.15.3.2 bool Arc::LDAPQuery::Result (ldap_callback *callback*, void ∗ *ref*)

Retrieves the result of the query from the ldap-server.

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

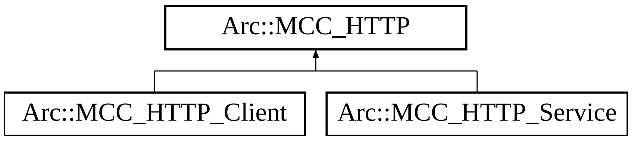
- LDAPQuery.h

5.16 Arc::MCC_HTTP Class Reference

A base class for HTTP client and service MCCs.

`#include <MCCHTTP.h>`

Inheritance diagram for Arc::MCC_HTTP::



Public Member Functions

- **MCC_HTTP** (Arc::Config ∗cfg)

Static Protected Attributes

- static Arc::Logger **logger**

5.16.1 Detailed Description

A base class for HTTP client and service MCCs.

This is a base class for HTTP client and service MCCs. It provides some common functionality for them, i.e. so far only a logger.

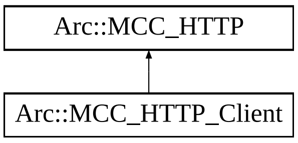
The documentation for this class was generated from the following file:

- MCCHTTP.h

5.17 Arc::MCC_HTTP_Client Class Reference

`#include <MCCHTTP.h>`

Inheritance diagram for Arc::MCC_HTTP_Client::



Public Member Functions

- **MCC_HTTP_Client** (Arc::Config ∗cfg)
- virtual MCC_Status **process** (Message &, Message &)

Protected Attributes

- std::string **method_**
- std::string **endpoint_**

5.17.1 Detailed Description

This class is a client part of HTTP MCC. It accepts PayloadRawInterface payload and uses it as body to generate HTTP request. Request is passed to next MCC as PayloadRawInterface type of payload. Returned PayloadStreamInterface payload is parsed into HTTP response and it's body is passed back to calling MCC as PayloadRawInerface. Attributes of request/input message of type HTTP:name are translated into HTTP header with corresponding 'name's. Special attributes HTTP:METHOD and HTTP:ENDPOINT specify method and URL in HTTP request. If not present meathod and URL are taken from configuration. In output/response message following attributes are present: HTTP:CODE - response code of HTTP HTTP:REASON - reason string of HTTP response HTTP:name - all 'name' attributes of HTTP header.

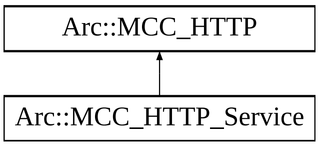
The documentation for this class was generated from the following file:

- MCCHTTP.h

5.18 Arc::MCC_HTTP_Service Class Reference

```
#include <MCCHTTP.h>
```

Inheritance diagram for Arc::MCC_HTTP_Service::



Public Member Functions

- **MCC_HTTP_Service** (Arc::Config ∗cfg)
- virtual MCC_Status **process** (Message &, Message &)

5.18.1 Detailed Description

This class implements MCC to processes HTTP request. On input payload with PayloadStreamInterface is expected. HTTP message is read from stream ans it's body is converted into PayloadRaw and passed to next MCC. Returned payload of PayloadRawInterface type is treated as body part of returning PayloadHTTP. Generated HTTP response is sent though stream passed in input payload. During processing of request/input message following attributes are generated: HTTP:METHOD - HTTP method e.g. GET, PUT, POST, etc. HTTP:ENDPOINT - URL taken from HTTP request ENDPOINT - global attribute equal to HTTP:ENDPOINT HTTP:RANGESTART - start of requested byte range HTTP:RANGEEND - end of requested byte range (inclusive) HTTP:name - all 'name' attributes of HTTP header. Attributes of response message of HTTP:name type are translated into HTTP header with corresponding 'name's.

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

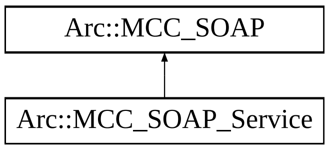
- MCCHTTP.h

5.19 Arc::MCC_SOAP Class Reference

A base class for SOAP client and service MCCs.

`#include <MCCSOAP.h>`

Inheritance diagram for Arc::MCC_SOAP::



Public Member Functions

- **MCC_SOAP** (Arc::Config ∗cfg)

Static Protected Attributes

- static Arc::Logger **logger**

5.19.1 Detailed Description

A base class for SOAP client and service MCCs.

This is a base class for SOAP client and service MCCs. It provides some common functionality for them, i.e. so far only a logger.

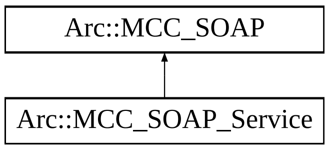
The documentation for this class was generated from the following file:

- MCCSOAP.h

5.20 Arc::MCC_SOAP_Service Class Reference

```
#include <MCCSOAP.h>
```

Inheritance diagram for Arc::MCC_SOAP_Service::



Public Member Functions

- **MCC_SOAP_Service** (Arc::Config ∗cfg)
- virtual MCC_Status **process** (Message &, Message &)

5.20.1 Detailed Description

This MCC parses SOAP message from input payload. On input payload with PayloadRawInterface is expected. It's converted into PayloadSOAP and passed next MCC. Returned PayloadSOAP is converted into PayloadRaw and returned to calling MCC.

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

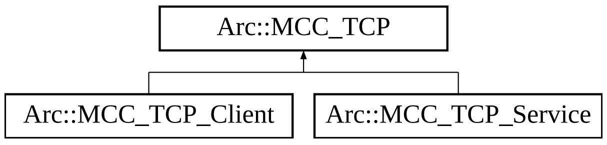
- MCCSOAP.h

5.21 Arc::MCC_TCP Class Reference

A base class for TCP client and service MCCs.

`#include <MCCTCP.h>`

Inheritance diagram for Arc::MCC_TCP::



Public Member Functions

- **MCC_TCP** (Arc::Config ∗cfg)

Static Protected Attributes

- static Arc::Logger **logger**

Friends

- class **PayloadTCPSocket**

5.21.1 Detailed Description

A base class for TCP client and service MCCs.

This is a base class for TCP client and service MCCs. It provides some common functionality for them, i.e. so far only a logger.

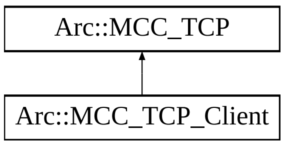
The documentation for this class was generated from the following file:

- MCCTCP.h

5.22 Arc::MCC_TCP_Client Class Reference

`#include <MCCTCP.h>`

Inheritance diagram for Arc::MCC_TCP_Client::



Public Member Functions

- **MCC_TCP_Client** (Arc::Config ∗cfg)
- virtual MCC_Status **process** (Message &, Message &)

5.22.1 Detailed Description

This class is MCC implementing TCP client. Upon creation it connects to specified TCP post at specified host. process() method accepts PayloadRawInterface type of payload. Content of payload is sent over TCP socket. It returns PayloadStreamInterface payload for previous MCC to read response.

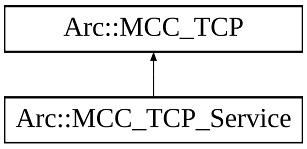
The documentation for this class was generated from the following file:

- MCCTCP.h

5.23 Arc::MCC_TCP_Service Class Reference

`#include <MCCTCP.h>`

Inheritance diagram for Arc::MCC_TCP_Service::



Public Member Functions

- MCC_TCP_Service (Arc::Config ∗cfg)
- virtual MCC_Status **process** (Message &, Message &)

Friends

- class **mcc_tcp_exec_t**

Classes

- class **mcc_tcp_exec_t**

5.23.1 Detailed Description

This class is MCC implementing TCP server. Upon creation this object binds to specified TCP ports and listens for incoming TCP connections on dedicated thread. Each connection is accepted and dedicated thread is created. Then that thread is used to call process() method of next MCC in chain. That method is passed payload implementing PayloadStreamInterface. On response payload with PayloadRawInterface is expected. Alternatively called MCC may use provided PayloadStreamInterface to send it's response back directly. During processing of request this MCC generates following attributes: TCP:HOST - IP address of interface to which local TCP socket is bound TCP:PORT - port number to which local TCP socket is bound TCP:REMOTEHOST - IP address from which connection is accepted TCP:REMOTEPORT - TCP port from which connection is accepted TCP:ENDPOINT - URL-like representation of remote connection - ://HOST:PORT ENDPOINT - global attribute equal to TCP:ENDPOINT

5.23.2 Constructor & Destructor Documentation

5.23.2.1 Arc::MCC_TCP_Service::MCC_TCP_Service (Arc::Config ∗ *cfg*)

executing function for connection thread

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

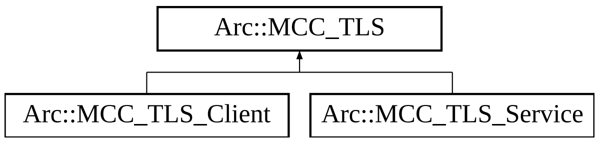
- MCCTCP.h

5.24 Arc::MCC_TLS Class Reference

A base class for SOAP client and service MCCs.

`#include <MCCTLS.h>`

Inheritance diagram for Arc::MCC_TLS::



Public Member Functions

- **MCC_TLS** (Arc::Config ∗cfg)
- const std::string & **CADir** (void) const
- const std::string & **CAFile** (void) const
- const std::string & **ProxyFile** (void) const
- const std::string & **CertFile** (void) const
- const std::string & **KeyFile** (void) const
- bool **GlobusPolicy** (void) const

Protected Member Functions

- bool **tls_load_certificate** (SSL_CTX ∗sslctx, const std::string &cert_file, const std::string &key_file, const std::string &password, const std::string &random_file)
- bool **do_ssl_init** (void)
- void **do_ssl_deinit** (void)

Static Protected Member Functions

- static void **ssl_locking_cb** (int mode, int n, const char ∗file, int line)
- static unsigned long **ssl_id_cb** (void)

Protected Attributes

- std::string **ca_dir_**
- std::string **ca_file_**
- std::string **proxy_file_**
- std::string **cert_file_**
- std::string **key_file_**
- bool **globus_policy_**

Static Protected Attributes

- static unsigned int **ssl_initialized_**
- static Glib::Mutex **lock_**
- static Glib::Mutex ∗ **ssl_locks_**
- static Logger **logger**

5.24.1 Detailed Description

A base class for SOAP client and service MCCs.

This is a base class for SOAP client and service MCCs. It provides some common functionality for them, i.e. so far only a logger.

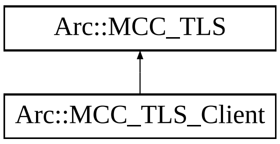
The documentation for this class was generated from the following file:

- MCCTLS.h

5.25 Arc::MCC_TLS_Client Class Reference

`#include <MCCTLS.h>`

Inheritance diagram for Arc::MCC_TLS_Client::



Public Member Functions

- **MCC_TLS_Client** (Arc::Config ∗cfg)
- virtual MCC_Status **process** (Message &, Message &)
- virtual void **Next** (MCCInterface ∗next, const std::string &label="")

5.25.1 Detailed Description

This class is MCC implementing TLS client.

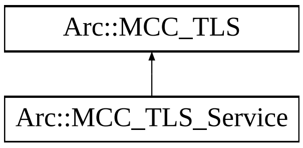
The documentation for this class was generated from the following file:

- MCCTLS.h

5.26 Arc::MCC_TLS_Service Class Reference

`#include <MCCTLS.h>`

Inheritance diagram for Arc::MCC_TLS_Service::



Public Member Functions

- **MCC_TLS_Service** (Arc::Config ∗cfg)
- virtual MCC_Status **process** (Message &, Message &)

5.26.1 Detailed Description

This MCC implements TLS server side functionality. Upon creation this object creats SSL_CTX object and configures SSL_CTX object with some environment information about credential. Because we cannot know the "socket" when the creation of MCC_TLS_Service/MCC_TLS_Client object (not like MCC_-TCP_Client, which can creat socket in the constructor method by using information in configuration file), we can only creat "ssl" object which is binded to specified "socket", when MCC_HTTP_Client calls the process() method of MCC_TLS_Client object, or MCC_TCP_Service calls the process() method of MCC_-TLS_Service object. The "ssl" object is embeded in a payload called PayloadTLSSocket.

The process() method of MCC_TLS_Service is passed payload implementing PayloadStreamInterface and the method returns empty PayloadRaw payload in "outmsg". The ssl object is created and bound to Stream payload when constructing the PayloadTLSSocket in the process() method.

During processing of message this MCC generates attribute TLS:PEERDN which contains Distinguished Name of remoote peer.

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

- MCCTLS.h

5.27 Arc::PayloadHTTP Class Reference

`#include <PayloadHTTP.h>`

Public Member Functions

- PayloadHTTP (PayloadStreamInterface &stream)
- PayloadHTTP (const std::string &method, const std::string &url, PayloadStreamInterface &stream)
- PayloadHTTP (const std::string &method, const std::string &url)
- PayloadHTTP (int code, const std::string &reason, PayloadStreamInterface &stream)
- PayloadHTTP (int code, const std::string &reason)
- virtual **operator bool** (void)
- virtual bool **operator!** (void)
- virtual const std::string & Attribute (const std::string &name)
- virtual const std::map< std::string, std::string > & Attributes (void)
- virtual void Attribute (const std::string &name, const std::string &value)
- virtual bool Flush (void)
- virtual std::string **Method** ()
- virtual std::string **Endpoint** ()
- virtual std::string **Reason** ()
- virtual int **Code** ()
- virtual void Body (PayloadRawInterface &body, bool ownership=true)
- virtual char **operator[]** (int pos) const
- virtual char ∗ **Content** (int pos=-1)
- virtual int **Size** (void) const
- virtual char ∗ **Insert** (int pos=0, int size=0)
- virtual char ∗ **Insert** (const char ∗s, int pos=0, int size=0)
- virtual char ∗ **Buffer** (unsigned int num=0)
- virtual int **BufferSize** (unsigned int num=0) const
- virtual int **BufferPos** (unsigned int num=0) const
- virtual bool **Truncate** (unsigned int size)

Protected Member Functions

- bool readline (std::string &line)
- bool read (char ∗buf, int &size)
- bool parse_header (void)
- bool get_body (void)

Protected Attributes

- bool **valid_**
- PayloadStreamInterface & **stream_**
- PayloadRawInterface ∗ body_
- bool body_own_
- std::string uri_
- int version_major_
- int version_minor_
- std::string method_

- int code_
- std::string reason_
- int length_
- bool chunked_
- bool keep_alive_
- std::map< std::string, std::string > attributes_
- char **tbuf_** [1024]
- int **tbuflen_**

5.27.1 Detailed Description

This class implements parsing and generation of HTTP messages. It implements only subset of HTTP/1.1 and also provides an PayloadRawInterface for including as payload into Message passed through MCC chains.

5.27.2 Constructor & Destructor Documentation

5.27.2.1 Arc::PayloadHTTP::PayloadHTTP (PayloadStreamInterface & *stream*)

Constructor - creates object by parsing HTTP request or response from stream. Supplied stream is associated with object for later use.

5.27.2.2 Arc::PayloadHTTP::PayloadHTTP (const std::string & *method*, const std::string & *url*, PayloadStreamInterface & *stream*)

Constructor - creates HTTP request to be sent through stream. HTTP message is not sent yet.

5.27.2.3 Arc::PayloadHTTP::PayloadHTTP (const std::string & *method*, const std::string & *url*)

Constructor - creates HTTP request to be rendered through Raw interface.

5.27.2.4 Arc::PayloadHTTP::PayloadHTTP (int *code*, const std::string & *reason*, PayloadStreamInterface & *stream*)

Constructor - creates HTTP response to be sent through stream. HTTP message is not sent yet.

5.27.2.5 Arc::PayloadHTTP::PayloadHTTP (int *code*, const std::string & *reason*)

Constructor - creates HTTP response to be rendered through Raw interface.

5.27.3 Member Function Documentation

5.27.3.1 virtual void Arc::PayloadHTTP::Attribute (const std::string & *name*, const std::string & *value*) `[virtual]`

Sets HTTP header attribute ’name’ to ’value’

5.27.3.2 virtual const std::string& Arc::PayloadHTTP::Attribute (const std::string & *name*) `[virtual]`

Returns HTTP header attribute with specified name. Empty string if no such attribute.

5.27.3.3 virtual const std::map<std::string,std::string>& Arc::PayloadHTTP::Attributes (void) `[virtual]`

Returns all HTTP header attributes.

5.27.3.4 virtual void Arc::PayloadHTTP::Body (PayloadRawInterface & *body*, bool *ownership* = `true`) `[virtual]`

Assign HTTP body. Assigned object is not copied. Instead it is remembered and made available through Raw interface. If 'ownership' is true then passed object is treated as being owned by this instance and destroyed in destructor.

5.27.3.5 virtual bool Arc::PayloadHTTP::Flush (void) `[virtual]`

Send created object through associated stream. If there is no stream associated then HTTP specific data is inserted into Raw buffers of this object. In last case this operation should not be repeated till content of buffer is completely rewritten.

5.27.3.6 bool Arc::PayloadHTTP::get_body (void) `[protected]`

Read Body of HTTP message and attach it to inherited PayloadRaw object

5.27.3.7 bool Arc::PayloadHTTP::parse_header (void) `[protected]`

Read HTTP header and fill internal variables

5.27.3.8 bool Arc::PayloadHTTP::read (char * *buf*, int & *size*) `[protected]`

Read up to 'size' bytes from stream_

5.27.3.9 bool Arc::PayloadHTTP::readline (std::string & *line*) `[protected]`

Read from stream till

5.27.4 Member Data Documentation

5.27.4.1 std::map<std::string,std::string> Arc::PayloadHTTP::attributes_ `[protected]`

true if conection should not be closed after response

5.27.4.2 PayloadRawInterface* Arc::PayloadHTTP::body_ [protected]

stream used to comminicate to outside

5.27.4.3 bool Arc::PayloadHTTP::body_own_ [protected]

associated HTTP Body if any

5.27.4.4 bool Arc::PayloadHTTP::chunked_ [protected]

Content-length of HTTP message

5.27.4.5 int Arc::PayloadHTTP::code_ [protected]

HTTP method being used or requested

5.27.4.6 bool Arc::PayloadHTTP::keep_alive_ [protected]

true if content is chunked

5.27.4.7 int Arc::PayloadHTTP::length_ [protected]

HTTP reason being sent or supplied

5.27.4.8 std::string Arc::PayloadHTTP::method_ [protected]

minor number of HTTP version - must be 0 or 1

5.27.4.9 std::string Arc::PayloadHTTP::reason_ [protected]

HTTP code being sent or supplied

5.27.4.10 std::string Arc::PayloadHTTP::uri_ [protected]

if true body_ is owned by this

5.27.4.11 int Arc::PayloadHTTP::version_major_ [protected]

URI being contacted

5.27.4.12 int Arc::PayloadHTTP::version_minor_ [protected]

major number of HTTP version - must be 1

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

- PayloadHTTP.h

5.28 Arc::PayloadTCPSocket Class Reference

`#include <PayloadTCPSocket.h>`

Public Member Functions

- PayloadTCPSocket (const char ∗hostname, int port, Logger &logger)
- PayloadTCPSocket (const std::string endpoint, Logger &logger)
- PayloadTCPSocket (int s, Logger &logger)
- PayloadTCPSocket (PayloadTCPSocket &s)
- PayloadTCPSocket (PayloadStream &s, Logger &logger)
- virtual bool **Get** (char ∗buf, int &size)
- virtual bool **Put** (const char ∗buf, int size)

5.28.1 Detailed Description

This class extends PayloadStream with TCP socket specific features

5.28.2 Constructor & Destructor Documentation

5.28.2.1 Arc::PayloadTCPSocket::PayloadTCPSocket (const char ∗ *hostname*, int *port*, Logger & *logger*)

Constructor - connects to TCP server at specified hostname:port

5.28.2.2 Arc::PayloadTCPSocket::PayloadTCPSocket (const std::string *endpoint*, Logger & *logger*)

Constructor - connects to TCP server at specified endpoint - hostname:port

5.28.2.3 Arc::PayloadTCPSocket::PayloadTCPSocket (int *s*, Logger & *logger*) `[inline]`

Constructor - creates object of already connected socket. Socket is NOT closed in destructor.

5.28.2.4 Arc::PayloadTCPSocket::PayloadTCPSocket (PayloadTCPSocket & *s*) `[inline]`

Copy constructor - inherits socket of copied object. Socket is NOT closed in destructor.

5.28.2.5 Arc::PayloadTCPSocket::PayloadTCPSocket (PayloadStream & *s*, Logger & *logger*) `[inline]`

Copy constructor - inherits handle of copied object. Handle is NOT closed in destructor.

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

- PayloadTCPSocket.h

5.29 Arc::PayloadTLSStream Class Reference

```
#include <PayloadTLSStream.h>
```

Public Member Functions

- PayloadTLSStream (Logger &logger, SSL ∗ssl=NULL)
- **PayloadTLSStream** (PayloadTLSStream &stream)
- virtual ∼PayloadTLSStream (void)
- void **HandleError** (int code=SSL_ERROR_NONE)
- virtual bool **Get** (char ∗buf, int &size)
- virtual bool **Get** (std::string &buf)
- virtual std::string **Get** (void)
- virtual bool **Put** (const char ∗buf, int size)
- virtual bool **Put** (const std::string &buf)
- virtual bool **Put** (const char ∗buf)
- virtual **operator bool** (void)
- virtual bool **operator!** (void)
- virtual int **Timeout** (void) const
- virtual void **Timeout** (int to)
- X509 ∗ GetPeerCert (void)
- STACK_OF (X509)∗GetPeerChain(void)
- X509 ∗ GetCert (void)

Static Public Member Functions

- static void **HandleError** (Logger &logger, int code=SSL_ERROR_NONE)
- static void **ClearError** (void)

Protected Attributes

- int **timeout_**
- SSL ∗ ssl_
- Logger & **logger_**

5.29.1 Detailed Description

Implemetation of PayloadStreamInterface for SSL handle.

5.29.2 Constructor & Destructor Documentation

5.29.2.1 Arc::PayloadTLSStream::PayloadTLSStream (Logger & *logger*, SSL ∗ *ssl* = `NULL`)

Constructor. Attaches to already open handle. Handle is not managed by this class and must be closed by external code.

5.29.2.2 virtual Arc::PayloadTLSStream::∼PayloadTLSStream (void) `[virtual]`

Destructor.

5.29.3 Member Function Documentation

5.29.3.1 X509∗ Arc::PayloadTLSStream::GetCert (void)

Get local certificate from associated ssl. Obtained X509 object is owned by this instance and becomes invalid after destruction.

5.29.3.2 X509∗ Arc::PayloadTLSStream::GetPeerCert (void)

Get peer certificate from the established ssl. Obtained X509 object is owned by this instance and becomes invalid after destruction. Still obtained has to be freed at end of usage.

5.29.3.3 Arc::PayloadTLSStream::STACK_OF (X509)

Get chain of peer certificates from the established ssl. Obtained X509 object is owned by this instance and becomes invalid after destruction.

5.29.4 Member Data Documentation

5.29.4.1 SSL∗ Arc::PayloadTLSStream::ssl_ `[protected]`

Timeout for read/write operations

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

- PayloadTLSStream.h

5.30 ArcSec::SimpleListPDP Class Reference

Tests X509 subject against list of subjects in file.

`#include <SimpleListPDP.h>`

Public Member Functions

- **SimpleListPDP** (Arc::Config ∗cfg)
- virtual bool **isPermitted** (Arc::Message ∗msg)

Static Public Member Functions

- static PDP ∗ **get_simplelist_pdp** (Arc::Config ∗cfg, Arc::ChainContext ∗ctx)

Static Protected Attributes

- static Arc::Logger **logger**

5.30.1 Detailed Description

Tests X509 subject against list of subjects in file.

This class implements PDP interface. It's isPermitted() method compares X590 subject of requestor obtained from TLS layer (TLS:PEERDN) to list of subjects (ne per line) in external file. Locations of file is defined by 'location' attribute of PDP caonfiguration. Returns true if subject is present in list, otherwise false.

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

- SimpleListPDP.h

5.31 ArcSec::UsernameTokenSH Class Reference

Adds WS-Security Username Token into SOAP Header.

`#include <UsernameTokenSH.h>`

Public Member Functions

- **UsernameTokenSH** (Arc::Config ∗cfg, Arc::ChainContext ∗ctx)
- virtual bool **Handle** (Arc::Message ∗msg)

Static Public Member Functions

- static SecHandler ∗ **get_sechandler** (Arc::Config ∗cfg, Arc::ChainContext ∗ctx)

5.31.1 Detailed Description

Adds WS-Security Username Token into SOAP Header.

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

- UsernameTokenSH.h

5.32 ArcSec::X509TokenSH Class Reference

Adds WS-Security X509 Token into SOAP Header.

`#include <X509TokenSH.h>`

Public Member Functions

- **X509TokenSH** (Arc::Config ∗cfg, Arc::ChainContext ∗ctx)
- virtual bool **Handle** (Arc::Message ∗msg)

Static Public Member Functions

- static SecHandler ∗ **get_sechandler** (Arc::Config ∗cfg, Arc::ChainContext ∗ctx)

5.32.1 Detailed Description

Adds WS-Security X509 Token into SOAP Header.

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

- X509TokenSH.h

5.33 ArcSec::XACMLPolicy Class Reference

XACMLPolicy class to parse and operate XACML specific <Policy> node.

```
#include <XACMLPolicy.h>
```

Public Member Functions

- XACMLPolicy (Arc::XMLNode &node, EvaluatorContext ∗ctx)
- virtual Result **eval** (EvaluationCtx ∗ctx)
- virtual MatchResult **match** (EvaluationCtx ∗ctx)
- virtual std::string **getEffect** ()
- virtual EvalResult & **getEvalResult** ()

Static Protected Attributes

- static Arc::Logger **logger**

5.33.1 Detailed Description

XACMLPolicy class to parse and operate XACML specific <Policy> node.

5.33.2 Constructor & Destructor Documentation

5.33.2.1 ArcSec::XACMLPolicy::XACMLPolicy (Arc::XMLNode & *node*, EvaluatorContext ∗ *ctx*)

Constructor -

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

- XACMLPolicy.h

5.34 ArcSec::XACMLRule Class Reference

XACMLRule class to parse XACML specific <Rule> node.

`#include <XACMLRule.h>`

Public Member Functions

- **XACMLRule** (Arc::XMLNode &node, EvaluatorContext ∗ctx)
- virtual std::string **getEffect** ()
- virtual Result **eval** (EvaluationCtx ∗ctx)
- virtual MatchResult **match** (EvaluationCtx ∗ctx)
- virtual EvalResult & **getEvalResult** ()

Static Protected Attributes

- static Arc::Logger **logger**

5.34.1 Detailed Description

XACMLRule class to parse XACML specific <Rule> node.

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

- XACMLRule.h

5.35 ArcSec::XACMLTarget Class Reference

XACMLTarget class to parse and operate XACML specific <Target> node.

```
#include <XACMLTarget.h>
```

Public Member Functions

- XACMLTarget (Arc::XMLNode &node, EvaluatorContext ∗ctx)
- virtual MatchResult **match** (EvaluationCtx ∗ctx)

5.35.1 Detailed Description

XACMLTarget class to parse and operate XACML specific <Target> node.

5.35.2 Constructor & Destructor Documentation

5.35.2.1 ArcSec::XACMLTarget::XACMLTarget (Arc::XMLNode & *node*, EvaluatorContext ∗ *ctx*)

Constructor -

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

- XACMLTarget.h

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