ArnLib

2.2.x

Generated by Doxygen 1.8.1

Tue Jul 29 2014 23:17:17

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README

ArnLib - Active Registry Network.

This Qt based library makes it easy to distribute changing data objects. It also gives a central place to find all your systems' current data. By using the ArnBrowser, all data objects are real time presented in a tree view.

Comparison to similar concepts

- **Data mart:** Statistical data gathered from different systems. This makes it possible to run cross system analysis.
- **Windows Registry & AD:** Centralized configuration data. All in one place easily shared.
- **ArnLib:** Hot changing data from different systems. Enables easy cross system data exchange, debugging, etc.

Installation and usage

Read doc/Install.md how to build, install and use.

ArnLib could be beneficial in a lot of projects. It should be well suited to the following conditions:

- *A lot of configurations and changing values.*

  ArnLib helps giving out-of-the-box diagnostics and ability to change values not yet available in the custom application user interface.

- *Hardware with a lot of sensors and controls.*

  Arnlib helps giving a common interface and diagnostic.

- *Distributed systems.*

  ArnLib helps giving an out-of-the-box data sharing system that replicates Arn objects.

- *Networked services by RPC (remote procedure call).*

  Will be quite the same as setting up signals and slots for local calls. You can find an easy example in the ArnLib package, showing a simple chat Client and Server.

- *ZeroConfig detection of present services.*

  Helps advertise and browse a service (ftp, http, arn, ...) on a local network. This is similar to UPNP discovery of units.

Main features

- Based on Qt (4 & 5), multiple platform and OS support.
- Qt based Arn browser available. Allows you to access all data objects in a tree view (see ArnBrowser).
- Web based Arn browser available, allowing you to use a standard web browser (see WebArnBrowser).

Arn Data Objects

- Hierarchical storage of hot changing data objects.
- *Arn Data objects* can be: integers, floats, strings, byte arrays and variants (most Qt data types, e.g. QImage).
- Data objects can typically be: measures, settings, data streams, documents, scripts (js), etc.
- *Arn Data objects* are thread-safe.
- Native support for data validation and double direction pipes (streams).

Sharing

- Data objects can be shared in a single program, among threads or between programs, at different computers. This division of program modules can be changed and is transparent to usage of ArnLib.
- Support for temporary session data objects. Optional auto-delete of objects when tcp/ip closes and unique uuid names.
- Dependency system with custom offered services and getting signals when all needed services are available.
- Monitoring of newly created data objects and any mode change.

Persistent storage

- Optional persistent storage of object in SQLight or in a file.
- Support for version control (VCS) of objects stored in files.

Java Script

- Native support in JavaScript for: *Arn Data Objects*, Dependency system and Monitoring of changed objects.
- Java Script jobstack with preemptive and cooperative scripts running at different priorities.
- Hot swap of changed Java Script in jobstack.

Data streams and *Remote Procedure Call*

- All data streams (pipes) can easily be monitored and manual test data can be inserted (see ArnBrowser).
- Service Api, for calling routines anywhere in connected Arn. *Remote Procedure Call* (RPC) simple to use as "remote signal slots".
- Service Api has an automatically generated help for giving syntax when doing debug manual typed calls to a RPC service.

ZeroConfig and Discover

- Any service (ftp, http, arn, etc) can be advertised, browsed and resolved for its host address and port number.
- High level, fully automatic support specialised for *arn* service, can e.g. remotely change the advertised *service name*.
- Simple integration together with a custom GUI for browsing, etc.
- Optional internal DNS_SD/mDNS routines for no dependency to any extra library.

Chapter 2

General Description

This document describes the general concepts of the ArnLib.

2.1 Arn Data Objects

All objects are stored in a tree hierarchy and the naming is similar to typical file systems, e.g. "//Measure/Water/-Temperature/value".

To get a handle to a folder, use a path ending with "/", e.g "//Measure/Water/".

Folder names can be empty. In the above example, the first level folder is empty and the second level folder is "Measure". The empty folder name can also be referred as "@". Again, the example can equally be written "/@/-Measure/Water/Temperature/value". This "@" is typically used when an empty name is unacceptable, e.g. in the tree viewer of ArnBrowser.

A relative path is also called the `local path`, e.g. "Sys/Discover/This/Service/value".

Each part in a given path is dynamically added as needed, i.e. any path can be used without explicitly creating each folder in advance.

2.1.1 Modes

Mode change is a one direction process. Once a specific *mode* is set, it can't be reset.

If the ArnItem is in a closed state when the *mode* change is done, the added modes will be stored and the real *mode* change is done when the ArnItem is opened to an *ARN Data Object*. This implies that ArnItems can benefit from *mode* settings before being opened.

If the *general mode* change is done to a `shared` object, the change of *general mode* is also done at the server and any connected clients.

The following *general modes* are available:

- **BiDir** A two-way object, typically for validation or pipe. See `bidirectional` objects.
- **Pipe** Implies *BiDir* and all data is preserved as a stream during `sharing`. Without *Pipe mode*, `sharing` is optimized to sync latest value and not all values in a stream.
- **Save** Sets the *ARN Data Object* as persistent and any data assigned to it will be saved. The persistent service must be started at the server. See `persistent` objects.

Additionally there are some *sync modes*. These modes are used by the local client session and are not shared with others. The *sync modes* must be set before the ArnItem is opened to an *ARN Data Object*.

Following *sync_modes* are available:

- **Master** The *ARN Data Object* (at client side) is set as *default generator* of data. Normally the server is the *default generator* of data. This makes difference when client connects or reconnects to the server. The data from the *default generator* is then used and synced. Also echo of data to the client side *ARN data object* is prohibited.
- **AutoDestroy** The *ARN Data Object* (at client side) is set up for auto destruction. When the client closes tcp/ip, the server side will destroy the *ARN Data Object* and this will also be done at any connected clients.

Note: It's convenient to always set all the needed modes before an ArnItem is opened or an ArnItem is used as a template. See ArnItem::setTemplate().

2.1.2 Local path

A relative path is also called the *local path*, e.g. the `Discover remote` *service name* at path "Sys/Discover/-This/Service/value". The *local path* is mapped to the absolute path "/Local/". The example is then equal to "/-Local/Sys/Discover/This/Service/value". The *local path* should not be `shared` as it will contain specific data for its running program.

The exception to not sharing *local path* is for some kind of remote client that must be able to change an *ARN Data Object* in the *local path* at the remoted target. For example this is used to change the `Discover remote` *service name* for a target host.

Note: Do always mount the *local path* of the server at a different path at the client. This is to avoid collision with the client's own *local path* data.

In the above example, a remote client using ArnClient::addMountPoint("/@HostLocal/", "/Local/") will share and access the `Discover remote` *service name* at the path "/@HostLocal/Sys/Discover/This/Service/value".

2.1.3 Naming conventions

These rules must not be obeyed, but are recommended, to get the most benefits of the Arn echo system, like ArnBrowser.

- First level folder empty, e.g. "//MyGlobalFolder/Date/value", is a global path and is `shared` to server and clients.
- First level folder starts with "@", e.g. "/@SomeServer/MyFolder/Date/value", is a shared path and is `shared` to a server (typically with some other remote path).
- First level folder is "/Local", e.g "/Local/Key/value", is a `local path` and is not `shared`.
- Path is relative, e.g "Key/value", is a `local path` and is not `shared`.
- When a leaf is used as an attribute, the following names are reserved:
  - **value** the value of the above closest folder denotation, e.g. "Temperature".
  - **set** allowed values and conversion to a more descriptive form, e.g. "0=Off 1=On".
  - **property** like precision and unit, e.g. "prec=1 unit=℃".
  - **info** like tool tips, e.g. "<tt>Standard UV radiation index</tt>".
  - **help.**XXX like "help.xhtml" contains help in xhtml format.

2.2 Bidirectional Arn Data Objects

A bidirectional *ARN Data Object* is actually a double object, a twin. Each part has its own path but their life span is depending on each other.

One part is the normal "official" and the other part is *provider*. The provider has an added "!" to the normal path, e.g. normal = "//Measure/Depth/value", provider = "//Measure/Depth/value!".

Data written to one part ends up in the other. When a provider slot is connected to the provider part (ArnItem), the slot will receive "request" data from the normal part. The provider slot processes the request data and writes the result to the same provider part. This way the result will end up in the normal "official" part.

This functionality can typically be used for data validation and limiting.

2.3 Pipe Arn Data Objects

Pipes also use the `bidirectional` functionality. The two (twin) parts are then named *requester* and *provider*.

All data put into a pipe are part of a stream and as such will be fully transfered (syncronized) if they are `shared` with a server and other clients.

ArnPipe is a specialized class for handling pipes.

It contains logic for handling `sequence check` and `anti congest`.

Data stream to and from a pipe can be controlled using ArnItemValve class. Actually ArnItemValve can controll any ArnItemB derived class.

2.3.1 Pipe sequence check

Sequence check is used to make sure everything is received and nothing is lost or comes twice. This might happen when a tcp/ip connection goes up and down.

The sequence check uses a hidden sequence number not visible in the pipe stream. The sequence number is increased for each assignment to the pipe. The sending and checking of this sequence number is activated at each end of the pipe.

When checking is activated and the received sequence number is unexpected, a signal will be generated.

See also ArnPipe::setSendSeq(), ArnPipe::setCheckSeq(), ArnPipe::outOfSequence().

2.3.2 Pipe anti congest

When the pipe is a `shared oject`, all assignment to the pipe is queued up in a send queue. If there is a disconnect in the tcp/ip, an ArnServer will drop the send queue. But in an ArnClient, this send queue will grow out of control if assignments to the pipe keeps coming. This problem can also arise with a fast rate of status messages on a slow network.

One possibility is to keep track of the connection status, but this involves knowing about which ArnClient (if many) to get status from. It also doesn't handle the problem with a slow network.

A probably better way is to use the *Pipe anti congest* logic.

We identify *messages* that can be sent any number of times and are used to check the data flow, resending, status and alike. Typically this can be *Heart beat*, *ping*, *request update*, *current time* etc. These *async messages* are assigned using ArnPipe::setValueOverwrite().

A regular expression is needed to identify "equal" *async messages*, that can be overwritten in the send queue. If *async messages* are repeatedly assigned to a pipe by ArnPipe::setValueOverwrite(), the send queue will then not grow.

All other *messages* will be normally assigned to the pipe. But these *messages* will only be assigned when normal data flow is present. Typically there is some expected *feedback message* from the receiving part to block uncontrolled assignment from one side of the pipe.

2.4 Persistent Arn Data Objects

The *server* must use ArnPersist to support the persistance service. As a standard *persist storage*, *ARN Data Objects* are stored in a SQLite database. It's also possible to store each object as a file.

The *mount point* (path) for collecting the persistent *ARN Data objects* is set by ArnPersist::setMountPoint(). For server applications this is typically set to "/", which makes all *ARN Data Objects* potential persistent. In client applications the *mount point* is typically restricted to Arn::pathLocal, which only saves local *ARN Data Objects* in the local *persist storage*.

Any connected *client* or the *server* can make an *ARN Data Object* persistent. It's just to open an ArnItem to the object and change *mode* to *Save*.

```
ArnItem  arnMaxLevel;
arnMaxLevel.addMode( Arn::ObjectMode::Save);
arnMaxLevel.open("//Config/Level/Max/value");
```

When the *ARN Data Object* is set to *Save* mode, it's automatically loaded by the ArnPersist. At the *server* this is instantly done. A *client* has to wait for the value to get synced from the *server*. It's convenient to use ArnDepend to get a signal when the value is loaded and ready to use.

When the *ARN Data Object* is changed, it will be automatically saved by ArnPersist. There is a delay from first change of the object until the saving is done, see ArnItem::setDelay(). This allows for intensive updates of the object without choking down the server with saving operations.

It's possible to mark an object in the SQLite data base as *mandatory*. In this way the *ARN Data Object* is set as *persistent* and gets loaded at start of ArnPersist.

2.4.1 Saving objects in files

To use the *persistent* storing of *ARN Data Objects* in files, the *root* directory is set by: ArnPersist::setPersistDir(). This can also be combined with support of VCS (version control system). See ArnPersist::setVcs(). Currently there is a support module for *git*.

In the *root* directory and below, all (VCS) persistent files are stored. The *root* directory corresponds to the *root* in Arn tree.

> Example: *root* directory is set to "/usr/local/arn_persist". There is a file stored at "/usr/local/arn_persist/@/doc/help.xhtml". This file will be mapped to Arn at "//doc/help.xhtml".

Any files stored in the *root* directory and below, get loaded into their *ARN Data Object* with *mode* set as *persistent* at start of ArnPersist.

The files get updated in a similar way to the data base update.

2.5 Sharing Arn Data Objects

A fundamental aspect of Arn is that *ARN Data Objects* can be shared. This is centralized to the *ARN Server*, which stores all shared objects. It's still a distributed model as each client and server has their own set of *ARN Data Objects* that operate independent of any connection.

Each *ARN Client* connects to the *ARN Server* and decides which part of the *ARN Data Object* tree to be shared.

`ArnClient::addMountPoint("/Share/")` will make the tree "/Share/" shared.

This doesn't mean that everything in the shared tree at the server now will be available at the client. The client has to create an *ARN Data Object* in the shared tree. The client can then decide the exact objects of interest.

`ArnItem::Open("/Share/Test/value")` will open a shared object in previous example.

Note: Normally "//" or "/@.../" is used for shared. See naming conventions.

The remote tree can be at a different path than the local tree (mount point).

```
ArnClient::addMountPoint("/@Host/", "/")  // Makes the
       server shared at "/@Host/".
ArnItem::open("/@Host/Share/Test/value")  // Open the shared object in
       previous example.
```

2.5.1 Dynamic port

An ArnServer can be created with *port* set to 0. This will be handled as a *dynamic port* and the system will assign a free *port number* to the server. The *port number* will be taken from a range specified by IANA.

This can typically be used to skip configuring static port numbers and be able to have multiple instanses of the ArnServer on the same machine. As an ArnClient must find its ArnServer, this can be used together with ArnDiscoverRemote / ArnDiscover.

2.6 RPC and SAPI

ArnRpc is the basic functionality of RPC (Remote Procedure Call). ArnSapi implements SAPI (Service Application Programming Interface) and is using ArnRpc as its base. It's recommended to use ArnSapi which has a higher level model.

The SAPI works by a model which can be described as RPC by *remote signal slots*. The *provider* is usually assumed to wait for a *requester* to initiate the session and then react to different remote calls from the *requester*. However, this is full duplex, so any side can make a remote call at any time.

A good example of the usage of SAPI is the "Arn Demo Chat", which is included in the source package of the ArnLib.

ArnRpc uses pipes to communicate. The *pipes* can be monitored and receive test stimuli from the "Arn Browser" program. The used `protocol` is XString based and quite easy to handtype when common data types are used. "$help" will give the syntax for the actual custom SAPI.

A SAPI is setup by deriving the ArnSapi class to a new class that defines the *custom SAPI*. This custom-declared class is included at both the *provider* and *requester* ends. The *custom SAPI* class by itself doesn't implement any *services*. It's merely a hub for connections to *external signals and slots*. The base ArnSapi class automatically transfers all *custom signal* (SAPI) calls to the remote connected ends, which also have the ArnSapi derived class and that emits the transfered signal. See example in ArnSapi Detailed Description.

The provider connects the signals from custom SAPI that are prefixed with "pv_" (as default) to each external slot that implements the services. In the same way the *requester* connects the signals prefixed with "rq_" to its external "service" slots.

When there is a naming pattern between the *SAPI services* and the *external signals and slots*, it's a great convenience to use ArnRpc::batchConnect(), ArnSapi::batchConnectTo() or ArnSapi::batchConnectFrom(). This saves a lot of QObject::connect() calls. Also newly added services in the SAPI, that obey the naming scheme, will automaically be connected to the newly matching *external signals and slots* for implementation of the *service*.

An extended feature comparing to normal *signals* is that the *SAPI signals* are *public* and can be called by non-derived classes. This makes it optional to use both *signal to signal* connections or direct *signal* calls (emit), when issuing a RPC to the remote side.

The *service* slot can get the emitting *custom SAPI* object by using normal QObject::sender() functionality.

2.6.1 RPC and SAPI method name overload

Under the hood Qt converts a signal that uses default argument(s) into methods with same name and all variation of the arguments. I.e. One method with all arguments, one with all but the last default argument, and so on until there is no more default urguments. When emitting the signal with some number of arguments, all of the signal methods will be exited.

ArnRpc has to deal with this default urgument mechanism, otherwise there would be multiple calling messages for just one original signal emit.

The problem arises when there also can be normal signals that are overloaded, i.e. using same method name but different arguments. ArnRpc has to be able to differentiate between these normal overloaded signals and the default argument signals described earlier.

These are the alternatives, how you can help ArnRpc make your SAPI work:

- Don't overload arguments or make sure they don't have a common start of equal names and types. E.g. its ok with: `f( int a, int b); f( int b); f( int c); f( uint a);`
- Set ArnRpc::Mode::NoDefaultArgs and never use any default arguments in the SAPI. It's then ok to use any kind of normal overloading.

2.6.2 RPC and SAPI communication format

The RPC calling has a basic format as XString (see Arn::XStringMap). A call message can have 3 possible argument formats: positional, named and typed. The positional format is always possible to use and is most comparable to a standard c++ call.

The method name always come first in the message. After that comes arguments that have the argument data in the value part of its key/value pair. The key part can have the argument type and name, but this depends on the used argument format.

The following RPC data types are available:

RPC	Qt
int	int
uint	uint
int64"	qint64
uint64	quint64
bool	bool
float	float
double	double
bytes	QByteArray
date	QDate
time	QTime
datetime	QDateTime
list	QStringList
string	QString

Also generic RPC data types can be formed as:

Textual like QColor t<QColor>
Binary like QPoint tb<QPoint>

Only textual types, i.e. those that can be converted to/from a string, are reasonable to be hand typed.

Lets have an example method to see the message when it is called.

Method: void put(QString id, int value);
Get called by: put("level", 123);

Alternatives in positional argument format:

put t<QString>.id=level t<int>.value=123
put string.id=level int.value=123
put string.=level int.=123
put string=level int=123
put level int=123

- Argument names are optional and only for human debuging.

- When no type is given, "string" is asumed.
- When ArnRpc::Mode::NamedArg is active, its not allowed to only use typename, e.g. "int=123" can be "int.=123" to enforce positional format.
- Both textual and binary arguments can be used.

Alternatives in named argument format:

```
put id=level value=123
put value=123 id=level
put value=123 dummy=ABC id=level garbage=321
```

- Only Argument names are used.
- Any order of arguments can be used.
- Extra arguments are discarded.
- If to few arguments, default constructor is used, e.g. "put value=123" will give id="".
- The methods parameter data type is used and only textual types are allowed.
- When ArnRpc::Mode::NamedArg is inactive, its not allowed to use an argument name that also is a RPC data type. See table above. E.g. "list" and "string" are not allowed.
- Only textual arguments can be used (as stated before).

Alternatives in typed argument format:

```
put id:t<QString>=level value:t<int>=123
put id:string=level value:int=123
put value:int=123 id:string=level
put value:int=123 dummy:bytes=ABC id:string=level
```

- Argument names and types are used.
- Only the name is used to match method parameter.
- The type is verified with the matching method parameter for error check.
- Any order of arguments can be used.
- Extra arguments are discarded.
- If to few arguments, default constructor is used, e.g. "put value:int=123" will give id="".
- Both textual and binary arguments can be used.

Named and typed argument format can be mixed, but positional format is never mixed.

List (QStringList) can be used. All examples below will get same resulting call.

```
For a function: void test( QStringList lst, int num)
test list=red green blu int=3
test list.lst=red green blu int.num=3
test list= +=red +==green +=blu int=3
test list=red +=green blu int=3
test lst:list=red green blu num=3
test num=3 lst:list=red green +=blu
```

- list is both a data type and a syntax for defining its data.

- list is only available for positional and typed argument format.

For special cases, like empty elements, the += syntax is needed. The example below has a first empty element followed by "green".

```
test list= += green blue int=2
```

The built-in call "$help" will give an automatically generated list of the present SAPI with the syntax for each available service. The default argument format is positional. This can be changed to named format by giving "$help named".

2.7 ZeroConfig

For getting a basic understanding of ZeroConfig and further references to relevant documentation, see: http://zeroconf.org/

ARN ZeroConfig is the lowest level support for advertising and discovering services on a local network. The implementation has very few dependences to the rest of the ArnLib.

ARN ZeroConfig can use a built in implementation of Apple (R) *mDns* / *DNS_SD* that has no further dependences to external libraries. For *mDns* the low end system abstraction layer has been written to use Qt for portability. The higher level *DNS_SD* has wrappers written to give a good c++ / Qt API.

It's also possible to use an external *DNS_SD* library, like *Avahi*. This gives better performance when many applications uses ZeroConfig on the same machine, as they share cashing etc with a common daemon. However you have to deal with this external dependency.

ARN ZeroConfig implementation has two parts. The ArnZeroConfRegister can be used to advertise any *service* given a *host address* and a *port number*. The other part is the ArnZeroConfBrowser / ArnZeroConfResolve / ArnZeroConfLookup. The browser is used to get a realtime list of available *services* on the network. The resolver takes a given *service* and resolves it into its *host name* and *port number*. Finally ArnZeroConfLookup takes a given *host name* and makes a DNS (mDNS) lookup to get its ip-address. Each of these classes are stand alone and has to be combined with glue logic for the complete process.

A service has a *service type*, that preferably should be registered at IANA. Examples of *service types* are "http", "ftp" and "arn". This type is mandatory when advertising a *service*. Also the *service* must have a *service name*.

2.7.1 Service name

Service names can be any human readable id. It should be easy to understand, without any cryptic coding. There should not be any attempts to make the *service name* unique as this is taken care of by the ZeroConfig system. It's common that the *service name* can be modified by the end user. The default starting name could be some system or product name. Example of *service name*: "My House Registry".

2.7.2 Sub types

Services can also have *sub types*. These are identifiers that can be used to filter out some sub group from a specific *service type*. All *services* having the same *service type* must still have some common protocol even if they belong to different *sub types*. A *service* can be advertised with many *sub types*, but browsing can only be filtered with one *sub type* or with no filter.

2.7.3 Text record

It's possible to add a *text record* to a *service*. The format of this record is specified by IANA. The purpose is to store properties by a *key* / *value* -pair. For convenience this can be done with ArnZeroConfRegister::setTxtRecordMap() using an Arn::XStringMap.

2.8 Discover

ARN Discover is the mid level support for advertising and discovering services on a local network. This implementation is only for the "arn" *service type* and is heavily dependent on the ArnLib. The "arn" *service type* is approved and registered by IANA.

ARN Discover implementation has two parts. The ArnDiscoverAdvertise can be used to advertise an Arn *service* given a *host address* and a *port number*. The other part is the ArnDiscoverBrowser / ArnDiscoverResolver. The browser is used to get a realtime list of available Arn *services* on the network. The resolver is for taking a manual resolve when a *service name* is known in advance.

ARN Discover is designed to minimize external glue logic as these classes do all the common processing. Internally *ARN ZeroConfig* is used, but focus is on solving Arn specific needs in a powerful, yet flexible manner.

An *ARN service* needs an ArnDiscover::Type and a service name. The ArnDiscover::Type sets up a coarse division of the applications into the *groups* "server" and "client". The "client" typically only offer the service of ArnDiscoverRemote.

ARN services can also have *groups*. These are identifiers that can be used to filter out some sub group. An *ARN service* can be advertised with many *groups*, but browsing can only be filtered with one *group* or with no filter.

It's possible to add a *custom property* to an *ARN service*. This can be done with ArnDiscoverAdvertise::setCustomProperties() using an Arn::XStringMap. The propertie has a *key* / *value* -pair. The custom property are advised to have a *key* starting with a capital letter to avoid name collision with the system. The added *groups* will be set as properties with naming as "group0", "group1" ...

ArnDiscoverBrowser collects found Arn *services*. Each of these *services* can automatically be further examined. This is chosen by calling ArnDiscoverBrowserB::setDefaultStopState(), which e.g. tells examination to stop after *host name* has been found. The *service* can then manually be ordered for further examination by ArnDiscoverBrowserB::goTowardState(), e.g. examination should now stop after *host ip* is found.

All the information about a *service* is stored in ArnDiscoverInfo. Found *services* can be accessed by index, id or *service name*. Increasing index, starting at 0, gives a list of *services* alfabetically sorted by *service name*. The index is kind of volatile and should be used instantly, not be stored. The id gives a unique number for each service and can be stored. However the *service* given by the id might dissapear.

2.9 Discover remote

ARN Discover Remote is the highest level support for advertising and discovering services on a local network. Its implementation is based on *ARN Discover*. The added functionality is to have a remote control for both advertising an ArnServer and multiple ArnClient connections. The remote control is done via *ARN Data Objects* in `local path` "Sys/Discover/".

ARN Discover Remote has one main class, ArnDiscoverRemote which act as a central point. The ArnDiscoverRemote class also takes an ArnServer and advertises it as a *service*. For remote control the *service name* is available at `local path` "Sys/Discover/This/Service/value".

ArnDiscoverRemote can make an internal ArnServer, when there is no need to access the ArnServer class. This is usually the case in an client application. The ArnServer is then merely used to make the discover functionality remote controlled.

Remote controlled client connections can be added. Each ArnClient is handled by an ArnDiscoverConnector instance, which is made by ArnDiscoverRemote::newConnector(). Connections can be added to ArnDiscoverConnector, both as a *direct host* list and a *discover host*.

The *discover host* is indirerctly set, by adding an ArnDiscoverResolver to ArnDiscoverConnector. A *service name* can then be resolved into the *discover host*.

The two connection methods can coexist and as standard the *discover host* has lower priority number than *direct host*, i.e. *discover host* is tried first.

The ArnDiscoverConnector is associated with an *id*, which should be chosen to describe the client target or its purpose. It's not a host address or necessarily a specific host, as there can be many possible addresses assigned

to the ArnDiscoverConnector.

The *id* will appear as an *ARN folder* in `local path`, e.g. when *id* is "WeatherData-XYZ" the folder path will be "Sys/Discover/Connect/WeatherData-XYZ/". The folder and its sub folders will contain *ARN Data Objects* to remote control the ArnClient. For a more comprehensive description of these objects, see help discover description.

In the above example, a *discover host* can be remote controlled by setting the *service name* in `local path` "Sys/Discover/Connect/WeatherData-XYZ/DiscoverHost/Service/value", e.g. to "Region Weather XYZ".

Also in the above example, the first *direct host* can be remote controlled by setting the *host name* in `local path` "Sys/Discover/Connect/WeatherData-XYZ/DirectHosts/Host-0/value", e.g. to "localhost".

Normally it's wanted that any remote set values in the `local path` remains after power cycling. This is supported by the `Arn persist system`.

Connecting via resolver uses the logic:

- If connection fails for a *discover host*, resolving is forced to be refreshed for the target *service name*. The Host for the *service name* might have changed since last resolved and doing a refresh can get the new *discover host*.

- If connection continues to fail for a *discover host*, refreshing the resolv will have a blocking time to avoid spamming the net. Typically this time is 30 seconds, but it can be changed by ArnDiscoverConnector::setResolveRefreshTimeout().

2.10 Application notations

- If any graphics are used, Gui must be included.

- Qt4: For console application only using QImage, Windowing system can be off, like: QApplication a(argc, argv, false);

- Qt5: For console application needing QImage, use QApplication a(argc, argv) and start application with flags "-platform offscreen".

Chapter 3

Installation and usage

3.1 Introduction

This software uses qmake to build all its components. qmake is part of a Qt distribution.

qmake reads project files, that contain the options and rules how to build a certain project. A project file ends with the suffix "$*$.pro". Files that end with the suffix "$*$.pri" are included by the project files and contain definitions, that are common for several project files.

The first step is to edit the $*$.pri / $*$.pro files to adjust them to your needs. Take care to select your deployment directories.

3.2 Documentation

The documentation is built by:

```
qmake
make doc
```

ArnLib includes a class documentation, that is available in various formats:

- **Html files**
- **PDF document**

  refman.pdf is built by:

  ```
  cd doc/latex
  make
  ```

- **Qt Compressed Help** ($*$.qch) for the Qt assistant or creator.

  Load the doc/qthelp/arnlib.qch file into Qt Creator. Start Qt creator and go to Tools $>$ Options, open up Help and Documentation. Click Add and browse for the qch file that was just created, then Apply. It's best to close Qt creator at this point, and restart it.

3.3 Building ArnLib

The software can be built both by command line and IDE (Qt Creator). When using IDE, don't forget the "make install" step.

A) Unix

```
qmake
make
make install
```

The easiest way of installing this library, is to let it be placed in a standard location for librarys and includes, e.g. /usr/lib and /usr/include/ArnInc. When using a shared library it's path has to be known to the run-time linker of your operating system. On Linux systems read "man ldconfig" (or google for it). Another option is to use the LD_LIBRARY_PATH (on some systems LIBPATH is used instead, on MacOSX it is called DYLD_LIBRARY_PATH) environment variable.

If you only want to check the library examples without installing something, you can set the LD_LIBRARY_PATH to the lib directory of your local build. it's also possible to compile the sources together by ArnLibCompile (see Using ArnLib below).

The examples is built this way:

```
cd examples/ArnDemoChat
qmake
make
```

B) Win32/MSVC

Has not been tested yet ...

Check that your Qt version has been built with MSVC - not with MinGW !

Please read the qmake documentation how to convert your $*$.pro files into your development environment.

For example MSVC with nmake:

```
qmake ArnLib.pro
nmake
nmake install
```

The examples is built this way:

```
cd examples\ArnDemoChat
qmake ArnDemoChat.pro
nmake
```

Windows doesn't like mixing of debug and release binaries.

In windows it's possible to install the dll files together with the application binary, as the application directory always is included in the search path for dll.

C) Win32/MinGW

Using Qt Creator for windows, will give you the needed tools for building a Qt project.

Check that your Qt version has been built with MinGW - not with MSVC !

Start a Shell, where Qt is initialized. (e.g. with "Programs->Qt by Trolltech ...->Qt 4.x.x Command Prompt"). Check if you can execute "make" or something like "mingw32-make".

```
qmake ArnLib.pro
make
make install
```

The examples is built this way:

```
cd examples\ArnDemoChat
qmake ArnDemoChat.pro
make
```

Windows doesn't like mixing of debug and release binaries.

In windows it's possible to install the dll files together with the application binary, as the application directory always is included in the search path for dll.

D) MacOSX

Has not been tested yet ...

Well, the Mac is only another Unix system. So read the instructions in A).

In the recent Qt4 releases the default target of qmake is to generate XCode project files instead of makefiles. So you might need to do the following:

```
qmake -spec macx-g++
```

E) Qt Embedded

ArnLib has been built with Qt Embedded using a Raspberry Pi. To build was as simple as for a regular Unix build.

3.4 Using ArnLib

In the ∗.pro file of the application the below lines can be used.

This will give a starting point for the configuration. It works well when using the same base directory for ArnLib as the application, e.g. basedir/ArnLib and basedir/myApp. In Unix alike systems it's also needed to install the library files in a path known by the system, see a) Unix.

It's possible to include the ArnLib source in the application compiling by adding ArnLibCompile to CONFIG. The included part of the source can be selected by addings to ARN, e.g. ARN += server.

Internal mDNS (ZeroConfig) is selected by adding mDnsIntern to CONFIG.

```
CONFIG += ArnLibCompile
CONFIG += mDnsIntern

greaterThan(QT_MAJOR_VERSION, 4) {
    ARNLIB = Arn5
} else {
    ARNLIB = Arn4
}

ArnLibCompile {
    #ARN += client
    ARN += server
    ARN += discover
    include(../ArnLib/src/ArnLib.pri)
    INCLUDEPATH += $$PWD/../ArnLib/src
} else {
    win32: INCLUDEPATH += $$PWD/../ArnLib/src
    win32:CONFIG(release, debug|release): LIBS += -L$$OUT_PWD/../ArnLib/release/ -l$${ARNLIB}
    else:win32:CONFIG(debug, debug|release): LIBS += -L$$OUT_PWD/../ArnLib/debug/ -l$${ARNLIB}
    else:unix: LIBS += -L$$OUT_PWD/../ArnLib/ -l$${ARNLIB}
}

!mDnsIntern {
    win32:CONFIG(release, debug|release): LIBS +=  -ldns_sd
```

```
    else:win32:CONFIG(debug, debug|release): LIBS +=  -ldns_sd
    else:unix: LIBS += -ldns_sd
}
```

If you don't use qmake you have to add the include path to find the ArnLib headers to your compiler flags and the ArnLib library to your linker list.

```
This Install.md file is based on documentation in the Qwt project.
```

Chapter 4

ArnLib Internals

This document describes internal processes that are relatively complex and by this needs some explanation.

4.1 ScriptJobs

- Each jobstack ScriptJobs is setup with a ScriptJobFactory wich makes custom interfaces etc.
- ScriptJobControl is setup with: Sriptfile, Config (QObject) and InterfaceList. Scriptfile is also copied to a ArnItem.
- ScriptJobControl can be connected to update of script in Arn, to make reload possible.
- Error text from ScriptJobControl can be connected to a pipe in Arn for logging.
- ScriptJobControl together with jobpriority define the ScriptJob and is added to ScriptJobs. Error text from Script job is connected to ScriptJobControl.
- Starting ScriptJobs in cooperative mode:
  1. Every ScriptJob is created and setup by corresponding ScriptJobControl
  2. Every ScriptJob is connected to Scheduler (yield etc).
  3. Every ScriptJobControl is connected to ScriptJobs for signaling update of script.
  4. Scheduler is started.
- Setup ScriptJob by ScriptJobControl:
  1. set ScriptJobFactory and Config
  2. Make and add the jobs Interfaces
  3. Evaluate the script (in js engine)
  4. run script function jobInit()
- Updating Script in cooperative mode:
  1. ScriptJobControl gets updated by Arn (or other).
  2. ScriptJobControl sends signal to ScriptJobs, which sets an updated flag for the corresponding Script Job.
  3. When scheduling, every updated script will get its sigQuit signal invoked and then reloaded.
  4. Reloading includes creating a new ScriptJob and setting up with ScriptJobControl etc.

- Starting ScriptJobs in preemtive mode:

  1. Every ScriptJob gets its own thread which also is setup with ScriptJobControl and ScriptJobFactory.
  2. Thread is started and it create a ScriptJobSingle where followning steps are done.
  3. ScriptJob is created and setup by ScriptJobControl
  4. ScriptJob is connected to Scheduler (yield etc).
  5. ScriptJobControl is connected to ScriptJobSingle for signaling update of script.
  6. Scheduler is started in ScriptJobSingle (just one job).

- Updating Script in preemtive mode:

  1. ScriptJobControl gets updated by Arn (or other).
  2. ScriptJobControl sends signal to ScriptJobSingle, which sets an updated flag and both invokes sigQuit signal to script and calls quit in scriptJob.
  3. ScriptJob aborts its js script engine and posts a custom Quit event with high prio.
  4. When ScriptJob get the Quit event, it will send a QuitRequest signal to ScriptJobSingle.
  5. ScriptJobSingle will get the signal amd detect update flag, which means reloading.
  6. Reloading includes creating a new ScriptJob and setting up with ScriptJobControl etc.

4.2 ArnMonitor

- Monitor starts its actual connection job when monitorPath is set.

- Monitor (at client-side) creates an ItemNet with path to monitorPath.

- The ItemNet is also put in syncQueue (always main-thread).

- Monitor puts the arn-event "monitorStart" in event loop, which makes sure event is sent after Monitor (and its caller) has finished initiializing.

- When "monitorStart" is received on local (client) side, the ItemNet will change SyncMode to Monitor. This will resync ItemNet to a Monitor at any server restart.

- Now 2 possibilities depending on threading:

  1. The ItemNet was sent before syncMode Monitor was set. Then server will receive an ordinary Itemnet and do standard setup.
  2. The ItemNet was sent with syncMode Monitor set. The server will detect this and do MonitorSetup on the ItemNet.

- When arn-event "monitorStart" is received on server-side, if SyncMode is not already set to "Monitor", server will do MonitorSetup on the ItemNet.

- When doing MonitorSetup (at server-side), connections are made to send arn-events when new childs are created, and present childs are directly sent as arn-event.

4.3 Destroy

- Command arives with a netId.
- Corresponding ItemNet is disabled (set as defunct).
- All link-leaves for the ItemNet:s tree is set as retired and each leaf is emitting a retired signal.
- The retired signal is handled by each connected Item. Each Item is sending a linkDestroyed signal to be handled by application code. The Items is finally closed and by this the link ref counter is decremented.
- When the links ref counter is reaching zero, a zeroRef signal is sent.
- The signal is handled by doZerRefLink(), in Main thread. It will set the link ref counter to -1 to mark the link as fully de-referenced. The link and parent (and grand parants ...) are deleted if they don't have any children and ref = -1 and they are retired.
- When the ItemNet is sending the linkDestroyed signal, it will be deleted from sync map and all queues. Finally a destroy command is sent with its netId, to spread the destruction to server and other clients.

Chapter 5

ArnLib Todo

Major

- Script support for Sapi.
- QML with "files" as ArnObject and other integration with Arn.
- Convert to d-pointer for making binary compatible library in the future.
- Unit tests

Minor

- In Signal Slot use "const Type&".
- Optimize data transfer with minimal copying.
- Optimize memory consumption with pointers to different data in ArnLink.
- Add tranfer classes for copying values.
- Add more examples
- ArnClient stored centraly with an id. Also accessible by the id.

Chapter 6

Example Collection

Here are some examples showing the use of the ArnLib described in this documentation.

- Chat Demo

6.1 Chat Demo

Demonstration with a simple chat program. It consists of a server and a client part. After starting the server, any number of clients can be started.

This demo is focused on the *Service API* (RPC) functionalty of ArnLib. Slots are remotely called from clients to server and the other way back. All is done with standard function calls without any visual serializing.

It's also a demo of *Discover Remote*, althou client side is as simple as possible without any remote control.

Chat Server ChatSapi.hpp, MainWindow.hpp, MainWindow.cpp, main.cpp

Chat Client MainWindow.hpp, MainWindow.cpp, main.cpp

6.1.1 Chat Server

6.1.1.1 ChatSapi.hpp

```
#ifndef CHATSAPI_HPP
#define CHATSAPI_HPP

#include <ArnInc/ArnSapi.hpp>


class ChatSapi : public ArnSapi
{
    Q_OBJECT
public:
    explicit ChatSapi( QObject* parent = 0) : ArnSapi( parent)  {}

signals:
MQ_PUBLIC_ACCESS
    no_queue void  pv_list();
    void  pv_newMsg( QString name, QString msg);
    void  pv_infoQ();

    void  rq_updateMsg( int seq, QString name, QString msg);
    void  rq_info( QString name, QString ver);
};

#endif // CHATSAPI_HPP
```

6.1.1.2 MainWindow.hpp

```
#ifndef MAINWINDOW_HPP
```

```
#define MAINWINDOW_HPP

#include "ChatSapi.hpp"
#include <ArnInc/ArnItem.hpp>
#include <ArnInc/ArnServer.hpp>
#include <QTimer>
#include <QStringList>
#include <QMainWindow>

namespace Ui {
class MainWindow;
}

class ArnDiscoverRemote;


class MainWindow : public QMainWindow
{
    Q_OBJECT
public:
    explicit MainWindow( QWidget *parent = 0);
    ~MainWindow();

private slots:
    void  doNewSession( QString path);
    void  doSessionClosed();
    void  doUpdateView();
    void  on_shutDownButton_clicked();
    void  doTimeUpdate();

    void  sapiList();
    void  sapiNewMsg( QString name, QString msg);
    void  sapiInfoQ();
    void  sapiDefault( const QByteArray& data);

private:
    Ui::MainWindow *_ui;
    QStringList  _chatNameList;
    QStringList  _chatMsgList;
    QTimer  _timer1s;
    int  _connectCount;

    ArnItem  _arnTime;
    ArnServer*  _server;
    ChatSapi*  _commonSapi;
    ArnDiscoverRemote*  _discoverRemote;
};

#endif // MAINWINDOW_HPP
```

6.1.1.3 MainWindow.cpp

```
#include "MainWindow.hpp"
#include "tmp/ui_MainWindow.h"
#include <ArnInc/ArnItem.hpp>
#include <ArnInc/ArnDiscoverRemote.hpp>
#include <QTime>
#include <QDebug>


MainWindow::MainWindow( QWidget *parent) :
    QMainWindow( parent, Qt::CustomizeWindowHint | Qt::WindowMinimizeButtonHint
      ),
    _ui( new Ui::MainWindow)
{
    _ui->setupUi( this);
    _connectCount = 0;
    doUpdateView();

    _timer1s.start(1000);
    connect( &_timer1s, SIGNAL(timeout()), this, SLOT(doTimeUpdate()));

    _server = new ArnServer( ArnServer::Type::NetSync
      , this);
    _server->start(0);  // Start server on dynamic port

    _discoverRemote = new ArnDiscoverRemote( this);
    _discoverRemote->setService("Demo Chat Server");
    _discoverRemote->addGroup("arndemo/chat");
    _discoverRemote->addCustomProperty("ChatProtoVer", "1.0");
    _discoverRemote->startUseServer( _server);

    _arnTime.open("//Chat/Time/value");
```

```
    typedef ArnSapi::Mode  SMode;
    _commonSapi = new ChatSapi( this);
    _commonSapi->open("//Chat/Pipes/pipeCommon", SMode::Provider |
      SMode::UseDefaultCall);
    _commonSapi->batchConnectTo( this, "sapi");

    ArnItem*  arnPipes = new ArnItem("//Chat/Pipes/", this);
    connect( arnPipes, SIGNAL(arnItemCreated(QString)), this, SLOT(doNewSession
      (QString)));
}


MainWindow::~MainWindow()
{
    delete _ui;
}


void  MainWindow::doNewSession( QString path)
{
    if (!Arn::isProviderPath( path))  return;  // Only
       provider pipe is used

    typedef ArnSapi::Mode  SMode;
    ChatSapi*  soleSapi = new ChatSapi( this);
    soleSapi->open( path, SMode::Provider | SMode::UseDefaultCall);
    soleSapi->batchConnectTo( this, "sapi");
    connect( soleSapi, SIGNAL(pipeClosed()), soleSapi, SLOT(deleteLater()));

    connect( soleSapi, SIGNAL(pipeClosed()), this, SLOT(doSessionClosed()));

    ++_connectCount;
    doUpdateView();
}


void MainWindow::doSessionClosed()
{
    --_connectCount;
    doUpdateView();
}


void  MainWindow::doUpdateView()
{
    _ui->connectCount->setText( QString::number( _connectCount));
}


void  MainWindow::on_shutDownButton_clicked()
{
    qWarning() << "About to shut down.";
    delete _discoverRemote;  // Must be deleted while still in the main
       eventloop
    _discoverRemote = 0;
    QApplication::quit();
}


void  MainWindow::doTimeUpdate()
{
    _arnTime = QTime::currentTime().toString();
}


void  MainWindow::sapiList()
{
    ChatSapi*  sapi = qobject_cast<ChatSapi*>( sender());
    Q_ASSERT(sapi);
    for (int i = 0; i < _chatNameList.size(); ++i) {
        sapi->rq_updateMsg( i, _chatNameList.at(i), _chatMsgList.at(i));
    }
}


void  MainWindow::sapiNewMsg( QString name, QString msg)
{
    _chatNameList += name;
    _chatMsgList  += msg;
    int  seq = _chatNameList.size() - 1;

    _commonSapi->rq_updateMsg( seq, name, msg);
}


void  MainWindow::sapiInfoQ()
{
```

```
    ChatSapi*  sapi = qobject_cast<ChatSapi*>( sender());
    Q_ASSERT(sapi);
    sapi->rq_info("Arn Chat Demo", "1.2");
}


void  MainWindow::sapiDefault( const QByteArray& data)
{
    ChatSapi*  sapi = qobject_cast<ChatSapi*>( sender());
    Q_ASSERT(sapi);
    qDebug() << "chatDefault:" << data;
    sapi->sendText("Chat Sapi: Can't find method, use $help.");
}
```

6.1.1.4 main.cpp

```
#include "MainWindow.hpp"
#include <QApplication>
#include <QDebug>


int main(int argc, char *argv[])
{
    QApplication a(argc, argv);
    MainWindow w;
    w.show();

    return a.exec();
}
```

6.1.2 Chat Client

6.1.2.1 MainWindow.hpp

```
#ifndef MAINWINDOW_HPP
#define MAINWINDOW_HPP

#include "../ArnDemoChatServer/ChatSapi.hpp"
#include <ArnInc/ArnClient.hpp>
#include <ArnInc/ArnItem.hpp>
#include <QMainWindow>
#include <QVector>

namespace Ui {
class MainWindow;
}


class MainWindow : public QMainWindow
{
    Q_OBJECT

public:
    explicit MainWindow( QWidget *parent = 0);
    ~MainWindow();

private slots:
    void  doSendLine();
    void  doTimeUpdate( QString timeStr);

    void  sapiUpdateMsg( int seq, QString name, QString msg);
    void  sapiInfo( QString name, QString ver);

private:
    Ui::MainWindow *_ui;
    QVector<QString>  _chatNameList;
    QVector<QString>  _chatMsgList;

    ArnClient  _arnClient;
    ChatSapi  _commonSapi;
    ChatSapi  _soleSapi;
    ArnItem  _arnTime;
};

#endif // MAINWINDOW_HPP
```

6.1.2.2 MainWindow.cpp

```
#include "MainWindow.hpp"
#include "tmp/ui_MainWindow.h"
#include <ArnInc/ArnDiscoverRemote.hpp>


MainWindow::MainWindow( QWidget* parent) :
    QMainWindow( parent),
    _ui( new Ui::MainWindow)
{
    _ui->setupUi( this);
    _ui->userEdit->setFocus();
    connect( _ui->lineEdit, SIGNAL(returnPressed()), this, SLOT(doSendLine()));

    _arnClient.addMountPoint("//");
    _arnClient.setAutoConnect(true);

    ArnDiscoverConnector*  connector = new
      ArnDiscoverConnector( _arnClient, "DemoChat");
    connector->setResolver( new ArnDiscoverResolver
      ());
    connector->setService("Demo Chat Server");
    connector->start();

    _arnTime.open("//Chat/Time/value");
    connect( &_arnTime, SIGNAL(changed(QString)), this, SLOT(doTimeUpdate(
      QString)));

    _commonSapi.open("//Chat/Pipes/pipeCommon");
    _commonSapi.batchConnectTo( this, "sapi");

    _soleSapi.open("//Chat/Pipes/pipe", ArnSapi::Mode::UuidAutoDestroy
      );
    _soleSapi.batchConnectTo( this, "sapi");

    _soleSapi.pv_infoQ();
    _soleSapi.pv_list();
}


MainWindow::~MainWindow()
{
    delete _ui;
}


void  MainWindow::doTimeUpdate( QString timeStr)
{
    _ui->timeEdit->setTime( QTime::fromString( timeStr));
}


void  MainWindow::doSendLine()
{
    QString  myName = _ui->userEdit->text();
    QString  line   = _ui->lineEdit->text();
    _ui->lineEdit->clear();

    _soleSapi.pv_newMsg( myName, line);
}


void  MainWindow::sapiUpdateMsg( int seq, QString name, QString msg)
{
    if (seq >= _chatNameList.size()) {
        _chatNameList.resize( seq + 1);
        _chatMsgList.resize(  seq + 1);
    }
    _chatNameList[ seq] = name;
    _chatMsgList[  seq] = msg;

    QString  text;
    for (int i = 0; i < _chatNameList.size(); ++i) {
        text += _chatNameList.at(i) + ":  " + _chatMsgList.at(i) + "\n";
    }
    _ui->textEdit->setText( text);
}


void  MainWindow::sapiInfo( QString name, QString ver)
{
    _ui->appNameLabel->setText( name);
    _ui->verLabel->setText( ver);
}
```

6.1.2.3 main.cpp

```
#include "MainWindow.hpp"
#include <QApplication>

int main(int argc, char *argv[])
{
    QApplication a(argc, argv);
    MainWindow w;
    w.show();

    return a.exec();
}
```

6.1.3 Pictures

Chapter 7

Help descriptions

Here are some help descriptions included in ArnLib

7.1 Discover

The "parameter path" in the table have stripped the "value" attribute, e.g. "Service/value".

7.1.1 Description

Chapter 8

Deprecated List

Member ArnClient::setMountPoint (const QString &path)

Use addMountPoint() and removeMountPoint()

Member ArnMonitor::setMonitorPath (QString path, ArnClient *client=0)

Use start() instead, _client_ parameter is changed.

Member ArnRpc::setIncludeSender (bool v)

Use rpcSender()

Chapter 9

Namespace Index

9.1 Namespace List

Here is a list of all namespaces with brief descriptions:

Chapter 10

Class Index

10.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

Chapter 11

Class Index

11.1 Class List

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

Chapter 12

File Index

12.1 File List

Here is a list of all files with brief descriptions:

Chapter 13

Namespace Documentation

13.1 Arn Namespace Reference

Classes

- struct SameValue

  Action when assigning same value to an ArnItem.
- struct DataType

  Data type of an Arn Data Object
- struct ObjectMode

  General global mode of an Arn Data Object
- struct ObjectSyncMode

  The client session sync mode of an Arn Data Object
- struct LinkFlags

  Link flags when accessing an Arn Data Object
- struct NameF
- struct Coding
- class XStringMap

  Container class with string representation for serialized data.

Functions

- QString convertName (const QString &name, Arn::NameF nameF=Arn::NameF())

  Convert a name to a specific format.
- QString fullPath (const QString &path)

  Convert a path to a full absolute path.
- QString itemName (const QString &path)

  The last part of a path
- QString childPath (const QString &parentPath, const QString &posterityPath)

  Get substring for child from a path (posterityPath)
- QString changeBasePath (const QString &oldBasePath, const QString &newBasePath, const QString &path)

  Change the base (start) of a path.
- QString makePath (const QString &parentPath, const QString &itemName)

  Make a path from a parent and an item name.
- QString addPath (const QString &parentPath, const QString &childRelPath, Arn::NameF nameF=Arn::NameF::EmptyOk)

Make a path from a parent and an additional relative path.

- QString convertPath (const QString &path, Arn::NameF nameF=Arn::NameF::EmptyOk)

  Convert a path to a specific format.
- QString twinPath (const QString &path)

  Get the bidirectional twin to a given path
- QString providerPath (const QString &path, bool giveProviderPath=true)

  Get provider path or requester path
- bool isFolderPath (const QString &path)

  Test if path is a folder path
- bool isProviderPath (const QString &path)

  Test if path is a provider path
- QString makeHostWithInfo (const QString &host, const QString &info)

  Make a combined host and info string, i.e. HostWithInfo
- QString hostFromHostWithInfo (const QString &hostWithInfo)

  Get the host from the HostWithInfo string.

Variables

- const QString pathLocal = "/Local/"
- const QString pathLocalSys = "Sys/"
- const QString pathDiscover = "Sys/Discover/"
- const QString pathDiscoverThis = "Sys/Discover/This/"
- const QString pathDiscoverConnect = "Sys/Discover/Connect/"
- bool debugThreading = false
- bool debugLinkRef = false
- bool debugLinkDestroy = false
- bool debugRecInOut = false
- bool debugShareObj = false
- bool debugMonitor = false
- bool debugMonitorTest = false
- bool debugRPC = false
- bool debugDepend = false
- bool debugDiscover = false
- bool debugZeroConf = false
- bool debugMDNS = false
- bool warningMDNS = false
- const QString resourceArnLib = ":/ArnLib/"
- const QString resourceArnRoot = ":/ArnLib/ArnRoot/"
- const quint16 defaultTcpPort = 2022

13.1.1 Function Documentation

13.1.1.1 QString Arn::addPath (const QString & *parentPath*, const QString & *childRelPath*, Arn::NameF *nameF* = Arn::NameF::EmptyOk)

Make a path from a parent and an additional relative path.

parentPath don't have to end with a "/", if missing it's added.

Example: *parentPath* = "//Measure/", *childRelPath* = "depth/value" ==> return = "//Measure/depth/value"

Parameters

in	*parentPath*	
in	*childRelPath*	
in	*nameF*	is the path naming format

Returns

The *path*

See also

convertPath()

Definition at line 130 of file Arn.cpp.

13.1.1.2 QString Arn::changeBasePath (const QString & *oldBasePath,* const QString & *newBasePath,* const QString & *path*)

Change the base (start) of a path.

oldBasePath and *newBasePath* don't have to end with a "/", if missing it's added. If *path* not starts with *oldBasePath*, *path* is returned. Otherwise the path is returned with its base changed from *oldBasePath* to *newBasePath*.

Example: *path* = "//Measure/depth/value", *oldBasePath* = "//Measure/", *newBasePath* = "/Measure/Tmp/" ==> return = "/Measure/Tmp/depth/value"

Parameters

in	*oldBasePath*	
in	*newBasePath*	
in	*path*	

Returns

The changed path

Definition at line 107 of file Arn.cpp.

13.1.1.3 QString Arn::childPath (const QString & *parentPath,* const QString & *posterityPath*)

Get substring for child from a path (posterityPath)

parentPath don't have to end with a "/", if missing it's added.

If *posterityPath* not starts with *parentPath*, QString() is returned. Otherwise given the *posterityPath* the child to *parentPath* is returned.

Example 1: *posterityPath* = "//Measure/depth/value", *parentPath* = "//Measure/" ==> return = "//Measure/depth/"

Example 2: *posterityPath* = "//Measure/depth/value", *parentPath* = "//Measure/depth/" ==> return = //-Measure/depth/value"

Parameters

in	*parentPath*	
in	*posterityPath*	

Returns

The *child path*

Definition at line 93 of file Arn.cpp.

13.1.1.4 QString Arn::convertName (const QString & *name,* Arn::NameF *nameF* = Arn::NameF())

Convert a name to a specific format.

Name is a sub part from a *path*. Example: *name* = "value/", nameF = NoFolderMark ==> return = "value"

Parameters

in	*name*	
in	*nameF*	is the path naming format

Returns

The converted *name*

Definition at line 47 of file Arn.cpp.

13.1.1.5 QString Arn::convertPath (const QString & *path*, Arn::NameF *nameF* = Arn::NameF::EmptyOk)

Convert a path to a specific format.

Example: *path* = "//Measure/depth/value", nameF = Relative ==> return = "@/Measure/depth/value"

Parameters

in	*path*	
in	*nameF*	is the path naming format

Returns

The converted *path*

Definition at line 141 of file Arn.cpp.

13.1.1.6 QString Arn::fullPath (const QString & *path*)

Convert a path to a full absolute path.

Example: *path* = "Measure/depth/value" ==> return = "/Local/Measure/depth/value"

Parameters

in	*path*	

Returns

The converted *path* full path

Definition at line 75 of file Arn.cpp.

13.1.1.7 QString Arn::hostFromHostWithInfo (const QString & *hostWithInfo*)

Get the host from the *HostWithInfo* string.

This is typically used to extract only the host part without information, to be used in e.g. QTcpSocket for connection to the host.

Example: *hostWithInfo* = "192.168.1.1 [myhost.local]" ==> return = "192.168.1.1"

Parameters

in	*hostWithInfo*	The *HostWithInfo* string

Returns

The name or address of the host

See also

makeHostWithInfo()

Note

As the format of the *HostWithInfo* string can be changed in the future, allways use makeHostWithInfo() and hostFromHostWithInfo() for coding and decoding.

Definition at line 210 of file Arn.cpp.

13.1.1.8 bool Arn::isFolderPath (const QString & *path*)

Test if *path* is a *folder path*

Parameters

in	*path*	

Return values

true	if *path* is a *folder path*, i.e. ends with a "/".

Definition at line 191 of file Arn.cpp.

13.1.1.9 bool Arn::isProviderPath (const QString & *path*)

Test if *path* is a *provider path*

About Bidirectional Arn Data Objects

Parameters

in	*path*	

Return values

true	if *path* is a *provider path*, i.e. ends with a "!".

Examples:

ArnDemoChatServer/MainWindow.cpp.

Definition at line 197 of file Arn.cpp.

13.1.1.10 QString Arn::itemName (const QString & *path*)

The last part of a *path*

Example: path = "//Measure/depth/value" ==> return = "value"

Parameters

in	*path*	

Returns

The itemName, i.e. the last part of the path after last "/"

Definition at line 83 of file Arn.cpp.

13.1.1.11 QString Arn::makeHostWithInfo (const QString & *host*, const QString & *info*)

Make a combined host and info string, i.e. *HostWithInfo*

This is typically used to pass some extra information about the host, but still be used for connection to the host.

ArnClient and alike accepts such *HostWithInfo* strings for connection. Hosts discovered using e.g. ArnDiscoverBrowser will be using the ip-address as host and the host name as info. Example: *host* = "192.168.1.1", *info* = "myhost.local" ==> return = "192.168.1.1 [myhost.local]"

Parameters

in	*host*	the name or address of the host
in	*info*	is corresponding info for the host

Returns

The *HostWithInfo* string

See also

hostFromHostWithInfo()

Note

As the format of the *HostWithInfo* string can be changed in the future, allways use makeHostWithInfo() and hostFromHostWithInfo() for coding and decoding.

Definition at line 203 of file Arn.cpp.

13.1.1.12 QString Arn::makePath (const QString & *parentPath*, const QString & *itemName*)

Make a path from a parent and an item name.

parentPath don't have to end with a "/", if missing it's added. Empty folder *itemName* is allowed on returned path.

Example: *parentPath* = "//Measure/depth/", *itemName* = "value" ==> return = "//Measure/depth/value"

Parameters

in	*parentPath*	
in	*itemName*	

Returns

The *path*

Definition at line 121 of file Arn.cpp.

13.1.1.13 QString Arn::providerPath (const QString & *path*, bool *giveProviderPath* = `true`)

Get *provider path* or *requester path*

About Bidirectional Arn Data Objects

Parameters

in	*path*	to be converted
in	*giveProviderPath*	choses between provider and requester path. false = requester path, default is true = provider path.

Return values

is	*provider path* or *requester path*

See also

twinPath()
isProviderPath()

Definition at line 185 of file Arn.cpp.

13.1.1.14 QString Arn::twinPath (const QString & *path*)

Get the bidirectional twin to a given *path*

Example: *path* = "//Measure/depth/value!" ==> return = "//Measure/depth/value"

Parameters

in	*path*	

Returns

The twin *path*

See also

Bidirectional Arn Data Objects

Definition at line 176 of file Arn.cpp.

13.1.2 Variable Documentation

13.1.2.1 bool Arn::debugDepend = false

Definition at line 45 of file ArnLib.cpp.

13.1.2.2 bool Arn::debugDiscover = false

Definition at line 46 of file ArnLib.cpp.

13.1.2.3 bool Arn::debugLinkDestroy = false

Definition at line 39 of file ArnLib.cpp.

13.1.2.4 bool Arn::debugLinkRef = false

Definition at line 38 of file ArnLib.cpp.

13.1.2.5 bool Arn::debugMDNS = false

Definition at line 48 of file ArnLib.cpp.

13.1.2.6 bool Arn::debugMonitor = false

Definition at line 42 of file ArnLib.cpp.

13.1.2.7 bool Arn::debugMonitorTest = false

Definition at line 43 of file ArnLib.cpp.

13.1.2.8 bool Arn::debugRecInOut = false

Definition at line 40 of file ArnLib.cpp.

13.1.2.9 bool Arn::debugRPC = false

Definition at line 44 of file ArnLib.cpp.

13.1.2.10 bool Arn::debugShareObj = false

Definition at line 41 of file ArnLib.cpp.

13.1.2.11 bool Arn::debugThreading = false

Definition at line 37 of file ArnLib.cpp.

13.1.2.12 bool Arn::debugZeroConf = false

Definition at line 47 of file ArnLib.cpp.

13.1.2.13 const quint16 Arn::defaultTcpPort = 2022

Definition at line 43 of file Arn.hpp.

13.1.2.14 const QString Arn::pathDiscover = "Sys/Discover/"

Definition at line 42 of file Arn.cpp.

13.1.2.15 const QString Arn::pathDiscoverConnect = "Sys/Discover/Connect/"

Definition at line 44 of file Arn.cpp.

13.1.2.16 const QString Arn::pathDiscoverThis = "Sys/Discover/This/"

Definition at line 43 of file Arn.cpp.

13.1.2.17 const QString Arn::pathLocal = "/Local/"

Definition at line 40 of file Arn.cpp.

13.1.2.18 const QString Arn::pathLocalSys = "Sys/"

Definition at line 41 of file Arn.cpp.

13.1.2.19 const QString Arn::resourceArnLib = ":/ArnLib/"

Definition at line 51 of file ArnLib.cpp.

13.1.2.20 const QString Arn::resourceArnRoot = ":/ArnLib/ArnRoot/"

Definition at line 52 of file ArnLib.cpp.

13.1.2.21 bool Arn::warningMDNS = false

Definition at line 49 of file ArnLib.cpp.

13.2 ArnDiscover Namespace Reference

Classes

- struct Type

  Types of Arn discover advertise.

13.3 ArnZeroConf Namespace Reference

Classes

- struct Error

  Errors of ZeroConfig, other values are defined in dns_sd.h.
- struct State

  States of ZeroConfig, limited valid for each ArnZeroConfB subclass / These values must be synced with: ArnDiscover::State.

Chapter 14

Class Documentation

14.1 ArnClient Class Reference

Class for connecting to an *Arn Server*.

`#include <ArnClient.hpp>`

Classes

- struct ConnectStat
- struct HostAddrPort
- struct **MountPointSlot**

Public Types

- typedef QList< HostAddrPort > HostList

Signals

- void tcpError (QString errorText, QAbstractSocket::SocketError socketError)
- void tcpConnected (QString arnHost, quint16 port)

  Signal emitted when the tcp connection is successfull.
- void tcpDisConnected ()

  Signal emitted when the tcp connection is broken (has been successfull).
- void connectionStatusChanged (int status, int curPrio)

  Signal emitted when the connection status is changed.

Public Member Functions

- ArnClient (QObject *parent=0)
- void clearArnList (int prioFilter=-1)

  Clear the Arn connection list.
- HostList arnList (int prioFilter=-1) const

  Return the Arn connection list.
- void addToArnList (const QString &arnHost, quint16 port=0, int prio=0)

  Add an Arn Server to the Arn connection list.
- void connectToArnList ()

Connect to an Arn Server in the Arn connection list.

- void connectToArn (const QString &arnHost, quint16 port=0)

  Connect to an Arn Server

- bool setMountPoint (const QString &path)

  Set the sharing tree path.

- bool addMountPoint (const QString &localPath, const QString &remotePath=QString())

  Add a sharing tree path.

- bool removeMountPoint (const QString &localPath)

  Remove a sharing tree path.

- ConnectStat connectStatus () const

  Return the Arn connection status.

- void setAutoConnect (bool isAuto, int retryTime=2)

  Set automatic reconnect.

14.1.1 Detailed Description

Class for connecting to an *Arn Server*.

About Sharing Arn Data Objects

Connection can be made to a specific Host by connectToArn(). It's also possible to define an *Arn Connection List*. Each host address is added to the list with a priority. The priority is used to control the order at which the host addresses will be tried for connection. Lowest priority number is tried first. Connection trials are started with connectToArnlList(). The priority can also be used for selction in clearArnList() and arnList().

Example usage

```
// In class declare
ArnClient  _arnClient;

// In class code
_arnClient.connectToArn("localhost");
_arnClient.addMountPoint("//");
_arnClient.setAutoConnect( true);
```

Examples:

ArnDemoChat/MainWindow.hpp.

Definition at line 71 of file ArnClient.hpp.

14.1.2 Member Typedef Documentation

14.1.2.1 typedef QList<HostAddrPort> ArnClient::HostList

Definition at line 101 of file ArnClient.hpp.

14.1.3 Constructor & Destructor Documentation

14.1.3.1 ArnClient::ArnClient (QObject * *parent* = 0) [explicit]

Definition at line 43 of file ArnClient.cpp.

14.1.4 Member Function Documentation

14.1.4.1 bool ArnClient::addMountPoint (const QString & *localPath,* const QString & *remotePath* = `QString()`)

Add a sharing tree path.

Mountpoint is an association to the similarity of mounting a "remote filesystem". In Arn, the remote "file system" can be at different sub path than the local mountpoint, e.g. a client having mountpoint local="/a/b/" remote="/r/" and opening an *Arn Data Object* at "/a/b/c" will have the object *c* shared with the server at its path "/r/c". However if *remotePath* is not specified, it will be same as *localPath*. In the above example, the *c* object will then be shared with the server at its path "/a/b/c".

Parameters

in	*localPath*	is the local sharing tree.
in	*remotePath*	is the remote sharing tree. If empty, same as *localPath*.

Return values

false	if error.

See also

Sharing Arn Data Objects

Definition at line 155 of file ArnClient.cpp.

14.1.4.2 void ArnClient::addToArnList (const QString & *arnHost,* quint16 *port* = `0`, int *prio* = `0`)

Add an *Arn Server* to the Arn connection list.

Parameters

in	*arnHost*	is host name or ip address, e.g. "192.168.1.1".
in	*port*	is the host port, 0 gives Arn::defaultTcpPort.
in	*prio*	gives the sorting (connection) order and can be used for selection filter.

See also

clearArnList()
arnList()
Arn::makeHostWithInfo()

Definition at line 105 of file ArnClient.cpp.

14.1.4.3 ArnClient::HostList ArnClient::arnList (int *prioFilter* = `-1`) const

Return the Arn connection list.

Parameters

in	*prioFilter*	selects hosts in the list with this pri. Default -1 selects all.

Return values

the	selected Arn connection list.

See also

addToArnList()

Definition at line 89 of file ArnClient.cpp.

14.1.4.4 void ArnClient::clearArnList (int *prioFilter* = -1)

Clear the Arn connection list.

Typically used to start making a new Arn connection list.

Parameters

in	*prioFilter*	selects hosts in the list with this pri, to be removed. Default -1 removes all.

See also

addToArnList()

Definition at line 68 of file ArnClient.cpp.

14.1.4.5 void ArnClient::connectionStatusChanged (int *status*, int *curPrio*) [signal]

Signal emitted when the connection status is changed.

Parameters

in	*status*	is the new connection status ArnClient::ConnectStat.
in	*curPrio*	is the current priority of the connection in ArnList

See also

curPrio()

14.1.4.6 ArnClient::ConnectStat ArnClient::connectStatus ( ) const

Return the Arn connection status.

Return values

the	Arn connection status.

Definition at line 140 of file ArnClient.cpp.

14.1.4.7 void ArnClient::connectToArn (const QString & *arnHost*, quint16 *port* = 0)

Connect to an *Arn Server*

Parameters

in	*arnHost*	is host name or ip address, e.g. "192.168.1.1".
in	*port*	is the host port, 0 gives Arn::defaultTcpPort.

See also

Arn::makeHostWithInfo()

Definition at line 131 of file ArnClient.cpp.

14.1.4.8 void ArnClient::connectToArnList ( )

Connect to an *Arn Server* in the Arn connection list.

Will scan the connection list once until a successful connection is made. If the end of the list is reached without connection, the tcpError() signal

Definition at line 122 of file ArnClient.cpp.

14.1.4.9 bool ArnClient::removeMountPoint (const QString & *localPath*)

Remove a sharing tree path.

Only the mount point will be removed, i.e any new *Arn Data Objects* created within the *localPath* tree will not be shared with the server. However already existing objects will not be affected and is still shared with the server.

Parameters

in	*localPath*	is the sharing tree to be removed. Only affects newly created objects.

Return values

false	if error.

See also

Sharing Arn Data Objects

Definition at line 192 of file ArnClient.cpp.

14.1.4.10 void ArnClient::setAutoConnect (bool *isAuto*, int *retryTime* = 2)

Set automatic reconnect.

If connectToArnList() is used, this auto connect funtionality starts every time after the last host in the Arn connection list has failed. The connection list is retried after *retryTime*. When using connectToArn(), there will be a *retryTime* delay between each reConnect to the host.

Parameters

in	*isAuto*	true if using auto reconnect
in	*retryTime*	is the time between attempts in seconds

Definition at line 210 of file ArnClient.cpp.

14.1.4.11 bool ArnClient::setMountPoint (const QString & *path*)

Set the sharing tree path.

For campatibility, this can only set one mount point and with same local as remote path. If exactly one mount point exist, it will be removed before this new one is added.

Parameters

in	*path*	is the sharing tree.

Return values

false	if error.

See also

Sharing Arn Data Objects

Deprecated Use addMountPoint() and removeMountPoint()

Definition at line 146 of file ArnClient.cpp.

14.1.4.12 void ArnClient::tcpConnected (QString *arnHost*, quint16 *port*) [signal]

Signal emitted when the tcp connection is successfull.

Parameters

in	*arnHost*	is host name or ip address, e.g. "192.168.1.1".
in	*port*	is the host port, e.g. 2022.

14.1.4.13 void ArnClient::tcpDisConnected ( ) [signal]

Signal emitted when the tcp connection is broken (has been successfull).

14.1.4.14 void ArnClient::tcpError (QString *errorText*, QAbstractSocket::SocketError *socketError*) [signal]

Signal emitted when a connection tcp error occur.

Parameters

in	*errorText*	is the human readable description of the error.
in	*socketError*	is the error from tcp socket, see Qt doc.

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

- src/ArnInc/ArnClient.hpp (2.2.0)
- src/ArnClient.cpp (2.2.0)

14.2 ArnDepend Class Reference

Class for setting up dependencis to needed services.

`#include <ArnDepend.hpp>`

Public Types

- typedef ArnDependSlot DepSlot

Signals

- void completed ()

  Signal emitted when all dependent services are available.

Public Member Functions

- ArnDepend (QObject *parent=0)
- ~ArnDepend ()
- void add (QString serviceName, int stateId=-1)

  Add a dependency for a service
- void add (QString serviceName, QString stateName)

  Add a dependency for a service
- void setMonitorName (QString name)

  Set an optional monitor name for debugging.
- void startMonitor ()

  Starting the dependency monitor.

14.2.1 Detailed Description

Class for setting up dependencis to needed services.

The services can be both system types available by internal Arn, and custom application types. The system types have a service name starting with "$".

This is typically used when an application needs a service to continue. When using persistent values, a client will need to know when they have been synced from the server. Then it's convenient to setup a dependency for the system service "$Persist".

When all dependent services are available, the completed() signal is emitted.

Example usage

```
// In class declare
ArnDepend*  _arnDepend;

// In class code
_arnDepend = new ArnDepend( this);
_arnDepend->setMonitorName("MyApp_Monitor");  // Optional for
   debug
_arnDepend->add("$Persist");
_arnDepend->add("MyService");
_arnDepend->startMonitor();
connect( _arnDepend, SIGNAL(completed()), this, SLOT(arnDependOk()
  ));
```

Definition at line 128 of file ArnDepend.hpp.

14.2.2 Member Typedef Documentation

14.2.2.1 typedef ArnDependSlot ArnDepend::DepSlot

Definition at line 132 of file ArnDepend.hpp.

14.2.3 Constructor & Destructor Documentation

14.2.3.1 ArnDepend::ArnDepend (QObject * *parent* = 0) [explicit]

Definition at line 126 of file ArnDepend.cpp.

14.2.3.2 ArnDepend::~ArnDepend ( )

Definition at line 138 of file ArnDepend.cpp.

14.2.4 Member Function Documentation

14.2.4.1 void ArnDepend::add (QString *serviceName*, int *stateId* = -1)

Add a dependency for a *service*

Parameters

in	*serviceName*	is the name of the needed *service*.
in	*stateId*	is the needed *state* id number. -1 is don't care.

Definition at line 172 of file ArnDepend.cpp.

14.2.4.2 void ArnDepend::add (QString *serviceName*, QString *stateName*)

Add a dependency for a *service*

Parameters

in	*serviceName*	is the name of the needed *service*.
in	*stateName*	is the needed *state* name.

Definition at line 164 of file ArnDepend.cpp.

14.2.4.3 void ArnDepend::completed ( ) [signal]

Signal emitted when all dependent services are available.

14.2.4.4 void ArnDepend::setMonitorName (QString *name*)

Set an optional monitor name for debugging.

Parameters

in	*name*	is the monitor name.

Definition at line 180 of file ArnDepend.cpp.

14.2.4.5 void ArnDepend::startMonitor ( )

Starting the dependency monitor.

Definition at line 186 of file ArnDepend.cpp.

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

- src/ArnInc/ArnDepend.hpp (2.2.0)
- src/ArnDepend.cpp (2.2.0)

14.3 ArnDependOffer Class Reference

Class for advertising that a *service* is available.

`#include <ArnDepend.hpp>`

Public Member Functions

- ArnDependOffer (QObject *parent=0)
- void advertise (QString serviceName)

  Advertise an available service
- void setStateName (const QString &name)

  Set the state of the service by a logic name.
- QString stateName () const
- void setStateId (int id)

  Set the state of the service by an id number.
- int stateId () const

14.3.1 Detailed Description

Class for advertising that a *service* is available.

Additionally it's possible to indicate the *state* of the *service*. The *state* can either be indicated by a logic name or by an id number whichever is prefered.

Example usage

```
// In class declare
ArnDependOffer* _depOffer;

// In class code
_depOffer = new ArnDependOffer( this);
_depOffer->advertise("MyService");  // Service now available
```

Definition at line 60 of file ArnDepend.hpp.

14.3.2 Constructor & Destructor Documentation

14.3.2.1 ArnDependOffer::ArnDependOffer (QObject * *parent* = 0) [explicit]

Definition at line 44 of file ArnDepend.cpp.

14.3.3 Member Function Documentation

14.3.3.1 void ArnDependOffer::advertise (QString *serviceName*)

Advertise an available *service*

Parameters

in	*serviceName*	is the name of the *service*.

Definition at line 50 of file ArnDepend.cpp.

14.3.3.2 void ArnDependOffer::setStateId (int *id*)

Set the *state* of the *service* by an id number.

The *state* starts of by 0 as default.

Parameters

in	*id*	is the *state* id number.

Definition at line 82 of file ArnDepend.cpp.

14.3.3.3 void ArnDependOffer::setStateName (const QString & *name*)

Set the *state* of the *service* by a logic name.

The *state* starts of by "Start" as default.

Parameters

in	*name*	is the *state* name.

Definition at line 70 of file ArnDepend.cpp.

14.3.3.4 int ArnDependOffer::stateId ( ) const

Returns

The *state* id number.

See also

setStateId()

Definition at line 88 of file ArnDepend.cpp.

14.3.3.5 QString ArnDependOffer::stateName ( ) const

Returns

The logic *state* name, e.g. the default "Start"

See also

setStateName()

Definition at line 76 of file ArnDepend.cpp.

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

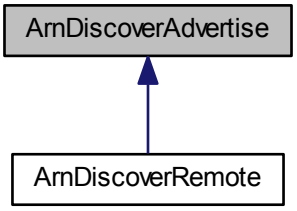
- src/ArnInc/ArnDepend.hpp (2.2.0)
- src/ArnDepend.cpp (2.2.0)

14.4 ArnDiscoverAdvertise Class Reference

Advertise an Arn service.

`#include <ArnDiscover.hpp>`

Inheritance diagram for ArnDiscoverAdvertise:



Classes

- struct State

  States of DiscoverAdvertise / These values must be synced with: ArnZeroConf::State.

Public Slots

- virtual void setService (QString service)

  Set the service name.

Signals

- void serviceChanged (QString serviceName)

  Indicate successfull advertise of service.
- void serviceChangeError (int code)

  Indicate unsuccessfull advertise of service.

Public Member Functions

- ArnDiscoverAdvertise (QObject *parent=0)
- QStringList groups () const

  Return service discover groups used for filter browsing.
- void setGroups (const QStringList &groups)

  Set service discover groups used for filter browsing.
- void addGroup (const QString &group)

  Add a service discover group.
- QString service () const

  Returns the requested service name for this Advertise.
- QString currentService () const

  Returns the current service name for this Advertise.
- State state () const

  Returns the state for this Advertise.
- void advertiseService (ArnDiscover::Type discoverType, QString serviceName, int port=-1, const QString &hostName=QString())

Start advertising the service.

- Arn::XStringMap customProperties () const

  Return service custom properties.

- void setCustomProperties (const Arn::XStringMap &customProperties)

  Set service custom properties.

- void addCustomProperty (const QString &key, const QString &val)

  Add service custom property.

14.4.1 Detailed Description

Advertise an Arn service.

About Arn Discover

Arn Discover is the mid level support for advertising services on an local network. For higher level support, use ArnDiscoverRemote.

Example usage

```
// In class declare
ArnDiscoverAdvertise*  _serviceAdvertiser;
ArnServer*  _server;

// In class code
_server = new ArnServer( ArnServer::Type::NetSync
  , this);
_server->start(0);  // Start server on dynamic port
int  serverPort = _server->port();

_serviceAdvertiser = new ArnDiscoverAdvertise( this);
_serviceAdvertiser->addGroup("myId/myProduct");
_serviceAdvertiser->addCustomProperty("MyProtoVer", "1.0")
  ;
_serviceAdvertiser->advertiseService(
  ArnDiscover::Type::Server, "My service", serverPort);
```

Definition at line 617 of file ArnDiscover.hpp.

14.4.2 Constructor & Destructor Documentation

14.4.2.1 ArnDiscoverAdvertise::ArnDiscoverAdvertise (QObject * *parent* = 0) [explicit]

Definition at line 585 of file ArnDiscover.cpp.

14.4.3 Member Function Documentation

14.4.3.1 void ArnDiscoverAdvertise::addCustomProperty (const QString & *key*, const QString & *val*)

Add service custom property.

The custom property are advised to have a *key* starting with a capital letter to avoid name collision with the system.

Parameters

in	*key*	property key (Start with capital letter) e.g. "MyProp"
in	*val*	property value kan be any text e.g. "my data"

Note

Properties must be set before calling advertiseService().

See also

setCustomProperties()

Definition at line 660 of file ArnDiscover.cpp.

14.4.3.2 void ArnDiscoverAdvertise::addGroup (const QString & *group*)

Add a service discover group.

Parameters

in	*group*	e.g. "Any Group ID"

Note

Groups must be set before calling advertiseService().

See also

setGroups()

Definition at line 718 of file ArnDiscover.cpp.

14.4.3.3 void ArnDiscoverAdvertise::advertiseService (ArnDiscover::Type *discoverType*, QString *serviceName*, int *port* = -1, const QString & *hostName* = QString())

Start advertising the service.

Tries to advertise the service on the local network. Result is indicated by serviceChanged() and serviceChangeError() signals.

Empty *serviceName* will be ignored, no advertising until using setService() with non empty name.

Parameters

in	*discoverType*	is used for discover filtering
in	*serviceName*	is requested name e.g. "My House Registry"
in	*port*	is the port of the service, -1 gives default Arn port number
in	*hostName*	is the host doing the service, empty gives this advertising host

See also

setService()
serviceChanged()
serviceChangeError()

Definition at line 593 of file ArnDiscover.cpp.

14.4.3.4 QString ArnDiscoverAdvertise::currentService ( ) const

Returns the current service name for this Advertise.

This is the realy advertised name when it's available otherwise it's the requested service name.

Returns

service namen (se above) e.g. "My House Registry (2)"

See also

setService()
service()
advertiseService()

Definition at line 678 of file ArnDiscover.cpp.

14.4.3.5 XStringMap ArnDiscoverAdvertise::customProperties ( ) const

Return service custom properties.

This is only the customer (application) properties, as there also are some Arn system properties.

Returns

custom properties

See also

setCustomProperties()

Definition at line 648 of file ArnDiscover.cpp.

14.4.3.6 QStringList ArnDiscoverAdvertise::groups ( ) const

Return service discover groups used for filter browsing.

Returns

groups e.g. ("mydomain.se", "mydomain.se/House", "Any Group ID")

See also

setGroups()

Definition at line 706 of file ArnDiscover.cpp.

14.4.3.7 QString ArnDiscoverAdvertise::service ( ) const

Returns the requested service name for this Advertise.

This is always the requested service name, the realy used name comes with the serviceChanged() signal and currentService().

Returns

requested service name, e.g. "My House Registry"

See also

setService()
currentService()
advertiseService()

Definition at line 672 of file ArnDiscover.cpp.

14.4.3.8 void ArnDiscoverAdvertise::serviceChanged (QString *serviceName*) [signal]

Indicate successfull advertise of service.

Parameters

in	*serviceName*	is the realy advertised name e.g. "My House Registry (2)"

See also

advertiseService()
setService()

14.4.3.9 void ArnDiscoverAdvertise::serviceChangeError (int *code*) [signal]

Indicate unsuccessfull advertise of service.

Parameters

in	*code*	error code.

See also

advertiseService()

14.4.3.10 void ArnDiscoverAdvertise::setCustomProperties (const Arn::XStringMap & *customProperties*)

Set service custom properties.

This is only the customer (application) properties, as there also are some Arn system properties.

These custom properties are advised to have a key starting with a capital letter to avoid name collision with the system.

Parameters

in	*customProperties*	e.g. Arn::XStringMap().add("MyProp", "my data")

Note

Properties must be set before calling advertiseService().

See also

customProperties()
addCustomProperty()
ArnDiscoverInfo::properties()

Definition at line 654 of file ArnDiscover.cpp.

14.4.3.11 void ArnDiscoverAdvertise::setGroups (const QStringList & *groups*)

Set service discover groups used for filter browsing.

Groups are used for filtering discovered services. They will also be availabe as properties with naming as "group0", "group1" ...

Parameters

in	*groups*	e.g. ("mydomain.se", "mydomain.se/House", "Any Group ID")

Note

Groups must be set before calling advertiseService().

See also

groups()
ArnDiscoverBrowser::setFilter()

Definition at line 712 of file ArnDiscover.cpp.

14.4.3.12 void ArnDiscoverAdvertise::setService (QString *service*) [virtual], [slot]

Set the service name.

Will update current advertised service name if this advertiser has been setup, otherwise the service name is stored for future use.

Service names can be any human readable id. It should be easy to understand, without any cryptic coding, and can usually be modified by the end user

Empty name is ignored. The requested service name is not guaranted to be used for advertise, as it has to be unique within this local network. The realy used name comes with the serviceChanged() signal and currentService().

Parameters

in	*service*	is the requested service name e.g. "My House Registry"

See also

service()
currentService()
advertiseService()
serviceChanged()
serviceChangeError()

Reimplemented in ArnDiscoverRemote.

Definition at line 690 of file ArnDiscover.cpp.

14.4.3.13 ArnDiscoverAdvertise::State ArnDiscoverAdvertise::state ( ) const

Returns the state for this Advertise.

Returns

current state

See also

State

Definition at line 684 of file ArnDiscover.cpp.

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

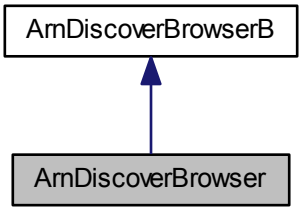
- src/ArnInc/ArnDiscover.hpp (2.2.0)
- src/ArnDiscover.cpp (2.2.0)

14.5 ArnDiscoverBrowser Class Reference

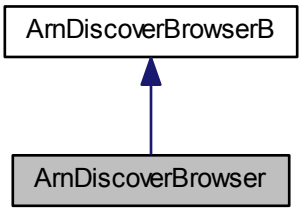
Browsing for Arn services.

`#include <ArnDiscover.hpp>`

Inheritance diagram for ArnDiscoverBrowser:



Collaboration diagram for ArnDiscoverBrowser:



Public Slots

- void browse (bool enable=true)

  Change state of browsing.
- void stopBrowse ()

  Stop browsing.

Public Member Functions

- ArnDiscoverBrowser (QObject ∗parent=0)
- bool isBrowsing () const

  Return the status of the browsing.
- void setFilter (ArnDiscover::Type typeFilter)

  Set service discover filter using predefined types.
- void setFilter (QString group)

  Set service discover filter using group name.

Additional Inherited Members

14.5.1 Detailed Description

Browsing for Arn services.

About Arn Discover

For a more complete example see the project ArnBrowser in DiscoverWindow.hpp and DiscoverWindow.cpp files.

Example usage

```
    // In class declare
    ArnDiscoverBrowser*  _serviceBrowser;
    QListWidget*  _serviceTabView;
    QLabel*  _hostNameValue;

    // In class code
    _serviceBrowser = new ArnDiscoverBrowser( this);
    connect(_serviceBrowser, SIGNAL(serviceAdded(int,QString)),
            this, SLOT(onServiceAdded(int,QString)));
    connect(_serviceBrowser, SIGNAL(serviceRemoved(int)), this,
      SLOT(onServiceRemoved(int)));
    connect(_serviceBrowser, SIGNAL(infoUpdated(int,
      ArnDiscoverInfo::State)),
            this, SLOT(onInfoUpdated(int,ArnDiscoverInfo::State
      )));

void  XXX::onServiceAdded( int index, QString name)
{
    _serviceTabView->insertItem( index, name);
}

void  XXX::onServiceRemoved( int index)
{
    QListWidgetItem*  item = _serviceTabView->takeItem( index);
    if (item)
        delete item;
}

void  XXX::onInfoUpdated( int index, ArnDiscoverInfo::State
       state)
{
    int  curIndex = _serviceTabView->currentRow();
    if (index != curIndex)  return;  // The updated info is not for selected
       row

    const ArnDiscoverInfo&  info = _serviceBrowser->infoByIndex
      ( curIndex);
    _hostNameValue->setText( info.hostName());
}
```

Definition at line 471 of file ArnDiscover.hpp.

14.5.2 Constructor & Destructor Documentation

14.5.2.1 ArnDiscoverBrowser::ArnDiscoverBrowser (QObject * *parent* = 0) [explicit]

Definition at line 165 of file ArnDiscover.cpp.

14.5.3 Member Function Documentation

14.5.3.1 void ArnDiscoverBrowser::browse (bool *enable* = true) [inline], [slot]

Change state of browsing.

When browsing is started, services will be discovered.

Parameters

in	*enable*	if true browsing is started, otherwise it is stopped

See also

stopBrowse()
serviceAdded()

Definition at line 510 of file ArnDiscover.hpp.

14.5.3.2 bool ArnDiscoverBrowser::isBrowsing ( ) const [inline]

Return the status of the browsing.

Return values

true	if browsing is started

See also

browse()

Definition at line 481 of file ArnDiscover.hpp.

14.5.3.3 void ArnDiscoverBrowser::setFilter (ArnDiscover::Type *typeFilter*) [inline]

Set service discover filter using predefined types.

When filter is enabled, only services that have the same type is discovered.

Parameters

in	*typeFilter*	

See also

ArnDiscoverAdvertise::advertiseService()

Definition at line 490 of file ArnDiscover.hpp.

14.5.3.4 void ArnDiscoverBrowser::setFilter (QString *group*) [inline]

Set service discover filter using group name.

If passing empy group, this is taken as subtype (filter) disabled. When subtype (filter) is enabled, only services that have the same group is discovered.

Parameters

in	*group*	the filter group name, e.g. "myGroup1"

See also

ArnDiscoverAdvertise::setGroups()

Definition at line 500 of file ArnDiscover.hpp.

14.5.3.5 void ArnDiscoverBrowser::stopBrowse ( ) [inline], [slot]

Stop browsing.

See also

browse()

Definition at line 516 of file ArnDiscover.hpp.

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

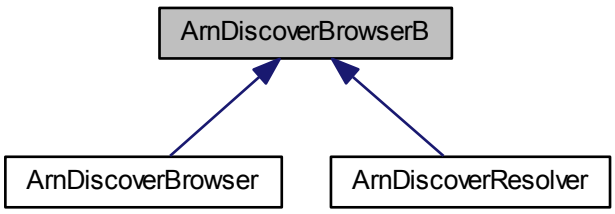
- src/ArnInc/ArnDiscover.hpp (2.2.0)
- src/ArnDiscover.cpp (2.2.0)

14.6 ArnDiscoverBrowserB Class Reference

Browse() and resolve() together, may never be used to the same instance.

`#include <ArnDiscover.hpp>`

Inheritance diagram for ArnDiscoverBrowserB:



Signals

- void serviceAdded (int index, QString name)

  Indicate service has been added (discovered)
- void serviceRemoved (int index)

  Indicate service has been removed.
- void infoUpdated (int index, ArnDiscoverInfo::State state)

  Indicate service has been updated.

Public Member Functions

- ArnDiscoverBrowserB (QObject *parent=0)
- int serviceCount () const

  Return the number of active discover services.
- const ArnDiscoverInfo & infoByIndex (int index)

  Return the discover service info by its index.
- const ArnDiscoverInfo & infoById (int id)

  Return the discover service info by its id.
- const ArnDiscoverInfo & infoByName (QString serviceName)

  Return the discover service info by its name.
- int indexToId (int index)

Return the discover service id by its index.

- int IdToIndex (int id)

  Return the discover service index by its id.

- int serviceNameToId (const QString &name)

  Return the discover service id by its name.

- ArnDiscoverInfo::State defaultStopState () const

  Return the default stop state for this service discover browser.

- void setDefaultStopState (ArnDiscoverInfo::State defaultStopState)

  Set the default stop state for this service discover browser.

- bool goTowardState (int index, ArnDiscoverInfo::State state)

  Command a service to go towards a stop state.

14.6.1 Detailed Description

Browse() and resolve() together, may never be used to the same instance.

Definition at line 220 of file ArnDiscover.hpp.

14.6.2 Constructor & Destructor Documentation

14.6.2.1 ArnDiscoverBrowserB::ArnDiscoverBrowserB (QObject * *parent* = 0) [explicit]

Definition at line 201 of file ArnDiscover.cpp.

14.6.3 Member Function Documentation

14.6.3.1 ArnDiscoverInfo::State ArnDiscoverBrowserB::defaultStopState ( ) const

Return the default stop state for this service discover browser.

This default stop state will be used for all services discovered by this browser.

Returns

default stop state

See also

setDefaultStopState()
goTowardState()
ArnDiscoverInfo::stopState()
State

Definition at line 293 of file ArnDiscover.cpp.

14.6.3.2 bool ArnDiscoverBrowserB::goTowardState (int *index*, ArnDiscoverInfo::State *state*)

Command a service to go towards a stop state.

The service is specified by its index. The wanted final state must be forward, otherwise it is ignored.

Parameters

in	*index*	for the service
in	*state*	is the wanted final state

See also

defaultStopState()
infoUpdated()
ArnDiscoverInfo::stopState()
State

Definition at line 305 of file ArnDiscover.cpp.

14.6.3.3 int ArnDiscoverBrowserB::IdToIndex (int *id*)

Return the discover service index by its id.

The index for a service info is only valid valid for a given moment, it can change as services are added and removed. If given a non existent id, -1 will be returned.

Parameters

in	*id*	

Returns

selected service discover index

See also

indexToId()
infoByIndex()

Definition at line 253 of file ArnDiscover.cpp.

14.6.3.4 int ArnDiscoverBrowserB::indexToId (int *index*)

Return the discover service id by its index.

The index for a service info is only valid valid for a given moment, it can change as services are added and removed. If given an invalid index, -1 will be returned.

Parameters

in	*index*	

Returns

selected service discover id

See also

IdToIndex()
infoById()

Definition at line 245 of file ArnDiscover.cpp.

14.6.3.5 const ArnDiscoverInfo & ArnDiscoverBrowserB::infoById (int *id*)

Return the discover service info by its id.

The id for a service info is unique and stays same over time, but the service can have been removed. If given a non existent service id, a Null discover info will be returned.

Parameters

in	*id*	

Returns

selected service discover info

See also

infoByIndex()

Definition at line 232 of file ArnDiscover.cpp.

14.6.3.6 const ArnDiscoverInfo & ArnDiscoverBrowserB::infoByIndex (int *index*)

Return the discover service info by its index.

The index for a service info is only valid valid for a given moment, it can change as services are added and removed. If given an invalid index, a Null discover info will be returned.

Parameters

in	*index*	

Returns

selected service discover info

See also

infoById()
infoByName()
indexToId()

Definition at line 222 of file ArnDiscover.cpp.

14.6.3.7 const ArnDiscoverInfo & ArnDiscoverBrowserB::infoByName (QString *serviceName*)

Return the discover service info by its name.

The service name is unique for a given moment, but the service can be removed and then reappear with a different service name. Also non used service names can be reused for a different service. If given a non existent service name, a Null discover info will be returned.

Parameters

in	*serviceName*	

Returns

selected service discover info

See also

serviceNameToId()

Definition at line 239 of file ArnDiscover.cpp.

14.6.3.8 void ArnDiscoverBrowserB::infoUpdated (int *index*, ArnDiscoverInfo::State *state*) [signal]

Indicate service has been updated.

Parameters

in	*index*	for the service
in	*state*	is the current state of the service info

See also

goTowardState()
serviceAdded()

14.6.3.9 void ArnDiscoverBrowserB::serviceAdded (int *index*, QString *name*) [signal]

Indicate service has been added (discovered)

The service has been added to a list sorted by ascending service names. The index is a reference to this sorted list.

Parameters

in	*index*	for the service
in	*name*	is the service name e.g. "My House Registry"

See also

serviceRemoved()
infoUpdated()

14.6.3.10 int ArnDiscoverBrowserB::serviceCount ( ) const

Return the number of active discover services.

Returns

number of services

Definition at line 216 of file ArnDiscover.cpp.

14.6.3.11 int ArnDiscoverBrowserB::serviceNameToId (const QString & *name*)

Return the discover service id by its name.

The service name is unique for a given moment. If given a non existent service name, -1 will be returned.

Parameters

in	*name*	

Returns

selected service discover id

See also

IdToIndex()
infoByName()

Definition at line 259 of file ArnDiscover.cpp.

14.6.3.12 void ArnDiscoverBrowserB::serviceRemoved (int *index*) [signal]

Indicate service has been removed.

Parameters

in	*index*	for the service

See also

serviceAdded()

14.6.3.13 void ArnDiscoverBrowserB::setDefaultStopState (ArnDiscoverInfo::State *defaultStopState*)

Set the default stop state for this service discover browser.

This default stop state will be used for all services discovered by this browser.

Parameters

in	*defaultStopState*	

See also

defaultStopState()
goTowardState()
ArnDiscoverInfo::stopState()
State

Definition at line 299 of file ArnDiscover.cpp.

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

- src/ArnInc/ArnDiscover.hpp (2.2.0)
- src/ArnDiscover.cpp (2.2.0)

14.7 ArnDiscoverConnector Class Reference

An automatic client discover connector.

`#include <ArnDiscoverConnect.hpp>`

Public Slots

- void setService (QString service)

  Set the service name for the connection.

Signals

- void clientReadyToConnect (ArnClient *arnClient, const QString &id)

  Signal for external client connection.

Public Member Functions

- ArnDiscoverConnector (ArnClient &client, const QString &id)
- void clearDirectHosts ()

  Clear the direct host connection list.
- void addToDirectHosts (const QString &arnHost, quint16 port=0)

  Add an Arn Server to the direct host connection list.
- void setResolver (ArnDiscoverResolver *resolver)

  Set the ArnDiscoverResolver to be used.
- void start ()

  Start connector.
- QString id () const

  Return the identifier for this connector.
- QString service () const

  Returns the service name for this connection.
- int directHostPrio () const

  Return the priority for direct hosts
- void setDirectHostPrio (int directHostPrio)

  Set the priority for direct hosts
- int discoverHostPrio () const

  Return the priority for discovered hosts
- void setDiscoverHostPrio (int discoverHostPrio)

  Set the priority for discovered hosts
- int resolveRefreshTimeout () const

  Return the resolv refresh period.
- void setResolveRefreshTimeout (int resolveRefreshTimeout)

  Set the resolv refresh period.
- bool externalClientConnect () const

  Return the external client connect mode.
- void setExternalClientConnect (bool externalClientConnect)

  Set the external client connect mode.

14.7.1 Detailed Description

An automatic client discover connector.

About Arn Discover Remote

This connector class manages client connections. Both as a list of possible *direct host* addresses and using a service name for reolving into a *discover host*. The two methods can coexist and as standard the *discover host* has lowest priority number, i.e. tried first.

An *id* is assigned to every connector. The *id* should be chosen to describe the client target or its purpose. It's not a host address or necessarily a specific host, as there can be many possible addresses assigned to the ArnDiscover-Connector.

The *id* will appear as an *Arn folder*, e.g. when *id* is "WeatherData-XYZ" the *connector folder path* will be "Sys/-Discover/Connect/WeatherData-XYZ/".

Example usage

```
// In class declare
ArnDiscoverConnector*  _connector
ArnClient  _arnClient;

// In class code
_arnClient.addMountPoint("//");
_arnClient.setAutoConnect(true);

_connector = new ArnDiscoverConnector( _arnClient, "
  MyConnectionId");
_connector->setResolver( new ArnDiscoverResolver());
_connector->setService("My Service");
_connector->addToDirectHosts("localhost");
_connector->start();
```

Examples:

ArnDemoChat/MainWindow.cpp.

Definition at line 74 of file ArnDiscoverConnect.hpp.

14.7.2 Constructor & Destructor Documentation

14.7.2.1 ArnDiscoverConnector::ArnDiscoverConnector (ArnClient & *client,* const QString & *id*)

Definition at line 43 of file ArnDiscoverConnect.cpp.

14.7.3 Member Function Documentation

14.7.3.1 void ArnDiscoverConnector::addToDirectHosts (const QString & *arnHost,* quint16 *port* = 0)

Add an *Arn Server* to the *direct host* connection list.

Parameters

in	*arnHost*	is host name or ip address, e.g. "192.168.1.1".
in	*port*	is the host port, 0 gives Arn::defaultTcpPort.

See also

clearDirectHosts()
ArnClient

Definition at line 72 of file ArnDiscoverConnect.cpp.

14.7.3.2 void ArnDiscoverConnector::clearDirectHosts ( )

Clear the *direct host* connection list.

Typically used to start making a new connection list.

See also

addToDirectHosts()
ArnClient

Definition at line 66 of file ArnDiscoverConnect.cpp.

14.7.3.3 void ArnDiscoverConnector::clientReadyToConnect (ArnClient * *arnClient,* const QString & *id*) [signal]

Signal for external client connection.

When activated external client connection by the method setExternalClientConnect(), this signal will be emitted when the client has been prepared to connect.

It's the responsibility of the receiver to do the actual client connect by ArnClient::connectToArnList().

Parameters

in	*arnClient*	being ready for connection
in	*id*	is the identifier used in ArnDiscoverRemote::newConnector(), e.g "Weather-Data-XYZ"

See also

ArnDiscoverRemote::newConnector()
setExternalClientConnect()

14.7.3.4 int ArnDiscoverConnector::directHostPrio ( ) const

Return the priority for *direct hosts*

Returns

direct host priority

See also

setDirectHostPrio()

Definition at line 128 of file ArnDiscoverConnect.cpp.

14.7.3.5 int ArnDiscoverConnector::discoverHostPrio ( ) const

Return the priority for *discovered hosts*

Returns

discoverHostPrio is the priority.

See also

setDiscoverHostPrio()

Definition at line 116 of file ArnDiscoverConnect.cpp.

14.7.3.6 bool ArnDiscoverConnector::externalClientConnect ( ) const

Return the *external client connect* mode.

Returns

true when active.

See also

setExternalClientConnect()

Definition at line 140 of file ArnDiscoverConnect.cpp.

14.7.3.7 QString ArnDiscoverConnector::id ( ) const

Return the identifier for this connector.

Returns

the identifier, e.g "WeatherData-XYZ"

See also

ArnDiscoverRemote::newConnector()

Definition at line 98 of file ArnDiscoverConnect.cpp.

14.7.3.8 int ArnDiscoverConnector::resolveRefreshTimeout ( ) const

Return the resolv refresh period.

Returns

resolve refresh timeout in seconds.

See also

setResolveRefreshTimeout()

Definition at line 104 of file ArnDiscoverConnect.cpp.

14.7.3.9 QString ArnDiscoverConnector::service ( ) const

Returns the service name for this connection.

Returns

service name, e.g. "My House Registry"

See also

setService()

Definition at line 152 of file ArnDiscoverConnect.cpp.

14.7.3.10 void ArnDiscoverConnector::setDirectHostPrio (int *directHostPrio*)

Set the priority for *direct hosts*

This priority controls order between *direct hosts* and *discover host*. Low priority number give earlier try for its hosts.

Parameters

in	*directHostPrio*	is the priority.

Note

The priority for *direct hosts* and *discover hosts* must be different.

See also

directHostPrio()

Definition at line 134 of file ArnDiscoverConnect.cpp.

14.7.3.11 void ArnDiscoverConnector::setDiscoverHostPrio (int *discoverHostPrio*)

Set the priority for *discovered hosts*

This priority controls order between *direct hosts* and *discover host*. Low priority number give earlier try for its hosts.

Parameters

in	*discoverHostPrio*	is the priority.

Note

The priority for *direct hosts* and *discover hosts* must be different.

See also

discoverHostPrio()

Definition at line 122 of file ArnDiscoverConnect.cpp.

14.7.3.12 void ArnDiscoverConnector::setExternalClientConnect (bool *externalClientConnect*)

Set the *external client connect* mode.

This mode is used when there is a need to do special processing when connecting a client. Then QObject::connect() should be used for the signal clientReadyToConnect() and a *receiver* doing the special processing.

It's the responsibility of the *receiver* to do the actual client connect by ArnClient::connectToArnList().

Parameters

in	*externalClient-Connect*	true to activate.

See also

externalClientConnect()

Definition at line 146 of file ArnDiscoverConnect.cpp.

14.7.3.13 void ArnDiscoverConnector::setResolver (ArnDiscoverResolver * *resolver*)

Set the ArnDiscoverResolver to be used.

The resolver handles resolving a known service name into a host name.

Ownership is taken of this resolver. Any previos set resolver will be deleted.

Parameters

in	*resolver*	is the used ArnDiscoverResolver. Use 0 (null) to set none.

Examples:

ArnDemoChat/MainWindow.cpp.

Definition at line 78 of file ArnDiscoverConnect.cpp.

14.7.3.14 void ArnDiscoverConnector::setResolveRefreshTimeout (int *resolveRefreshTimeout*)

Set the resolv refresh period.

The refresh period is used when there is a failure to connect to a *discover host*.

The rationale is that the current resolv might be outdated as there is an error when connecting to the resolved host. A refreshed resolv will be done at an intervall of *resolveRefreshTimeout* until connection to resolved host is successful.

Parameters

in	*resolveRefresh-Timeout*	is the period in seconds.

See also

resolveRefreshTimeout()

Definition at line 110 of file ArnDiscoverConnect.cpp.

14.7.3.15 void ArnDiscoverConnector::setService (QString *service*) [slot]

Set the service name for the connection.

This is only functional if using ArnDiscoverResolver, see setResolver().

Will update connection service name if the resolver has been setup, otherwise the service name is only stored for future use.

For remote control the service name is also available as an *Arn Data Object* at local path: *connector folder path* + "Service/value", e.g. "Sys/Discover/Connect/WeatherData-XYZ/Service/value".

Parameters

in	*service*	is the requested connection service name e.g. "My House Registry"

See also

ArnDiscoverAdvertise::setService()

Examples:

ArnDemoChat/MainWindow.cpp.

Definition at line 158 of file ArnDiscoverConnect.cpp.

14.7.3.16 void ArnDiscoverConnector::start ( )

Start connector.

See also

addToDirectHosts()
setResolver()

Examples:

ArnDemoChat/MainWindow.cpp.

Definition at line 167 of file ArnDiscoverConnect.cpp.

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

- src/ArnInc/ArnDiscoverConnect.hpp (2.2.0)
- src/ArnDiscoverConnect.cpp (2.2.0)

14.8 ArnDiscoverInfo Class Reference

Class for holding current discover info of one service.

`#include <ArnDiscover.hpp>`

Classes

- struct State

  State of Arn discover browse data. Can be tested by relative order.

Public Member Functions

- ArnDiscoverInfo ()
- bool inProgress () const

  Is discover in progress for this service.
- bool isError () const

  Is in an error state for this service.
- State state () const

  Return the state for this service.
- State stopState () const

  Return the stop state for this service.
- ArnDiscover::Type type () const

  Return the discover type for this service.
- QStringList groups () const

  Return the groups for this service.
- QString serviceName () const

  Return the service name for this service.
- QString domain () const

  Return the domain for this service.
- QString hostName () const

  Return the host name for this service.
- quint16 hostPort () const

  Return the port for this service.
- QHostAddress hostIp () const

  Return the host ip-address for this service.
- Arn::XStringMap properties () const

Return the properties for this service.

- QString typeString () const

  Return the printable type for this service.

- QString hostPortString () const

  Return the printable host port for this service.

- QString hostIpString () const

  Return the printable host ip-address for this service.

- QString hostWithInfo () const

  Get the the HostWithInfo string.

- int resolvCode () const

  Return the latest resolv error code for this service.

Friends

- class ArnDiscoverBrowserB

14.8.1 Detailed Description

Class for holding current discover info of one service.

About Arn Discover

This class holds the service info and its discover state.

Definition at line 68 of file ArnDiscover.hpp.

14.8.2 Constructor & Destructor Documentation

14.8.2.1 ArnDiscoverInfo::ArnDiscoverInfo ( )

Definition at line 44 of file ArnDiscover.cpp.

14.8.3 Member Function Documentation

14.8.3.1 QString ArnDiscoverInfo::domain ( ) const

Return the domain for this service.

Returns

domain, e.g. "local."

Definition at line 95 of file ArnDiscover.cpp.

14.8.3.2 QStringList ArnDiscoverInfo::groups ( ) const

Return the groups for this service.

Groups are used for filtering discovered services. They will also be availabe as properties with naming as "group0", "group1" ...

Returns

groups, e.g. ("mydomain.se", "mydomain.se/House", "Any Group ID")

See also

ArnDiscoverAdvertise::setGroups()

Definition at line 83 of file ArnDiscover.cpp.

14.8.3.3 QHostAddress ArnDiscoverInfo::hostIp ( ) const

Return the host ip-address for this service.

Returns

host ip-address

Definition at line 113 of file ArnDiscover.cpp.

14.8.3.4 QString ArnDiscoverInfo::hostIpString ( ) const

Return the printable host ip-address for this service.

Will return empty string if no valid ip available

Returns

host ip-address, e.g. "192.168.1.1", "" etc

Definition at line 145 of file ArnDiscover.cpp.

14.8.3.5 QString ArnDiscoverInfo::hostName ( ) const

Return the host name for this service.

Returns

host name, e.g. "myHost.local"

See also

ArnDiscoverAdvertise::advertiseService()

Definition at line 101 of file ArnDiscover.cpp.

14.8.3.6 quint16 ArnDiscoverInfo::hostPort ( ) const

Return the port for this service.

Returns

port

See also

ArnDiscoverAdvertise::advertiseService()

Definition at line 107 of file ArnDiscover.cpp.

14.8.3.7 QString ArnDiscoverInfo::hostPortString ( ) const

Return the printable host port for this service.

Will return empty string if no valid port available

Returns

host port, e.g. "2022", "" etc

Definition at line 139 of file ArnDiscover.cpp.

14.8.3.8 QString ArnDiscoverInfo::hostWithInfo ( ) const

Get the the *HostWithInfo* string.

ArnClient and alike accepts such *HostWithInfo* strings for connection.

Returns

The *HostWithInfo* string, e.g. "192.168.1.1 [myhost.local]"

See also

Arn::makeHostWithInfo()

Definition at line 151 of file ArnDiscover.cpp.

14.8.3.9 bool ArnDiscoverInfo::inProgress ( ) const

Is discover in progress for this service.

Return values

true	if discover is in progress

See also

state()

Definition at line 53 of file ArnDiscover.cpp.

14.8.3.10 bool ArnDiscoverInfo::isError ( ) const

Is in an error state for this service.

Return values

true	if in error state

See also

state()

Definition at line 59 of file ArnDiscover.cpp.

14.8.3.11 XStringMap ArnDiscoverInfo::properties ( ) const

Return the properties for this service.

Will return booth Arn system properties and custom (application) properties. System properties will always have a key starting with a lower case letter e.g. "protovers".

Returns

properties

See also

ArnDiscoverAdvertise::setCustomProperties()

Definition at line 119 of file ArnDiscover.cpp.

14.8.3.12 int ArnDiscoverInfo::resolvCode ( ) const

Return the latest resolv error code for this service.

This code can come from booth resolving a service and lookup ip-address.

Returns

error code

See also

ArnZeroConf::Error

Definition at line 157 of file ArnDiscover.cpp.

14.8.3.13 QString ArnDiscoverInfo::serviceName ( ) const

Return the service name for this service.

Returns

service name, e.g. "My House Registry"

See also

ArnDiscoverAdvertise::advertiseService()
ArnDiscoverAdvertise::setService()

Definition at line 89 of file ArnDiscover.cpp.

14.8.3.14 ArnDiscoverInfo::State ArnDiscoverInfo::state ( ) const

Return the state for this service.

Returns

state

See also

State

Definition at line 65 of file ArnDiscover.cpp.

14.8.3.15 ArnDiscoverInfo::State ArnDiscoverInfo::stopState ( ) const

Return the stop state for this service.

The discover logic will stop when reaching the stop state for a service.

Returns

stop state

See also

ArnDiscoverBrowserB::setDefaultStopState()
ArnDiscoverBrowserB::goTowardState()
State

Definition at line 71 of file ArnDiscover.cpp.

14.8.3.16 ArnDiscover::Type ArnDiscoverInfo::type ( ) const

Return the discover type for this service.

Returns

discover type

See also

Type
ArnDiscoverAdvertise::advertiseService()

Definition at line 77 of file ArnDiscover.cpp.

14.8.3.17 QString ArnDiscoverInfo::typeString ( ) const

Return the printable type for this service.

Returns

type, e.g. "Client"

Definition at line 125 of file ArnDiscover.cpp.

14.8.4 Friends And Related Function Documentation

14.8.4.1 friend class ArnDiscoverBrowserB [friend]

Definition at line 70 of file ArnDiscover.hpp.

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

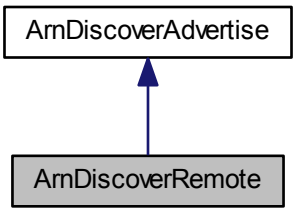
- src/ArnInc/ArnDiscover.hpp (2.2.0)
- src/ArnDiscover.cpp (2.2.0)

14.9 ArnDiscoverRemote Class Reference

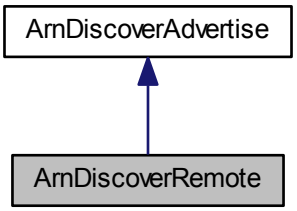
Discover with remote setting.

`#include <ArnDiscoverRemote.hpp>`

Inheritance diagram for ArnDiscoverRemote:



Collaboration diagram for ArnDiscoverRemote:



Public Slots

- virtual void setService (QString service)

  Set the service name.

Signals

- void clientReadyToConnect (ArnClient *arnClient, const QString &id)

  Central signal for external client connection.

Public Member Functions

- ArnDiscoverRemote (QObject *parent=0)
- QString defaultService () const

  Return the default service name.

- void setDefaultService (const QString &defaultService)

  Set the default service name.
- int initialServiceTimeout () const

  Return the time for initial timeout processing.
- void setInitialServiceTimeout (int initialServiceTimeout)

  Set the time for initial timeout processing.
- void startUseServer (ArnServer *arnServer, ArnDiscover::Type discoverType=ArnDiscover::Type::Server)

  Start advertising the ArnServer as a service.
- void startUseNewServer (ArnDiscover::Type discoverType, int port=-1)

  Start a new ArnServer and advertise as a service.
- ArnDiscoverConnector * newConnector (ArnClient &client, const QString &id)

  Create and return an ArnDiscoverConnector for handling remote client.

14.9.1 Detailed Description

Discover with remote setting.

About Arn Discover Remote

This class is the main class for handling discover with remote setting.

Following rules apply:

- If service is set before start using server, this service will be used.
- If no persist is active or it gives an empty service name, timeout-processing is done.
- Timeout-processing can wait upto initialServiceTimeout(), after that defaultService() will be used as service.
- If service is set by any method before timeout-processing has finnished, that service is used. Timeout-processing is then also aborted.
- After initial advertise of the service, it can be changed by any method and the changed service will be used.
- The used service will also be saved if using persist.
- Methods to change service are ArnDiscoverRemote::setService() and corresponding *Arn Data Objects* which can be changed locally or remote.

For a complete example of advertisng a server, see the project ArnServer in ServerMain.hpp and ServerMain.cpp files.

Example usage

```
// In class declare
ArnDiscoverRemote*  _discoverRemote;
ArnClient*  _client;

// In class code
_client = new ArnClient;
_client->addMountPoint("//");
_client->setAutoConnect( true);

_discoverRemote = new ArnDiscoverRemote( this);
_discoverRemote->setDefaultService("My default service");
_discoverRemote->addGroup("myId/myProduct");
_discoverRemote->addCustomProperty("MyProtoVer", "1.0");
_discoverRemote->startUseNewServer(
  ArnDiscover::Type::Client, 0);  // Dynamic server

ArnDiscoverConnector*  connector = _discoverRemote->
  newConnector( *_client, "House");
connector->setResolver( new ArnDiscoverResolver
  ());
connector->start();

ArnPersist*  persist = new ArnPersist( this);
persist->setupDataBase();
persist->setMountPoint( Arn::pathLocal);
```

Examples:

ArnDemoChatServer/MainWindow.cpp, and ArnDemoChatServer/MainWindow.hpp.

Definition at line 93 of file ArnDiscoverRemote.hpp.

14.9.2 Constructor & Destructor Documentation

14.9.2.1 ArnDiscoverRemote::ArnDiscoverRemote (QObject * *parent* = 0) [explicit]

Definition at line 46 of file ArnDiscoverRemote.cpp.

14.9.3 Member Function Documentation

14.9.3.1 void ArnDiscoverRemote::clientReadyToConnect (ArnClient * *arnClient,* const QString & *id*) [signal]

Central signal for external client connection.

When activated external client connection by the connector method ArnDiscoverConnector::setExternalClientConnect(), this signal will be emitted when the client has been prepared to connect.

It's the responsibility of the receiver to do the actual client connect by ArnClient::connectToArnList().

Parameters

in	*arnClient*	being ready for connection
in	*id*	is the identifier used in newConnector(), e.g "WeatherData-XYZ"

See also

newConnector()
ArnDiscoverConnector::setExternalClientConnect()

14.9.3.2 QString ArnDiscoverRemote::defaultService ( ) const

Return the default service name.

Returns

default service name, e.g. "Arn Default Service"

See also

setDefaultService()

Definition at line 195 of file ArnDiscoverRemote.cpp.

14.9.3.3 int ArnDiscoverRemote::initialServiceTimeout ( ) const

Return the time for initial timeout processing.

Returns

time in seconds

See also

setInitialServiceTimeout()

Definition at line 208 of file ArnDiscoverRemote.cpp.

14.9.3.4 ArnDiscoverConnector * ArnDiscoverRemote::newConnector (ArnClient & *client,* const QString & *id*)

Create and return an ArnDiscoverConnector for handling remote client.

The ArnDiscoverConnector is internally connected to this ArnDiscoverRemote.

The *id* should be chosen to describe the client target or its purpose. It's not a host address or necessarily a specific host, as there can be many possible addresses assigned to the ArnDiscoverConnector.

The *id* will appear as an *Arn folder*, e.g. when *id* is "WeatherData-XYZ" the folder path will be "Sys/Discover/-Connect/WeatherData-XYZ/".

Parameters

in	*client*	
in	*id*	identifies the target of the client connection, e.g "WeatherData-XYZ"

Returns

The ArnDiscoverConnector

Definition at line 108 of file ArnDiscoverRemote.cpp.

14.9.3.5 void ArnDiscoverRemote::setDefaultService (const QString & *defaultService*)

Set the default service name.

This default service name will be used when no service has been set before timeout. If calling with *defaultService* empty, it's ignored.

Parameters

in	*defaultService*	e.g. "My Default Service"

See also

defaultService()

Definition at line 201 of file ArnDiscoverRemote.cpp.

14.9.3.6 void ArnDiscoverRemote::setInitialServiceTimeout (int *initialServiceTimeout*)

Set the time for initial timeout processing.

Initial timeout-processing can wait upto this time, after that defaultService() will be used as service.

Parameters

in	*initialService-Timeout*	in seconds

See also

initialServiceTimeout()

Definition at line 214 of file ArnDiscoverRemote.cpp.

14.9.3.7 void ArnDiscoverRemote::setService (QString *service*) [virtual], [slot]

Set the service name.

Will update current advertised service name if this advertiser has been setup, otherwise the service name is stored for future use.

For remote control the service name is also available as an *Arn Data Object* at local path "Sys/Discover/This/-Service/value".

All the functionaly from ArnDiscoverAdvertise::setService() apply.

Parameters

in	*service*	is the requested service name e.g. "My House Registry"

See also

ArnDiscoverAdvertise::setService()
currentService()
advertiseService()

Reimplemented from ArnDiscoverAdvertise.

Definition at line 180 of file ArnDiscoverRemote.cpp.

14.9.3.8 void ArnDiscoverRemote::startUseNewServer (ArnDiscover::Type *discoverType*, int *port* = -1)

Start a new ArnServer and advertise as a service.

Handle advertising an internally created ArnServer as a service on the local network.

This method is typically used when there is no need to access the ArnServer class, which usually is the case in an client application. The ArnServer is then merely used to make the discover functionality remote controlled.

All the functionaly from startUseServer() do apply.

Parameters

in	*discoverType*	is used for discover filtering
in	*port*	is the port of the service, -1 gives Arn::defaultTcpPort, 0 gives dynamic port

See also

setService()
setDefaultService()
startUseServer()

Definition at line 97 of file ArnDiscoverRemote.cpp.

14.9.3.9 void ArnDiscoverRemote::startUseServer (ArnServer * *arnServer*, ArnDiscover::Type *discoverType* = ArnDiscover::Type::Server)

Start advertising the ArnServer as a service.

Handle advertising of an existing ArnServer as a service on the local network. Everything is fully automatic, including remote setting service name and support for persistent storage of the name. Status can be accessed via *Arn Data Objects*.

Parameters

in	*arnServer*	is the ArnServer to be advertised
in	*discoverType*	is used for discover filtering

See also

setService()
setDefaultService()
startUseNewServer()

Definition at line 57 of file ArnDiscoverRemote.cpp.

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

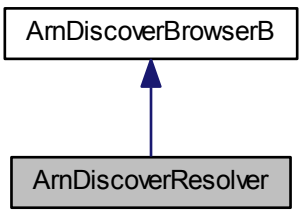
- src/ArnInc/ArnDiscoverRemote.hpp (2.2.0)
- src/ArnDiscoverRemote.cpp (2.2.0)

14.10 ArnDiscoverResolver Class Reference

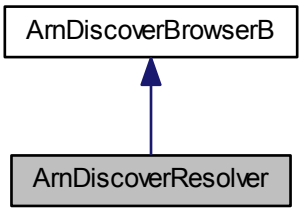
Resolv an Arn service.

`#include <ArnDiscover.hpp>`

Inheritance diagram for ArnDiscoverResolver:



Collaboration diagram for ArnDiscoverResolver:



Public Slots

- int resolve (QString serviceName, bool forceUpdate=true)

  Resolve a specific service name.

Public Member Functions

- ArnDiscoverResolver (QObject *parent=0)
- QString defaultService () const

  Return the default service name.
- void setDefaultService (const QString &defaultService)

  Set the default service name.

Additional Inherited Members

14.10.1 Detailed Description

Resolv an Arn service.

About Arn Discover

Example usage

```
    // In class declare
    ArnDiscoverResolver*  _resolver;

    // In class code
    _resolver = new ArnDiscoverResolver( this);
    connect( _resolver, SIGNAL(infoUpdated(int,
      ArnDiscoverInfo::State)),
            this, SLOT(doClientResolvChanged(int,ArnDiscoverInfo::State
      )));
    _resolver->resolve("My service");

void  XXX::doClientResolvChanged( int index, ArnDiscoverInfo::State
       state)
{
    const ArnDiscoverInfo&  info = _resolver->infoByIndex
      ( index);

    if (state == state.HostIp) {
        qDebug() << "Resolved service:" << info.serviceName()
                 << " into host:" << info.hostWithInfo();
    }
    else if (info.isError()) {
        qDebug() << "Error resolving service:" << info.serviceName()
```

```
                << " code:" << info.resolvCode();
    }
}
```

Examples:

ArnDemoChat/MainWindow.cpp.

Definition at line 550 of file ArnDiscover.hpp.

14.10.2 Constructor & Destructor Documentation

14.10.2.1 ArnDiscoverResolver::ArnDiscoverResolver (QObject * *parent* = 0) [explicit]

Definition at line 173 of file ArnDiscover.cpp.

14.10.3 Member Function Documentation

14.10.3.1 QString ArnDiscoverResolver::defaultService ( ) const

Return the default service name.

This default service name will be used when resolve() is called with empty service name.

Returns

default service name, e.g. "Arn Default Service"

See also

setDefaultService()
resolve()

Definition at line 186 of file ArnDiscover.cpp.

14.10.3.2 int ArnDiscoverResolver::resolve (QString *serviceName*, bool *forceUpdate* = true) [slot]

Resolve a specific service name.

Only the specified service will be resolved, but there can be many ongoing resolves by calling this method multiple times with different service names. The infoUpdated() signal will always be emitted when calling this method. The signal can also be emitted multiple times later regarding the same service.

Parameters

in	*serviceName*	is the service to be resolved
in	*forceUpdate*	when true, a new resolve is always done, otherwise a service name that already is resolved will not be resolved again.

Returns

index to service info

See also

indexToId()
infoUpdated()

Definition at line 180 of file ArnDiscover.cpp.

14.10.3.3 void ArnDiscoverResolver::setDefaultService (const QString & *defaultService*)

Set the default service name.

This default service name will be used when resolve() is called with empty service name. If calling with *defaultService* empty, it is ignored.

Parameters

in	*defaultService*	e.g. "My Default Service"

See also

defaultService()
resolve()

Definition at line 192 of file ArnDiscover.cpp.

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

- src/ArnInc/ArnDiscover.hpp (2.2.0)
- src/ArnDiscover.cpp (2.2.0)

14.11 ArnError Struct Reference

`#include <ArnError.hpp>`

Classes

- struct StdCode

Public Types

- enum E {
  Ok = 0, Info = StdCode::Info, Warning = StdCode::Warning, Undef = StdCode::Err_Undef,
  CreateError = StdCode::Err_Custom, NotFound, NotOpen, AlreadyExist,
  AlreadyOpen, Retired, NotMainThread, FolderNotOpen,
  ItemNotOpen, ItemNotSet, ConnectionError, RecUnknown,
  ScriptError, RpcInvokeError, RpcReceiveError, Err_N }

14.11.1 Detailed Description

Definition at line 38 of file ArnError.hpp.

14.11.2 Member Enumeration Documentation

14.11.2.1 enum ArnError::E

Enumerator:

Ok

Info

Warning

Undef

CreateError

NotFound

NotOpen

AlreadyExist

AlreadyOpen

Retired

NotMainThread

FolderNotOpen

ItemNotOpen

ItemNotSet

ConnectionError

RecUnknown

ScriptError

RpcInvokeError

RpcReceiveError

Err_N

Definition at line 51 of file ArnError.hpp.

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

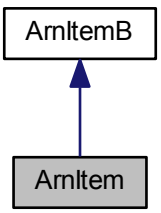
- src/ArnInc/ArnError.hpp (2.2.0)

14.12 ArnItem Class Reference

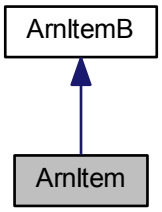
Handle for an *Arn Data Object*.

`#include <ArnItem.hpp>`

Inheritance diagram for ArnItem:



Collaboration diagram for ArnItem:



Public Slots

- void setValue (int value, int ignoreSame=Arn::SameValue::DefaultAction)

  Assign an integer to an Arn Data Object
- void setValue (double value, int ignoreSame=Arn::SameValue::DefaultAction)

  Assign a double to an Arn Data Object
- void setValue (bool value, int ignoreSame=Arn::SameValue::DefaultAction)

  Assign a bool to an Arn Data Object
- void setValue (const QString &value, int ignoreSame=Arn::SameValue::DefaultAction)

  Assign a QString to an Arn Data Object
- void setValue (const QByteArray &value, int ignoreSame=Arn::SameValue::DefaultAction)

  Assign a QByteArray to an Arn Data Object
- void setValue (const QVariant &value, int ignoreSame=Arn::SameValue::DefaultAction)

  Assign a QVariant to an Arn Data Object
- void setValue (const char *value, int ignoreSame=Arn::SameValue::DefaultAction)

  Assign a char to an Arn Data Object*
- void toggleBool ()

  Toggle the bool at the Arn Data Object

Signals

- void changed ()

  Signals emitted when data in Arn Data Object is changed.
- void changed (int value)
- void changed (double value)
- void changed (bool value)
- void changed (QString value)
- void changed (QByteArray value)
- void changed (QVariant value)
- void modeChanged (Arn::ObjectMode mode)

  Signal emitted when mode in Arn Data Object is changed.
- void arnItemCreated (QString path)

  Signal emitted when an Arn Data Object is created in the tree below.
- void arnModeChanged (QString path, uint linkId, Arn::ObjectMode mode)

  Signal emitted when an Arn Data Object in the tree below has a general mode change.

Public Member Functions

- ArnItem (QObject *parent=0)

  Standard constructor of a closed handle.
- ArnItem (const QString &path, QObject *parent=0)

  Construction of a handle to a path.
- ArnItem (const ArnItem &itemTemplate, const QString &path, QObject *parent=0)

  Construction of a handle to a path with a template for modes
- virtual ~ArnItem ()
- bool openUuid (const QString &path)

  Open a handle to an Arn Object with a unique uuid name.
- bool openUuidPipe (const QString &path)

  Open a handle to an Arn Pipe Object with a unique uuid name.
- bool openFolder (const QString &path)

  Open a handle to an Arn folder.
- bool isFolder () const
- bool isBiDir () const
- Arn::DataType type () const

  The type stored in the Arn Data Object
- void setIgnoreSameValue (bool isIgnore=true)

  Set skipping assignment of equal value.
- bool isIgnoreSameValue ()
- void addMode (Arn::ObjectMode mode)

  Add general mode settings for this Arn Data Object
- Arn::ObjectMode getMode () const
- Arn::ObjectSyncMode syncMode () const
- ArnItem & setTemplate (bool isTemplate=true)

  Mark this ArnItem as a template.
- bool isTemplate () const
- ArnItem & setBiDirMode ()

  Set general mode as Bidirectional for this Arn Data Object
- bool isBiDirMode () const
- ArnItem & setPipeMode ()

  Set general mode as Pipe for this Arn Data Object
- bool isPipeMode () const
- ArnItem & setSaveMode ()

  Set general mode as Save for this Arn Data Object
- bool isSaveMode () const
- ArnItem & setMaster ()

  Set client session sync mode as Master for this ArnItem.
- bool isMaster () const
- ArnItem & setAutoDestroy ()

  Set client session sync mode as AutoDestroy for this ArnItem.
- bool isAutoDestroy () const
- void setDelay (int delay)

  Set delay of data changed signal.
- void arnImport (const QByteArray &data, int ignoreSame=Arn::SameValue::DefaultAction)

  Import data to an Arn Data Object
- QByteArray arnExport () const
- int toInt () const
- double toDouble () const
- bool toBool () const

- QString toString () const
- QByteArray toByteArray () const
- QVariant toVariant () const
- ArnItem & operator= (const ArnItem &other)
- ArnItem & operator= (int other)
- ArnItem & operator= (double other)
- ArnItem & operator= (const QString &other)
- ArnItem & operator= (const QByteArray &other)
- ArnItem & operator= (const QVariant &other)
- ArnItem & operator= (const char *other)
- void setValue (const ArnItem &other, int ignoreSame=Arn::SameValue::DefaultAction)

  Assign the value of an other ArnItem to an Arn Data Object

14.12.1 Detailed Description

Handle for an *Arn Data Object*.

About Arn Data Object

When opening an ArnItem to an *Arn Data object*, the ArnItem act as a handle (pointer) to the object. There can be any amount of ArnItem:s opened (pointing) to the same *Arn Data object*. Deleting the ArnItem won't effect the *Arn Data object*.

This class is not thread-safe, but the *Arn Data object* is, so each thread should have it's own handles i.e ArnItem instances.

Example usage

```
// In class declare
ArnItem  _arnTime;

// In class code
_arnTime.open("//Chat/Time/value");
connect( &_arnTime, SIGNAL(changed(QString)), this, SLOT(
  doTimeUpdate(QString)));
_arnTime = "Undefined ...";
```

Examples:

ArnDemoChat/MainWindow.hpp, ArnDemoChatServer/MainWindow.cpp, and ArnDemoChatServer/MainWindow.hpp.

Definition at line 70 of file ArnItem.hpp.

14.12.2 Constructor & Destructor Documentation

14.12.2.1 ArnItem::ArnItem (QObject * *parent* = 0)

Standard constructor of a closed handle.

Parameters

in	*parent*	

Definition at line 73 of file ArnItem.cpp.

14.12.2.2 ArnItem::ArnItem (const QString & *path*, QObject * *parent* = 0)

Construction of a handle to a path.

Parameters

in	*path*	The *Arn Data Object* path e.g. "//Measure/Water/Level/value"
in	*parent*	

See also

open()

Definition at line 80 of file ArnItem.cpp.

14.12.2.3 ArnItem::ArnItem (const ArnItem & *itemTemplate*, const QString & *path*, QObject * *parent* = 0)

Construction of a handle to a path with a template for *modes*

Parameters

in	*itemTemplate*	The template for setting *modes*
in	*path*	The *Arn Data Object* path e.g. "//Measure/Water/Level/value"
in	*parent*	

Definition at line 88 of file ArnItem.cpp.

14.12.2.4 ArnItem::~ArnItem ( ) [virtual]

Definition at line 400 of file ArnItem.cpp.

14.12.3 Member Function Documentation

14.12.3.1 void ArnItem::addMode (Arn::ObjectMode *mode*) [inline]

Add *general mode* settings for this *Arn Data Object*

If this ArnItem is in closed state, the added modes will be stored and the real mode change is done when this ArnItem is opened to an *Arn Data Object*. This implies that ArnItems can benefit from setting *modes* before opening.

Parameters

in	*mode*	The *modes* to be added.

See also

getMode()
Modes

Definition at line 156 of file ArnItem.hpp.

14.12.3.2 QByteArray ArnItem::arnExport ( ) const [inline]

Returns

A data blob representing the *Arn Data Object*

See also

arnImport()

Definition at line 288 of file ArnItem.hpp.

14.12.3.3 void ArnItem::arnImport (const QByteArray & *data*, int *ignoreSame* = Arn::SameValue::DefaultAction) [inline]

Import data to an *Arn Data Object*

Data blob from a previos `arnExport()` can be imported. This is essentially assigning the *Arn Data Object* with same as exported.

Parameters

in	*data*	is the data blob
in	*ignoreSame*	can override default ignoreSameValue setting.

See also

arnExport()
setIgnoreSameValue()

Definition at line 282 of file ArnItem.hpp.

14.12.3.4 void ArnItem::arnItemCreated (QString *path*) [signal]

Signal emitted when an *Arn Data Object* is created in the tree below.

The ArnItem is a folder. Created objects in this folder or its children will give this signal. Only created non folder objects will give this signal.

Parameters

in	*path*	to the created *Arn Data Object*

14.12.3.5 void ArnItem::arnModeChanged (QString *path*, uint *linkId*, Arn::ObjectMode *mode*) [signal]

Signal emitted when an *Arn Data Object* in the tree below has a *general mode* change.

The ArnItem is a folder. Objects changing *general mode* in this folder or its children will give this signal.

Parameters

in	*path*	to the *general mode* changing *Arn Data Object*
in	*linkId*	for the *general mode* changing *Arn Data Object*
in	*mode*	is the new *general mode*

See also

linkId()
Modes

14.12.3.6 void ArnItem::changed ( ) [signal]

Signals emitted when data in *Arn Data Object* is changed.

Only the connected (used) signals are emitted for efficiency. When using pipes with queued connection to a slot, it's strongly advised to use the signal that carries the updated data. Otherwise some stream data can be lost and other will be doubled, because reading is done late in the slot.

changed(...) is using connectNotify & disconnectNotify. Must be updated if new types are added

See also

setIgnoreSameValue()

14.12.3.7 void ArnItem::changed (int *value*) [signal]

See also

changed()

14.12.3.8 void ArnItem::changed (double *value*) [signal]

See also

changed()

14.12.3.9 void ArnItem::changed (bool *value*) [signal]

See also

changed()

14.12.3.10 void ArnItem::changed (QString *value*) [signal]

See also

changed()

14.12.3.11 void ArnItem::changed (QByteArray *value*) [signal]

See also

changed()

14.12.3.12 void ArnItem::changed (QVariant *value*) [signal]

See also

changed()

14.12.3.13 Arn::ObjectMode ArnItem::getMode ( ) const [inline]

Returns

The *general mode* of the *Arn Data Object*

See also

addMode()
Modes

Definition at line 163 of file ArnItem.hpp.

14.12.3.14 bool ArnItem::isAutoDestroy ( ) const [inline]

Return values

true	if *AutoDestroy mode*

See also

setAutoDestroy()

Definition at line 262 of file ArnItem.hpp.

14.12.3.15 bool ArnItem::isBiDir ( ) const [inline]

Return values

true	if this ArnItem is bi-directional

See also

setBiDirMode()
Modes

Definition at line 126 of file ArnItem.hpp.

14.12.3.16 bool ArnItem::isBiDirMode ( ) const [inline]

Return values

true	if Bidirectional

See also

setBiDirMode()
Modes
Bidirectional Arn Data Objects

Definition at line 201 of file ArnItem.hpp.

14.12.3.17 bool ArnItem::isFolder ( ) const [inline]

Return values

true	if this ArnItem is a folder

Definition at line 119 of file ArnItem.hpp.

14.12.3.18 bool ArnItem::isIgnoreSameValue ( ) [inline]

Return values

true	if skipping equal values

See also

setIgnoreSameValue()

Definition at line 144 of file ArnItem.hpp.

14.12.3.19 bool ArnItem::isMaster ( ) const [inline]

Return values

true	if *Master mode*

See also

setMaster()
Modes

Definition at line 249 of file ArnItem.hpp.

14.12.3.20 bool ArnItem::isPipeMode ( ) const [inline]

Return values

true	if *Pipe mode*

See also

setPipeMode()
Modes
Pipe Arn Data Objects

Definition at line 217 of file ArnItem.hpp.

14.12.3.21 bool ArnItem::isSaveMode ( ) const [inline]

Return values

true	if *Save mode*

See also

setSaveMode()
Modes
Persistent Arn Data Objects

Definition at line 234 of file ArnItem.hpp.

14.12.3.22 bool ArnItem::isTemplate ( ) const

Return values

true	if this is a template

See also

setTemplate()

Definition at line 123 of file ArnItem.cpp.

14.12.3.23 void ArnItem::modeChanged (Arn::ObjectMode *mode*) [signal]

Signal emitted when mode in *Arn Data Object* is changed.

Object changing *general mode* will give this signal.

Parameters

in	*mode*	is the new *general mode*

See also

Modes

14.12.3.24 bool ArnItem::openFolder (const QString & *path*) [inline]

Open a handle to an Arn folder.

Parameters

in	*path*	The Arn folder path e.g. "//Measure/Water" (the / is appended)

Return values

false	if error

Definition at line 114 of file ArnItem.hpp.

14.12.3.25 bool ArnItem::openUuid (const QString & *path*) [inline]

Open a handle to an Arn Object with a unique uuid name.

Parameters

in	*path*	The prefix for Arn uuid path e.g. "//Names/name"

Return values

false	if error

Definition at line 100 of file ArnItem.hpp.

14.12.3.26 bool ArnItem::openUuidPipe (const QString & *path*) [inline]

Open a handle to an Arn Pipe Object with a unique uuid name.

Parameters

in	*path*	The prefix for Arn uuid pipe path e.g. "//Pipes/pipe"

Return values

false	if error

Definition at line 107 of file ArnItem.hpp.

14.12.3.27 ArnItem & ArnItem::operator= (const ArnItem & *other*)

Definition at line 139 of file ArnItem.cpp.

14.12.3.28 ArnItem & ArnItem::operator= (int *other*)

Definition at line 146 of file ArnItem.cpp.

14.12.3.29 ArnItem & ArnItem::operator= (double *other*)

Definition at line 153 of file ArnItem.cpp.

14.12.3.30 ArnItem & ArnItem::operator= (const QString & *other*)

Definition at line 160 of file ArnItem.cpp.

14.12.3.31 ArnItem & ArnItem::operator= (const QByteArray & *other*)

Definition at line 167 of file ArnItem.cpp.

14.12.3.32 ArnItem & ArnItem::operator= (const QVariant & *other*)

Definition at line 181 of file ArnItem.cpp.

14.12.3.33 ArnItem & ArnItem::operator= (const char * *other*)

Definition at line 174 of file ArnItem.cpp.

14.12.3.34 ArnItem& ArnItem::setAutoDestroy ( ) [inline]

Set client session *sync mode* as *AutoDestroy* for this ArnItem.

This ArnItem at client side is setup for auto destruction.

Precondition

This must be set before open().

Definition at line 256 of file ArnItem.hpp.

14.12.3.35 ArnItem& ArnItem::setBiDirMode ( ) [inline]

Set *general mode* as Bidirectional for this *Arn Data Object*

A two way object, typically for validation or pipe

See also

Modes
Bidirectional Arn Data Objects

Definition at line 193 of file ArnItem.hpp.

14.12.3.36 void ArnItem::setDelay (int *delay*)

Set *delay* of data changed signal.

Normally any change of the *Arn Data Object* is immediately signalled. By setting this *delay*, intensive updates gives predictive and fewer signals. Signalling will not be faster than *delay* as period time. The latency from a change to a signal will not be more than *delay*.

Parameters

in	*delay*	in ms.

Definition at line 129 of file ArnItem.cpp.

14.12.3.37 void ArnItem::setIgnoreSameValue (bool *isIgnore* = `true`) [inline]

Set skipping assignment of equal value.

Parameters

in	*isIgnore*	If true, assignment of equal value don't give a changed signal.

Definition at line 138 of file ArnItem.hpp.

14.12.3.38 ArnItem& ArnItem::setMaster ( ) [inline]

Set client session *sync mode* as *Master* for this ArnItem.

This ArnItem at client side is set as default generator of data.

Precondition

This must be set before open().

See also

Modes

Definition at line 242 of file ArnItem.hpp.

14.12.3.39 ArnItem& ArnItem::setPipeMode ( ) [inline]

Set *general mode* as Pipe for this *Arn Data Object*

Implies *Bidir*.

See also

Modes
Pipe Arn Data Objects

Definition at line 209 of file ArnItem.hpp.

14.12.3.40 ArnItem& ArnItem::setSaveMode ( ) [inline]

Set *general mode* as *Save* for this *Arn Data Object*

Data is persistent and will be saved

Precondition

The persistent service must be started at the server.

See also

Modes
Persistent Arn Data Objects

Definition at line 226 of file ArnItem.hpp.

14.12.3.41 ArnItem & ArnItem::setTemplate (bool *isTemplate* = true)

Mark this ArnItem as a template.

When marked as a template it can be setup with a combination of *modes* which are used for other ArnItems using this template. The effected *modes* can be both *general modes* and *sync modes*.

Parameters

in	*isTemplate*	True for template mode.

See also

open()
Modes

Definition at line 116 of file ArnItem.cpp.

14.12.3.42 void ArnItem::setValue (const ArnItem & *other*, int *ignoreSame* = Arn::SameValue::DefaultAction) [inline]

Assign the value of an other ArnItem to an *Arn Data Object*

Parameters

in	*other*	is the ArnItem containing the value to assign
in	*ignoreSame*	can override default ignoreSameValue setting.

See also

setIgnoreSameValue()

Definition at line 334 of file ArnItem.hpp.

14.12.3.43 void ArnItem::setValue (int *value*, int *ignoreSame* = Arn::SameValue::DefaultAction) [inline], [slot]

Assign an *integer* to an *Arn Data Object*

Parameters

in	*value*	to be assigned
in	*ignoreSame*	can override default ignoreSameValue setting.

See also

setIgnoreSameValue()

Definition at line 343 of file ArnItem.hpp.

14.12.3.44 void ArnItem::setValue (double *value*, int *ignoreSame* = Arn::SameValue::DefaultAction) [inline], [slot]

Assign a *double* to an *Arn Data Object*

Parameters

in	*value*	to be assigned
in	*ignoreSame*	can override default ignoreSameValue setting.

See also

setIgnoreSameValue()

Definition at line 351 of file ArnItem.hpp.

14.12.3.45 void ArnItem::setValue (bool *value*, int *ignoreSame* = Arn::SameValue::DefaultAction) [inline], [slot]

Assign a *bool* to an *Arn Data Object*

Parameters

in	*value*	to be assigned
in	*ignoreSame*	can override default ignoreSameValue setting.

See also

setIgnoreSameValue()

Definition at line 359 of file ArnItem.hpp.

14.12.3.46 void ArnItem::setValue (const QString & *value*, int *ignoreSame* = Arn::SameValue::DefaultAction) [inline], [slot]

Assign a *QString* to an *Arn Data Object*

Parameters

in	*value*	to be assigned
in	*ignoreSame*	can override default ignoreSameValue setting.

See also

setIgnoreSameValue()

Definition at line 367 of file ArnItem.hpp.

14.12.3.47 void ArnItem::setValue (const QByteArray & *value*, int *ignoreSame* = Arn::SameValue::DefaultAction) [inline], [slot]

Assign a *QByteArray* to an *Arn Data Object*

Parameters

in	*value*	to be assigned
in	*ignoreSame*	can override default ignoreSameValue setting.

See also

setIgnoreSameValue()

Definition at line 375 of file ArnItem.hpp.

14.12.3.48 void ArnItem::setValue (const QVariant & *value*, int *ignoreSame* = Arn::SameValue::DefaultAction) [inline], [slot]

Assign a *QVariant* to an *Arn Data Object*

Parameters

in	*value*	to be assigned
in	*ignoreSame*	can override default ignoreSameValue setting.

See also

setIgnoreSameValue()

Definition at line 383 of file ArnItem.hpp.

14.12.3.49 void ArnItem::setValue (const char * *value*, int *ignoreSame* = Arn::SameValue::DefaultAction) [slot]

Assign a *char** to an *Arn Data Object*

Parameters

in	*value*	to be assigned
in	*ignoreSame*	can override default ignoreSameValue setting.

See also

setIgnoreSameValue()

Definition at line 188 of file ArnItem.cpp.

14.12.3.50 Arn::ObjectSyncMode ArnItem::syncMode ( ) const [inline]

Returns

The client session *sync mode* of an *Arn Data Object*

See also

addSyncMode()
Modes

Definition at line 170 of file ArnItem.hpp.

14.12.3.51 bool ArnItem::toBool ( ) const [inline]

Returns

Convert *Arn Data Object* to a *bool*

Definition at line 303 of file ArnItem.hpp.

14.12.3.52 QByteArray ArnItem::toByteArray ( ) const [inline]

Returns

Convert *Arn Data Object* to a *QByteArray*

Definition at line 313 of file ArnItem.hpp.

14.12.3.53 double ArnItem::toDouble ( ) const [inline]

Returns

Convert *Arn Data Object* to a *double*

Definition at line 298 of file ArnItem.hpp.

14.12.3.54 void ArnItem::toggleBool ( ) [slot]

Toggle the *bool* at the *Arn Data Object*

The *Arn Data Object* is first converted to a *bool*, then the toggled value is assigned back to the *Arn Data Object*.

Definition at line 194 of file ArnItem.cpp.

14.12.3.55 int ArnItem::toInt ( ) const [inline]

Returns

Convert *Arn Data Object* to a *integer*

Definition at line 293 of file ArnItem.hpp.

14.12.3.56 QString ArnItem::toString ( ) const [inline]

Returns

Convert *Arn Data Object* to a *QString*

Definition at line 308 of file ArnItem.hpp.

14.12.3.57 QVariant ArnItem::toVariant ( ) const [inline]

Returns

Convert *Arn Data Object* to a *QVariant*

Definition at line 318 of file ArnItem.hpp.

14.12.3.58 Arn::DataType ArnItem::type ( ) const [inline]

The type stored in the *Arn Data Object*

Returns

The type stored

Definition at line 132 of file ArnItem.hpp.

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

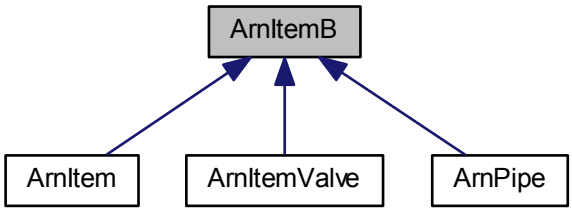
- src/ArnInc/ArnItem.hpp (2.2.0)
- src/ArnItem.cpp (2.2.0)

14.13 ArnItemB Class Reference

Base class handle for an *Arn Data Object*.

`#include <ArnItemB.hpp>`

Inheritance diagram for ArnItemB:



Classes

- struct ExportCode

  Code used in blob for arnExport() and arnImport()

Signals

- void arnLinkDestroyed ()

  Signal emitted when the Arn Data Object is destroyed.

Public Member Functions

- ArnItemB (QObject *parent=0)

  Standard constructor of a closed handle.
- virtual ~ArnItemB ()
- bool open (const QString &path)

  Open a handle to an Arn Data Object
- void close ()

  Close the handle.
- void destroyLink ()

  Destroy the Arn Data Object
- bool isOpen () const

  State of the handle.
- QString path (Arn::NameF nameF=Arn::NameF::EmptyOk) const

  Path of the Arn Data Object
- QString name (Arn::NameF nameF) const

  Name of the Arn Data Object
- void setReference (void *reference)

  Set an associated external reference.
- void * reference () const

  Get the stored external reference.
- uint itemId () const

  Get the id for this ArnItem.
- uint linkId () const

  Get the id for this Arn Data Object

14.13.1 Detailed Description

Base class handle for an *Arn Data Object*.

About Arn Data Object

This class contains the basic services, that should be apropriate for any derived class as public methods. Other non generic services that might be needed is available as protected methods. Typically derived classes can select among these protected methods and make any of them public.

See ArnItem.

Definition at line 63 of file ArnItemB.hpp.

14.13.2 Constructor & Destructor Documentation

14.13.2.1 ArnItemB::ArnItemB (QObject * *parent* = `0`)

Standard constructor of a closed handle.

Parameters

in	*parent*	

Definition at line 64 of file ArnItemB.cpp.

14.13.2.2 ArnItemB::~ArnItemB ( ) [virtual]

Definition at line 964 of file ArnItemB.cpp.

14.13.3 Member Function Documentation

14.13.3.1 void ArnItemB::arnLinkDestroyed ( ) [signal]

Signal emitted when the *Arn Data Object* is destroyed.

When the link (*Arn Data Object*) is destroyed, this ArnItem is closed and will give this signal. It's ok to assign values etc to a closed ArnItem, it's thrown away like a null device.

See also

destroyLink()

14.13.3.2 void ArnItemB::close ( )

Close the handle.

Definition at line 139 of file ArnItemB.cpp.

14.13.3.3 void ArnItemB::destroyLink ( )

Destroy the *Arn Data Object*

The link (*Arn Data Object*) will be removed locally, from server and all connected clients.

Definition at line 150 of file ArnItemB.cpp.

14.13.3.4 bool ArnItemB::isOpen ( ) const

State of the handle.

Return values

true	if this ArnItem is open

Definition at line 156 of file ArnItemB.cpp.

14.13.3.5 uint ArnItemB::itemId ( ) const [inline]

Get the *id* for this ArnItem.

The ArnItem *id* is unique within its running program. Even if 2 ArnItems are pointing to the same *Arn Data Object*, they have different *item id*.

Returns

id for this ArnItem

See also

linkId()

Definition at line 141 of file ArnItemB.hpp.

14.13.3.6 uint ArnItemB::linkId ( ) const

Get the *id* for this *Arn Data Object*

The link (*Arn Data Object*) *id* is unique within its running program. If 2 ArnItems are pointing to the same *Arn Data Object*, they have same *link id*.

Returns

Id for the *Arn Data Object*, 0 if closed

See also

itemId()

Definition at line 186 of file ArnItemB.cpp.

14.13.3.7 QString ArnItemB::name (Arn::NameF *nameF*) const

Name of the *Arn Data Object*

Parameters

in	*nameF*	The format of the returned name

Returns

The object name

Definition at line 409 of file ArnItemB.cpp.

14.13.3.8 bool ArnItemB::open (const QString & *path*)

Open a handle to an *Arn Data Object*

Parameters

in	*path*	The *Arn Data Object* path e.g. "//Measure/Water/Level/value"

Return values

false	if error

Definition at line 94 of file ArnItemB.cpp.

14.13.3.9 QString ArnItemB::path (Arn::NameF *nameF* = Arn::NameF::EmptyOk) const

Path of the *Arn Data Object*

Parameters

in	*nameF*	The format of the returned path

Returns

The object path

Definition at line 401 of file ArnItemB.cpp.

14.13.3.10 void* ArnItemB::reference ( ) const [inline]

Get the stored external reference.

Returns

The associated external reference

See also

setReference()

Definition at line 133 of file ArnItemB.hpp.

14.13.3.11 void ArnItemB::setReference (void * *reference*) [inline]

Set an associated external reference.

This is typically used when having many *ArnItems* changed signal connected to a common slot. The slot can then discover the signalling ArnItem:s associated structure for further processing.

Parameters

in	*reference*	Any external structure or id.

See also

reference()

Definition at line 127 of file ArnItemB.hpp.

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

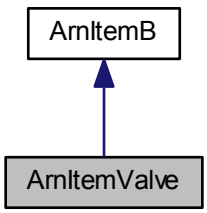
- src/ArnInc/ArnItemB.hpp (2.2.0)
- src/ArnItemB.cpp (2.2.0)

14.14 ArnItemValve Class Reference

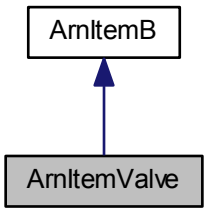
Valve for controlling stream to/from an ArnItemB.

`#include <ArnItemValve.hpp>`

Inheritance diagram for ArnItemValve:



Collaboration diagram for ArnItemValve:



Classes

- struct SwitchMode

Public Slots

- void setValue (bool value)

  Assign a bool to an Arn Data Object

Signals

- void changed (int value)

Public Member Functions

- ArnItemValve (QObject *parent=0)
- bool setTarget (ArnItemB *targetItem, SwitchMode mode=SwitchMode::InOutStream)
- SwitchMode switchMode () const
- ArnItemValve & setSaveMode ()

  Set general mode as Save for this Arn Data Object
- bool isSaveMode () const
- ArnItemValve & setMaster ()

  Set client session sync mode as Master for this ArnItem.
- bool isMaster () const
- ArnItemValve & setAutoDestroy ()

  Set client session sync mode as AutoDestroy for this ArnItem.
- bool isAutoDestroy () const
- bool toBool () const
- ArnItemValve & operator= (bool value)

14.14.1 Detailed Description

Valve for controlling stream to/from an ArnItemB.

About Arn Data Object

This valve class can control data stream to/from any ArnItemB derived class. The class itself is derived from ArnItemB, so it could also be controlled by another ArnItemValve. But most importent, it has a subset of ArnItem's methods to make it shareable in the ARN tree.

ArnItemValve can be used "standalone", i.e. not beeing opened to the ARN tree. In this case it is used by its setValue method and locally emits its changed() signal.

When opened to the ARN tree it can be used by its setValue method and it can also be remote controlled as any other ArnItem. If locally set, this will as usual be reflected in the ARN tree.

It's possible to use one ArnItemValve for controling *InStream* and another for controlling *OutStream*. The valve for each stream direction can then be set independently. The default is using one valve for both stream directions.

This class is not thread-safe, but the *Arn Data object* is, so this valve can be remote controlled by an ArnItem.

Example usage

```
// In class code
_commonSapi = new ChatSapi( this);
_commonSapi->open("//Chat/Pipes/pipeCommon", ArnSapi::Mode::Provider
  );
_commonSapi->batchConnectTo( this, "sapi");

// Control message flow to and from service api _commonSapi
ArnItemValve*  arnValve = new ArnItemValve( this);
arnValve->setTarget( _commonSapi->pipe());
arnValve->open("//Chat/Valves/pipeCommon");
*arnValve = true;  // Set valve open for message flow
```

Definition at line 76 of file ArnItemValve.hpp.

14.14.2 Constructor & Destructor Documentation

14.14.2.1 ArnItemValve::ArnItemValve (QObject * *parent* = 0) [explicit]

Definition at line 35 of file ArnItemValve.cpp.

14.14.3 Member Function Documentation

14.14.3.1 void ArnItemValve::changed (int *value*) [signal]

Signals emitted when data in *Arn Data Object* is changed.

14.14.3.2 bool ArnItemValve::isAutoDestroy ( ) const [inline]

Return values

true	if *AutoDestroy mode*

See also

setAutoDestroy()

Definition at line 140 of file ArnItemValve.hpp.

14.14.3.3 bool ArnItemValve::isMaster ( ) const [inline]

Return values

true	if *Master mode*

See also

setMaster()
Modes

Definition at line 127 of file ArnItemValve.hpp.

14.14.3.4 bool ArnItemValve::isSaveMode ( ) const [inline]

Return values

true	if *Save mode*

See also

setSaveMode()
Modes
Persistent Arn Data Objects

Definition at line 112 of file ArnItemValve.hpp.

14.14.3.5 ArnItemValve & ArnItemValve::operator= (bool *value*)

Definition at line 68 of file ArnItemValve.cpp.

14.14.3.6 ArnItemValve& ArnItemValve::setAutoDestroy ( ) [inline]

Set client session *sync mode* as *AutoDestroy* for this ArnItem.

This ArnItem at client side is setup for auto destruction.

Precondition

This must be set before open().

Definition at line 134 of file ArnItemValve.hpp.

14.14.3.7 ArnItemValve& ArnItemValve::setMaster ( ) [inline]

Set client session *sync mode* as *Master* for this ArnItem.

This ArnItem at client side is set as default generator of data.

Precondition

This must be set before open().

See also

Modes

Definition at line 120 of file ArnItemValve.hpp.

14.14.3.8 ArnItemValve& ArnItemValve::setSaveMode ( ) [inline]

Set *general mode* as *Save* for this *Arn Data Object*

Data is persistent and will be saved

Precondition

The persistent service must be started at the server.

See also

Modes
Persistent Arn Data Objects

Definition at line 104 of file ArnItemValve.hpp.

14.14.3.9 bool ArnItemValve::setTarget (ArnItemB * *targetItem*, ArnItemValve::SwitchMode *mode* = SwitchMode::InOutStream)

Definition at line 43 of file ArnItemValve.cpp.

14.14.3.10 void ArnItemValve::setValue (bool *value*) [slot]

Assign a *bool* to an *Arn Data Object*

Parameters

in	*value*	to be assigned

Definition at line 75 of file ArnItemValve.cpp.

14.14.3.11 ArnItemValve::SwitchMode ArnItemValve::switchMode ( ) const

Definition at line 53 of file ArnItemValve.cpp.

14.14.3.12 bool ArnItemValve::toBool ( ) const

Returns

state of this valve 1 = Enabled selected stream(s)

Definition at line 59 of file ArnItemValve.cpp.

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

- src/ArnInc/ArnItemValve.hpp (2.2.0)
- src/ArnItemValve.cpp (2.2.0)

14.15 ArnM Class Reference

`#include <ArnM.hpp>`

Public Slots

- static void destroyLink (const QString &path)

  Destroy the Arn Data Object at path
- static void setupErrorlog (QObject *errLog)

Signals

- void errorLogSig (QString errText, uint errCode, void *reference)

Public Member Functions

- bool skipLocalSysLoading () const

  Return mode skip "/Local/Sys/" loading.
- void setSkipLocalSysLoading (bool skipLocalSysLoading)

  Set mode skip "/Local/Sys/" loading.

Static Public Member Functions

- static ArnM & instance ()
- static void setConsoleError (bool isConsoleError)
- static void setDefaultIgnoreSameValue (bool isIgnore=true)

  Set system default skipping of equal assignment value.
- static bool defaultIgnoreSameValue ()
- static bool isMainThread ()
- static bool isThreadedApp ()
- static int valueInt (const QString &path)

  Get the value of Arn Data Object at path
- static double valueDouble (const QString &path)

  Get the value of Arn Data Object at path
- static QString valueString (const QString &path)

  Get the value of Arn Data Object at path
- static QByteArray valueByteArray (const QString &path)

  Get the value of Arn Data Object at path
- static QVariant valueVariant (const QString &path)

  Get the value of Arn Data Object at path
- static QStringList items (const QString &path)

  Get the childrens of the folder at path
- static bool exist (const QString &path)
- static bool isFolder (const QString &path)
- static bool isLeaf (const QString &path)
- static void setValue (const QString &path, int value)

  Assign an integer to an Arn Data Object at path
- static void setValue (const QString &path, double value)

  Assign a double to an Arn Data Object at path
- static void setValue (const QString &path, const QString &value)

  Assign a QString to an Arn Data Object at path
- static void setValue (const QString &path, const QByteArray &value)

  Assign a QByteArray to an Arn Data Object at path
- static void setValue (const QString &path, const QVariant &value)

  Assign a QVariant to an Arn Data Object at path
- static void setValue (const QString &path, const char *value)

  Assign a char to an Arn Data Object at path*
- static bool loadFromFile (const QString &path, const QString &fileName, Arn::Coding coding)

  Load from a file to an Arn Data Object at path
- static bool loadFromDirRoot (const QString &path, const QDir &dirRoot, Arn::Coding coding)

  Load relative a directory root to an Arn Data Object at path

- static bool saveToFile (const QString &path, const QString &fileName, Arn::Coding coding)

  Save to a file from an Arn Data Object at path
- static void errorLog (QString errText, ArnError err=ArnError::Undef, void *reference=0)
- static QString errorSysName ()
- static QByteArray info ()

  Give information about this library.

Friends

- class ArnItemB

14.15.1 Detailed Description

Arn main class

About Arn Data Object

This singleton class is the main reference to the Active Registry Network.

Definition at line 104 of file ArnM.hpp.

14.15.2 Member Function Documentation

14.15.2.1 bool ArnM::defaultIgnoreSameValue ( ) [static]

Return values

true	if default skipping equal assignment value

See also

setDefaultIgnoreSameValue()

Definition at line 867 of file ArnM.cpp.

14.15.2.2 void ArnM::destroyLink (const QString & *path*) [static], [slot]

Destroy the *Arn Data Object* at *path*

The link (*Arn Data Object*) will be removed locally, from server and all connected clients.

Parameters

in	*path*	

Threaded version of destroyLink

Definition at line 645 of file ArnM.cpp.

14.15.2.3 void ArnM::errorLog (QString *errText*, ArnError *err* = ArnError::Undef, void * *reference* = 0) [static]

Definition at line 763 of file ArnM.cpp.

14.15.2.4 void ArnM::errorLogSig (QString *errText*, uint *errCode*, void * *reference*) [signal]

14.15.2.5 QString ArnM::errorSysName ( ) [static]

Definition at line 723 of file ArnM.cpp.

14.15.2.6 bool ArnM::exist (const QString & *path*) [static]

Parameters

in	*path*	

Return values

true	if *Arn Data Object* exist at *path*

Definition at line 261 of file ArnM.cpp.

14.15.2.7 QByteArray ArnM::info ( ) [static]

Give information about this library.

Returns

The info, e.g. "Name=ArnLib Ver=1.0.0 Date=12-12-30 Time=00:37"

Definition at line 729 of file ArnM.cpp.

14.15.2.8 ArnM & ArnM::instance ( ) [static]

Definition at line 847 of file ArnM.cpp.

14.15.2.9 bool ArnM::isFolder (const QString & *path*) [static]

Parameters

in	*path*	

Return values

true	if *Arn Data Object* at *path* is a folder

Definition at line 272 of file ArnM.cpp.

14.15.2.10 bool ArnM::isLeaf (const QString & *path*) [static]

Parameters

in	*path*	

Return values

true	if *Arn Data Object* at *path* is a leaf (non folder)

Definition at line 283 of file ArnM.cpp.

14.15.2.11 bool ArnM::isMainThread ( ) [static]

Return values

true	if this is the main thread in the application

Definition at line 239 of file ArnM.cpp.

14.15.2.12 bool ArnM::isThreadedApp ( ) [static]

Return values

true	if this is a threaded application

Definition at line 255 of file ArnM.cpp.

14.15.2.13 QStringList ArnM::items (const QString & *path*) [static]

Get the childrens of the folder at *path*

Example: return list = {"test"; "folder/"; "@/"; "value"}

Parameters

in	*path*	

Returns

The items (children)

Definition at line 179 of file ArnM.cpp.

14.15.2.14 bool ArnM::loadFromDirRoot (const QString & *path*, const QDir & *dirRoot*, Arn::Coding *coding*) [static]

Load relative a directory root to an *Arn Data Object* at *path*

Example: *path* = "//Doc/help.txt", *dirRoot* = "/usr/local", will load file from "/usr/local/@/Doc/help.txt" to *Arn* path at "//Doc/help.txt".

Parameters

in	*path*	is the path of the *Arn Data Object* and also path relative to *dirRoot*
in	*dirRoot*	is the file directory to be used as root for the *path*
in	*coding*	indicates if text or binary mode will be used

Return values

true	if loading from file is successful

Definition at line 374 of file ArnM.cpp.

14.15.2.15 bool ArnM::loadFromFile (const QString & *path*, const QString & *fileName*, Arn::Coding *coding*) [static]

Load from a file to an *Arn Data Object* at *path*

Parameters

in	*path*	is the path of the *Arn Data Object*
in	*fileName*	is the file to be loaded
in	*coding*	indicates if text or binary mode will be used

Return values

true	if loading from file is successful

Definition at line 356 of file ArnM.cpp.

14.15.2.16 bool ArnM::saveToFile (const QString & *path*, const QString & *fileName*, Arn::Coding *coding*) [static]

Save to a file from an *Arn Data Object* at *path*

Parameters

in	*path*	is the path of the *Arn Data Object*
in	*fileName*	is the file to be saved
in	*coding*	indicates if text or binary mode will be used

Return values

true	if saving to file is successful

Definition at line 383 of file ArnM.cpp.

14.15.2.17 void ArnM::setConsoleError (bool *isConsoleError*) [static]

Definition at line 855 of file ArnM.cpp.

14.15.2.18 void ArnM::setDefaultIgnoreSameValue (bool *isIgnore* = true) [static]

Set system default skipping of equal assignment value.

Parameters

in	*isIgnore*	If true, assignment of equal value don't give a changed signal.

Definition at line 861 of file ArnM.cpp.

14.15.2.19 void ArnM::setSkipLocalSysLoading (bool *skipLocalSysLoading*)

Set mode skip "/Local/Sys/" loading.

Can disable auto loading of *ARN Data Objects* into "/Local/Sys/ tree".

Parameters

in	*skipLocalSys-Loading*	

Note

Must be called before entering the Qt event loop
Check the rules for Local path

See also

skipLocalSysLoading()

Definition at line 879 of file ArnM.cpp.

14.15.2.20 void ArnM::setupErrorlog (QObject * *errLog*) [static], [slot]

Definition at line 735 of file ArnM.cpp.

14.15.2.21 void ArnM::setValue (const QString & *path*, int *value*) [static]

Assign an *integer* to an *Arn Data Object* at *path*

Parameters

in	*path*	
in	*value*	to be assigned

Definition at line 306 of file ArnM.cpp.

14.15.2.22 void ArnM::setValue (const QString & *path*, double *value*) [static]

Assign a *double* to an *Arn Data Object* at *path*

Parameters

in	*path*	
in	*value*	to be assigned

Definition at line 317 of file ArnM.cpp.

14.15.2.23 void ArnM::setValue (const QString & *path*, const QString & *value*) [static]

Assign a *QString* to an *Arn Data Object* at *path*

Parameters

in	*path*	
in	*value*	to be assigned

Definition at line 295 of file ArnM.cpp.

14.15.2.24 void ArnM::setValue (const QString & *path*, const QByteArray & *value*) [static]

Assign a *QByteArray* to an *Arn Data Object* at *path*

Parameters

in	*path*	
in	*value*	to be assigned

Definition at line 328 of file ArnM.cpp.

14.15.2.25 void ArnM::setValue (const QString & *path*, const QVariant & *value*) [static]

Assign a *QVariant* to an *Arn Data Object* at *path*

Parameters

in	*path*	
in	*value*	to be assigned

Definition at line 339 of file ArnM.cpp.

14.15.2.26 void ArnM::setValue (const QString & *path*, const char * *value*) [static]

Assign a *char** to an *Arn Data Object* at *path*

Parameters

in	*path*	
in	*value*	to be assigned

Definition at line 350 of file ArnM.cpp.

14.15.2.27 bool ArnM::skipLocalSysLoading ( ) const

Return mode skip "/Local/Sys/" loading.

Returns

mode skipLocalSysLoading

See also

setSkipLocalSysLoading()

Definition at line 873 of file ArnM.cpp.

14.15.2.28 QByteArray ArnM::valueByteArray (const QString & *path*) [static]

Get the value of *Arn Data Object* at *path*

Parameters

in	*path*	

Returns

The *Arn Data Object* as a *QByteArray*

Definition at line 147 of file ArnM.cpp.

14.15.2.29 double ArnM::valueDouble (const QString & *path*) [static]

Get the value of *Arn Data Object* at *path*

Parameters

in	*path*	

Returns

The *Arn Data Object* as a *double*

Definition at line 125 of file ArnM.cpp.

14.15.2.30 int ArnM::valueInt (const QString & *path*) [static]

Get the value of *Arn Data Object* at *path*

Parameters

in	*path*	

Returns

The *Arn Data Object* as an *integer*

Definition at line 114 of file ArnM.cpp.

14.15.2.31 QString ArnM::valueString (const QString & *path*) [static]

Get the value of *Arn Data Object* at *path*

Parameters

in	*path*	

Returns

The *Arn Data Object* as a *QString*

Definition at line 136 of file ArnM.cpp.

14.15.2.32 QVariant ArnM::valueVariant (const QString & *path*) [static]

Get the value of *Arn Data Object* at *path*

Parameters

in	*path*	

Returns

The *Arn Data Object* as a *QVariant*

Definition at line 158 of file ArnM.cpp.

14.15.3 Friends And Related Function Documentation

14.15.3.1 friend class ArnItemB [friend]

Definition at line 107 of file ArnM.hpp.

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

- src/ArnInc/ArnM.hpp (2.2.0)
- src/ArnM.cpp (2.2.0)

14.16 ArnMonitor Class Reference

A client remote monitor to detect changes at server.

`#include <ArnMonitor.hpp>`

Public Slots

- void foundChildDeleted (QString path)

  Help telling the monitor about deletion of a previous found child.

Signals

- void arnItemCreated (QString path)

  Signal emitted when an Arn Data Object is created in the tree below.
- void arnChildFound (QString path)

  Signal emitted for present and newly created childs in the monitor folder.
- void arnChildFoundFolder (QString path)

  Signal emitted for present and newly created folder childs in the monitor folder.
- void arnChildFoundLeaf (QString path)

  Signal emitted for present and newly created leaf childs in the monitor folder.

Public Member Functions

- ArnMonitor (QObject *parent=0)
- void setClient (ArnClient *client, QString id=QString())

  Set the client to be used.
- QString clientId () const

  Get the id name of the used client
- ArnClient * client () const

  Get the used client
- void setMonitorPath (QString path, ArnClient *client=0)

  Set the path to be monitored.
- bool start (const QString &path, ArnClient *client)

  Starts the monitoring.
- QString monitorPath () const

  Get the monitored path
- void reStart ()

  The monitor is restarted.
- void setReference (void *reference)

Set an associated external reference.

- void * reference () const

  Get the stored external reference.

Protected Attributes

- QPointer< ArnClient > _arnClient
- QString _monitorPath

14.16.1 Detailed Description

A client remote monitor to detect changes at server.

The monitor must normally be set at a shared path. A none shared path can be used when client is set to 0, i.e. local monitoring.

When the monitor is started, all the *arnChildFound* signals are emmited for present childs. Later the signals are emmited for newly created childs.

Example usage

```
// In class declare
ArnMonitor*  _arnMon;
ArnClient*  _client;

// In class code
_arnMon = new ArnMonitor( this);
_arnMon->start("//Pipes/", _client);
connect( _arnMon, SIGNAL(arnChildFound(QString)), this, SLOT(
  netChildFound(QString)));
```

Definition at line 64 of file ArnMonitor.hpp.

14.16.2 Constructor & Destructor Documentation

14.16.2.1 ArnMonitor::ArnMonitor (QObject * *parent* = 0) [explicit]

Definition at line 39 of file ArnMonitor.cpp.

14.16.3 Member Function Documentation

14.16.3.1 void ArnMonitor::arnChildFound (QString *path*) [signal]

Signal emitted for present and newly created childs in the monitor folder.

The ArnMonitor monitors a folder. Present and newly created objects in this folder will give this signal. For newly created objects, the origin comes from the arnItemCreated() signal, so only non folder objects will then give this signal.

Example 1: monitorPath = "//Sensors/", created object = "//Sensors/Temp1/value" ==> path to child = "//Sensors/-Temp1/"

Example 2: monitorPath = "//Sensors/", created object = "//Sensors/Temp2/folder/" ==> will not give this signal as the created object is a folder.

Parameters

in	*path*	to the child

See also

arnItemCreated()

14.16.3.2 void ArnMonitor::arnChildFoundFolder (QString *path*) [signal]

Signal emitted for present and newly created folder childs in the monitor folder.

The ArnMonitor monitors a folder. Present and newly created folder objects in this folder will give this signal. For newly created childs, the origin comes from the arnItemCreated() signal, so only non folder objects will then give this signal.

Example: monitorPath = "//Sensors/", created object = "//Sensors/Temp1/value" ==> path to child = "//Sensors/-Temp1/"

Parameters

in	*path*	to the child

See also

arnItemCreated()
arnChildFound()

14.16.3.3 void ArnMonitor::arnChildFoundLeaf (QString *path*) [signal]

Signal emitted for present and newly created leaf childs in the monitor folder.

The ArnMonitor monitors a folder. Present and newly created leaf objects in this folder will give this signal.

Example: monitorPath = "//Sensors/", created object = "//Sensors/count" ==> path to child = "//Sensors/count"

Parameters

in	*path*	to the child

See also

arnChildFound()

14.16.3.4 void ArnMonitor::arnItemCreated (QString *path*) [signal]

Signal emitted when an *Arn Data Object* is created in the tree below.

The ArnMonitor monitors a folder. Created objects in this folder or its children below will give this signal. Only created non folder objects will give this signal.

Parameters

in	*path*	to the created *Arn Data Object*

14.16.3.5 ArnClient * ArnMonitor::client ( ) const

Get the used *client*

Returns

The *client*

See also

setClient()

Definition at line 62 of file ArnMonitor.cpp.

14.16.3.6 QString ArnMonitor::clientId ( ) const

Get the id name of the used *client*

Returns

The *client* id name

See also

setClient()

Definition at line 55 of file ArnMonitor.cpp.

14.16.3.7 void ArnMonitor::foundChildDeleted (QString *path*) [slot]

Help telling the monitor about deletion of a previous found child.

The monitor remembers every child it has signalled. If a deleted child reappears later it will not give a signal unless this function is used.

Parameters

in	*path*	to the deleted child

Definition at line 212 of file ArnMonitor.cpp.

14.16.3.8 QString ArnMonitor::monitorPath ( ) const [inline]

Get the monitored *path*

Returns

The *path*

See also

start()

Definition at line 113 of file ArnMonitor.hpp.

14.16.3.9 void* ArnMonitor::reference ( ) const [inline]

Get the stored external reference.

Returns

The associated external reference

See also

setReference()

Definition at line 134 of file ArnMonitor.hpp.

14.16.3.10 void ArnMonitor::reStart ( )

The monitor is restarted.

This makes the monitor forget the signals sent for present children and the *arnChildFound* signals are emmited again for present childs.

Definition at line 135 of file ArnMonitor.cpp.

14.16.3.11 void ArnMonitor::setClient (ArnClient * *client*, QString *id* = `QString()`)

Set the *client* to be used.

Parameters

in	*client*	to be used. If 0, local monitoring is done.
in	*id*	is an optional name to assign to the client.

Definition at line 47 of file ArnMonitor.cpp.

14.16.3.12 void ArnMonitor::setMonitorPath (QString *path*, ArnClient * *client* = `0`)

Set the *path* to be monitored.

The monitor must be set at a shared *path* that is shared using client::addMountPoint(). This function also starts the monitoring using start().

Parameters

in	*path*	
in	*client*	to be used. If 0, keep previous set client.

See also

start()

Deprecated Use start() instead, _client_ parameter is changed.

Definition at line 68 of file ArnMonitor.cpp.

14.16.3.13 void ArnMonitor::setReference (void * *reference*) `[inline]`

Set an associated external reference.

This is typically used when having many *ArnMonitors* signal connected to a common slot. The slot can then discover the signalling ArnMonitor:s associated structure for further processing.

Parameters

in	*reference*	Any external structure or id.

See also

reference()

Definition at line 128 of file ArnMonitor.hpp.

14.16.3.14 bool ArnMonitor::start (const QString & *path*, ArnClient * *client*)

Starts the monitoring.

The monitor must normally be set at a shared *path* that is shared using client::addMountPoint(). A none shared path can be used when client is set to 0, i.e. local monitoring.

Parameters

in	*path*	
in	*client*	to be used. If 0, local monitoring is done.

Definition at line 74 of file ArnMonitor.cpp.

14.16.4 Member Data Documentation

14.16.4.1 QPointer<ArnClient> ArnMonitor::_arnClient [protected]

Definition at line 195 of file ArnMonitor.hpp.

14.16.4.2 QString ArnMonitor::_monitorPath [protected]

Definition at line 196 of file ArnMonitor.hpp.

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

- src/ArnInc/ArnMonitor.hpp (2.2.0)
- src/ArnMonitor.cpp (2.2.0)

14.17 ArnPersist Class Reference

`#include <ArnPersist.hpp>`

Public Slots

- bool doArchive (QString name=QString())

Public Member Functions

- ArnPersist (QObject *parent=0)
- ~ArnPersist ()
- bool setMountPoint (const QString &path)

  Set the persistent enabled tree path.

- void setPersistDir (const QString &path)

  Set the persistent file directory root
- void setArchiveDir (const QString &path)

  Set the persistent database backup directory.
- void setVcs (ArnVcs *vcs)

  Set the Version Control System to be used.
- bool setupDataBase (QString dbName="persist.db")

  Setup the persistent database.

14.17.1 Detailed Description

Class for handling persistent *Arn Data object*.

About Persistent Arn Data Object

This class is used at an *ArnServer* to implemennt persistent objects.

Example usage

```
// In class declare
ArnPersist  *_persist;
VcsGit  *_git;

// In class code
_persist = new ArnPersist( this);
_persist->setupDataBase("persist.db");
_persist->setArchiveDir("archive");  // Use this directory for
   backup
_persist->setPersistDir("persist");  // use this directory for
   VCS persist files
_persist->setMountPoint("/");
_persist->setVcs( _git);
```

Definition at line 152 of file ArnPersist.hpp.

14.17.2 Constructor & Destructor Documentation

14.17.2.1 ArnPersist::ArnPersist (QObject * *parent* = 0) [explicit]

Definition at line 154 of file ArnPersist.cpp.

14.17.2.2 ArnPersist::~ArnPersist ( )

Definition at line 171 of file ArnPersist.cpp.

14.17.3 Member Function Documentation

14.17.3.1 bool ArnPersist::doArchive (QString *name* = QString()) [slot]

Do a persistent database backup

By default the backup file will be marked by date and clock. Optionally a custom name can be set for the backup file.

Parameters

in	*name*	is the file name of the backup. QString() gives default name.

See also

setArchiveDir()

Definition at line 726 of file ArnPersist.cpp.

14.17.3.2 void ArnPersist::setArchiveDir (const QString & *path*)

Set the persistent database backup directory.

In this directory, all backup files are stored.

Parameters

in	*path*	is the persistent file directory *root*.

See also

doArchive()
Persistent Arn Data Objects

Definition at line 189 of file ArnPersist.cpp.

14.17.3.3 bool ArnPersist::setMountPoint (const QString & *path*)

Set the persistent enabled tree path.

Mountpoint is a folder. When an *Arn Data Object* change to *Save* mode in this folder or anywhere below in the tree, it will be treated as a persistent object.

Parameters

in	*path*	is the persistent enabled tree.

Return values

false	if error.

See also

Persistent Arn Data Objects

Definition at line 366 of file ArnPersist.cpp.

14.17.3.4 void ArnPersist::setPersistDir (const QString & *path*)

Set the persistent file directory *root*

In this directory and below, all persistent files are stored. The *path* correspond to the *root* in Arn.

This file directory can optionally be managed by a *version control system*, set by using setVcs().

Example: *path* is set to "/usr/local/arn_persist". There is a file stored at "/usr/local/arn_persist/@/doc/help.html". This file will be mapped to Arn at "//doc/help.html".

Parameters

in	*path*	is the persistent file directory *root*.

See also

setVcs()
Persistent Arn Data Objects

Definition at line 183 of file ArnPersist.cpp.

14.17.3.5 bool ArnPersist::setupDataBase (QString *dbName* = "persist.db")

Setup the persistent database.

Starting a SQLite database to store persistent *Arn Data Object* in.

Parameters

in	*dbName*	is the name (and path) of the SQLite database file.

See also

Persistent Arn Data Objects

Definition at line 396 of file ArnPersist.cpp.

14.17.3.6 void ArnPersist::setVcs (ArnVcs * *vcs*)

Set the *Version Control System* to be used.

The VCS is implemented in a class derived from ArnVcs. Ownership is taken of this VCS. Any previos set VCS will be deleted.

Parameters

in	*vcs*	is the class implementing the VCS. Use 0 (null) to set none.

See also

setPersistDir()
Persistent Arn Data Objects

Definition at line 195 of file ArnPersist.cpp.

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

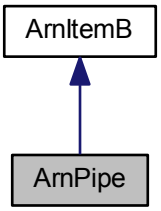
- src/ArnInc/ArnPersist.hpp (2.2.0)
- src/ArnPersist.cpp (2.2.0)

14.18 ArnPipe Class Reference

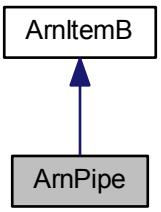
ArnItem specialized as a pipe.

`#include <ArnPipe.hpp>`

Inheritance diagram for ArnPipe:



Collaboration diagram for ArnPipe:



Public Slots

- void setValue (const QByteArray &value)

  Assign a QByteArray to a Pipe

Signals

- void changed (QByteArray value)

  Signal emitted when Pipe has received data.
- void outOfSequence ()

  Signal emitted when the received sequence numbers are "out of sequence".

Public Member Functions

- ArnPipe (QObject *parent=0)

  Standard constructor of a closed handle.
- ArnPipe (const QString &path, QObject *parent=0)

  Construction of a pipe handle to a path
- virtual ~ArnPipe ()
- bool openUuid (const QString &path)

Open a handle to an Arn Pipe Object with a unique uuid name.

- ArnPipe & setMaster ()

  Set client session sync mode as Master for this ArnItem.
- bool isMaster () const
- ArnPipe & setAutoDestroy ()

  Set client session sync mode as AutoDestroy for this ArnItem.
- bool isAutoDestroy () const
- ArnPipe & operator= (const QByteArray &value)
- void setValueOverwrite (const QByteArray &value, const QRegExp &rx)

  Assign a QByteArray to a Pipe by using Anti congest logic.
- bool isSendSeq () const

  Returns true if sending sequence numbers.
- void setSendSeq (bool useSendSeq)

  Change usage of sending sequence numbers.
- bool isCheckSeq () const

  Returns true if checking received sequence numbers.
- void setCheckSeq (bool useCheckSeq)

  Change usage of checking received sequence numbers.

14.18.1 Detailed Description

ArnItem specialized as a pipe.

About Pipes

This class is not thread-safe, but the *Arn Data object* is, so each thread should have it's own handles i.e ArnPipe instances.

Example usage

```
// In class declare
ArnPipe  _arnPipe;

// In class code
_arnPipe.open("//Pipes/Pipe/value");
_arnPipe.setSendSeq( true);
_arnPipe.setCheckSeq( true);
connect( &_arnPipe., SIGNAL(outOfSequence()), this, SLOT(
  doOutOfSequence()));
connect( &_arnPipe, SIGNAL(changed(QByteArray)), this, SLOT(
  doPipeInput(QByteArray)));

QRegExp rx("^ping\\b");
_arnPipe.setValueOverwrite( "ping new", rx);
```

Definition at line 61 of file ArnPipe.hpp.

14.18.2 Constructor & Destructor Documentation

14.18.2.1 ArnPipe::ArnPipe (QObject * *parent* = 0)

Standard constructor of a closed handle.

Parameters

in	*parent*	

Definition at line 47 of file ArnPipe.cpp.

14.18.2.2 ArnPipe::ArnPipe (const QString & *path*, QObject * *parent* = 0)

Construction of a pipe handle to a *path*

The mode for this handle is set to Arn::ObjectMode::Pipe.

Parameters

in	*path*	The *Arn Data Object* path e.g. "//Pipes/myPipe/value"
in	*parent*	

See also

open()

Definition at line 54 of file ArnPipe.cpp.

14.18.2.3 ArnPipe::~ArnPipe ( ) [virtual]

Definition at line 62 of file ArnPipe.cpp.

14.18.3 Member Function Documentation

14.18.3.1 void ArnPipe::changed (QByteArray *value*) [signal]

Signal emitted when *Pipe* has received data.

This is implied by the *Arn Data Object* is changed.

Parameters

in	*value*	is the received bytes

14.18.3.2 bool ArnPipe::isAutoDestroy ( ) const [inline]

Return values

true	if *AutoDestroy mode*

See also

setAutoDestroy()

Definition at line 114 of file ArnPipe.hpp.

14.18.3.3 bool ArnPipe::isCheckSeq ( ) const

Returns true if checking received sequence numbers.

Return values

true	if checking received sequence numbers

See also

setCheckSeq()

Definition at line 123 of file ArnPipe.cpp.

14.18.3.4 bool ArnPipe::isMaster ( ) const [inline]

Return values

true	if *Master mode*

See also

setMaster()
Modes

Definition at line 101 of file ArnPipe.hpp.

14.18.3.5 bool ArnPipe::isSendSeq ( ) const

Returns true if sending sequence numbers.

Return values

true	if sending sequence numbers

See also

setSendSeq()

Definition at line 111 of file ArnPipe.cpp.

14.18.3.6 bool ArnPipe::openUuid (const QString & *path*) [inline]

Open a handle to an Arn Pipe Object with a unique uuid name.

If *path* is marked as provider, the "!" marker will be moved to after uuid.

Parameters

in	*path*	The prefix for Arn uuid pipe path e.g. "//Pipes/pipe"

Return values

false	if error

Definition at line 86 of file ArnPipe.hpp.

14.18.3.7 ArnPipe & ArnPipe::operator= (const QByteArray & *value*)

Definition at line 81 of file ArnPipe.cpp.

14.18.3.8 void ArnPipe::outOfSequence ( ) [signal]

Signal emitted when the received sequence numbers are "out of sequence".

See also

setCheckSeq()
setSendSeq()
Pipe sequence check

14.18.3.9 ArnPipe& ArnPipe::setAutoDestroy ( ) [inline]

Set client session *sync mode* as *AutoDestroy* for this ArnItem.

This ArnItem at client side is setup for auto destruction.

Precondition

This must be set before open().

Definition at line 108 of file ArnPipe.hpp.

14.18.3.10 void ArnPipe::setCheckSeq (bool *useCheckSeq*)

Change usage of checking received sequence numbers.

Parameters

in	*useCheckSeq*	is true for activation

See also

isCheckSeq()
setSendSeq()
outOfSequence()
Pipe sequence check

Definition at line 129 of file ArnPipe.cpp.

14.18.3.11 ArnPipe& ArnPipe::setMaster ( ) [inline]

Set client session *sync mode* as *Master* for this ArnItem.

This ArnItem at client side is set as default generator of data.

Precondition

This must be set before open().

See also

Modes

Definition at line 94 of file ArnPipe.hpp.

14.18.3.12 void ArnPipe::setSendSeq (bool *useSendSeq*)

Change usage of sending sequence numbers.

Parameters

in	*useSendSeq*	is true for activation

See also

isSendSeq()
setCheckSeq()
outOfSequence()
Pipe sequence check

Definition at line 117 of file ArnPipe.cpp.

14.18.3.13 void ArnPipe::setValue (const QByteArray & *value*) [slot]

Assign a *QByteArray* to a *Pipe*

Parameters

in	*value*	to be assigned

Definition at line 67 of file ArnPipe.cpp.

14.18.3.14 void ArnPipe::setValueOverwrite (const QByteArray & *value,* const QRegExp & *rx*)

Assign a *QByteArray* to a *Pipe* by using *Anti congest* logic.

This is used to limit the filling of sendqueue with recuring messages during some kind of client disconnection. Matched message in sendqueue is overwritten by the new message *value*. Unmatched message is added to send queue as usual.

Example:

```
// Messages starts with a function name
// We want message with equal function name to overwrite
QRegExp rx("^" + funcName + "\\b");
_pipe->setValueOverwrite( message, rx);
```

Parameters

in	*value*	to be assigned
in	*rx*	is regexp to be matched with items in send queue.

See also

Pipe anti congest

Definition at line 88 of file ArnPipe.cpp.

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

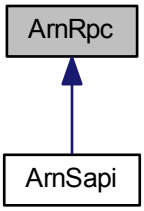
- src/ArnInc/ArnPipe.hpp (2.2.0)
- src/ArnPipe.cpp (2.2.0)

14.19 ArnRpc Class Reference

Remote Procedure Call.

`#include <ArnRpc.hpp>`

Inheritance diagram for ArnRpc:



Classes

- struct **ArgInfo**
- struct Invoke
- struct **MethodsParam**
- struct Mode
- struct **RpcTypeInfo**

Public Slots

- void sendText (QString txt)

  Send a general text message to the other end of the used pipe

Signals

- void pipeClosed ()

  Signal emitted when the used pipe is closed.
- void textReceived (QString text)

  Signal emitted when a general text message is received.
- void defaultCall (const QByteArray &data)

  Signal emitted when receiver method missing.
- void outOfSequence ()

  Signal emitted when checked sequence order is wrong.
- void heartBeatChanged (bool isOk)

  Signal emitted when Heart beat changes state.
- void heartBeatReceived ()

  Signal emitted when Heart beat message is received.

Public Member Functions

- ArnRpc (QObject ∗parent=0)
- QString pipePath () const

  Get the path for the used pipe
- bool open (QString pipePath)

- void setPipe (ArnPipe *pipe)
- ArnPipe * pipe () const

  Get the used pipe
- bool setReceiver (QObject *receiver, bool useTrackRpcSender=true)
- void setMethodPrefix (QString prefix)
- void setIncludeSender (bool v)

  Add sender as argument when calling a rpc method.
- void setMode (Mode mode)
- Mode mode () const

  Get the mode.
- void setHeartBeatSend (int time)

  Set period time for sending heart beat message.
- void setHeartBeatCheck (int time)

  Set max time period for receiving heart beat message.
- bool isHeartBeatOk () const

  Get the state of heart beat.
- void addSenderSignals (QObject *sender, QString prefix)
- bool invoke (const QString &funcName, MQGenericArgument val0=MQGenericArgument(0), MQGenericArgument val1=MQGenericArgument(), MQGenericArgument val2=MQGenericArgument(), MQGenericArgument val3=MQGenericArgument(), MQGenericArgument val4=MQGenericArgument(), MQGenericArgument val5=MQGenericArgument(), MQGenericArgument val6=MQGenericArgument(), MQGenericArgument val7=MQGenericArgument())

  Calls a named remote procedure.
- bool invoke (const QString &funcName, Invoke invokeFlags, MQGenericArgument val0=MQGenericArgument(0), MQGenericArgument val1=MQGenericArgument(), MQGenericArgument val2=MQGenericArgument(), MQGenericArgument val3=MQGenericArgument(), MQGenericArgument val4=MQGenericArgument(), MQGenericArgument val5=MQGenericArgument(), MQGenericArgument val6=MQGenericArgument(), MQGenericArgument val7=MQGenericArgument())

  Calls a named remote procedure using invoke flags.
- ArnRpc * rpcSender ()
- void batchConnect (const QRegExp &rgx, const QObject *receiver, const QString &replace, Mode mode=Mode())

  Make batch connection from this ArnRpc:s signals to another receivers slots/signals.
- void batchConnect (const QObject *sender, const QRegExp &rgx, const QString &replace, Mode mode=Mode())

  Make batch connection from one senders signals to this ArnRpc:s slots/signals.

Static Public Member Functions

- static ArnRpc * rpcSender (QObject *receiver)
- static void batchConnect (const QObject *sender, const QRegExp &rgx, const QObject *receiver, const QString &replace, Mode mode=Mode())

  Make batch connection from one senders signals to another receivers slots/signals.

14.19.1 Detailed Description

Remote Procedure Call.

About RPC and SAPI

This is the basic funtionality of RPC. It's recommended to use ArnSapi which uses a higher level model. For now the ArnRpc class is more sparsely documented.

Example usage

```
    // In class declare  (MyClass)
    ArnRpc*  _rpcCommon;

    // In class code  (MyClass)
    <em>rpcCommon = new ArnRpc( this);
    _rpcCommon->setMethodPrefix("rpc</em>");
    _rpcCommon->setReceiver( this);
    _rpcCommon->setMode( ArnRpc::Mode::Provider);
    _rpcCommon->open("//Pipes/pipeCommon");
.
.
void  MyClass::rpc_test( QByteArray ba, QString str, int i)
{
    ArnRpc*  sender = ArnRpc::rpcSender( this);
    if (sender) qDebug() << "RPC sender=" << sender->pipePath();
    qDebug() << "RPC-test ba=" << ba << " str=" << str << " int=" << i;
}

void  MyClass::rpc_ver()
{
    ArnRpc*  sender = ArnRpc::rpcSender( this);
    if (!sender)  return;
    // Reply to requester the version text
    sender->invoke("ver", MQ_ARG( QString, verText, "MySytem
       Version 1.0"));
}
```

Definition at line 118 of file ArnRpc.hpp.

14.19.2 Constructor & Destructor Documentation

14.19.2.1 ArnRpc::ArnRpc (QObject * *parent* = 0) [explicit]

Definition at line 160 of file ArnRpc.cpp.

14.19.3 Member Function Documentation

14.19.3.1 void ArnRpc::addSenderSignals (QObject * *sender*, QString *prefix*)

Definition at line 320 of file ArnRpc.cpp.

14.19.3.2 void ArnRpc::batchConnect (const QObject * *sender*, const QRegExp & *rgx*, const QObject * *receiver*, const QString & *replace*, Mode *mode* = Mode()) [static]

Make batch connection from one senders signals to another receivers slots/signals.

Used when there is a pattern in the naming of the signals and slots. It's assumed that naming for slots are unique regardless of its case i.e. using both test() and tesT() are not allowed.

Example: `batchConnect( _commonSapi, QRegExp("^rq_(.+)"), this, "chat\\\\1");` connects signal: `rq_info(QString,QString)` to slot: `chatInfo(QString,QString)`

Parameters

in	*sender*	is the sending QObject.
in	*rgx*	is the regular expression for selecting sender signals.
in	*receiver*	is the receiving QObject.
in	*replace*	is the conversion for naming the receiver slots/signals.
in	*mode*	Used modes: *Debug*, *NoDefaultArgs*

Definition at line 1252 of file ArnRpc.cpp.

14.19.3.3 void ArnRpc::batchConnect (const QRegExp & *rgx*, const QObject * *receiver*, const QString & *replace*, Mode *mode* = Mode()) [inline]

Make batch connection from this ArnRpc:s signals to another receivers slots/signals.

Used when there is a pattern in the naming of the signals and slots. It's assumed that naming for slots are unique regardless of its case i.e. using both test() and tesT() are not allowed.

Example: `_commonSapi.batchConnect( QRegExp("^rq_(.+)"), this, "chat\\\\1");` connects signal: `rq_info(QString,QString)` to slot: `chatInfo(QString,QString)`

Parameters

in	*rgx*	is the regular expression for selecting sender signals.
in	*receiver*	is the receiving QObject.
in	*replace*	is the conversion for naming the receiver slots/signals.
in	*mode*	

See also

batchConnect(const QObject*, const QRegExp&, const QObject*, const QString&, Mode)

Definition at line 311 of file ArnRpc.hpp.

14.19.3.4 void ArnRpc::batchConnect (const QObject * *sender*, const QRegExp & *rgx*, const QString & *replace*, Mode *mode* = Mode()) [inline]

Make batch connection from one senders signals to this ArnRpc:s slots/signals.

Used when there is a pattern in the naming of the signals and slots. It's assumed that naming for slots are unique regardless of its case i.e. using both test() and tesT() are not allowed.

Example: `_commonSapi.batchConnect( _commonSapi, QRegExp("^chat(.+)"), "rq_-\\\\1");` connects signal: `chatinfo(QString,QString)` to slot: `rq_Info(QString,QString)`

Parameters

in	*sender*	is the sending QObject.
in	*rgx*	is the regular expression for selecting sender signals.
in	*replace*	is the conversion for naming the receiver slots/signals.
in	*mode*	

See also

batchConnect(const QObject*, const QRegExp&, const QObject*, const QString&, Mode)

Definition at line 332 of file ArnRpc.hpp.

14.19.3.5 void ArnRpc::defaultCall (const QByteArray & *data*) [signal]

Signal emitted when receiver method missing.

This signal is only emitted if Mode::useDefaultCall is active. Error notification is then canceled.

Parameters

in	*data*	is the received call message in XString format.

14.19.3.6 void ArnRpc::heartBeatChanged (bool *isOk*) [signal]

Signal emitted when Heart beat changes state.

Heart beat messages are detected and expected within a check time. If this is satisfied, the state of heart beat is ok.

Parameters

in	*isOk*	is the Heart beat state, false = Not received.

14.19.3.7 void ArnRpc::heartBeatReceived ( ) [signal]

Signal emitted when Heart beat message is received.

14.19.3.8 bool ArnRpc::invoke (const QString & *funcName*, MQGenericArgument *val0* = MQGenericArgument (0), MQGenericArgument *val1* = MQGenericArgument (), MQGenericArgument *val2* = MQGenericArgument (), MQGenericArgument *val3* = MQGenericArgument (), MQGenericArgument *val4* = MQGenericArgument (), MQGenericArgument *val5* = MQGenericArgument (), MQGenericArgument *val6* = MQGenericArgument (), MQGenericArgument *val7* = MQGenericArgument ())

Calls a named remote procedure.

This is the low level way to call a remote procedure. It can freely call anything without declaring it. For high level calls use ArnSapi.

This function works similar to QMetaObject::invokeMethod(). The called name is prefixed before the final call is made. Using the label in MQ_ARG() makes dubugging easier, as the parameter is named.

Example: `rpc->invoke("myfunc", MQ_ARG( QString, mypar, "Test XYZ"));`

Parameters

in	*funcName*	is the name of the called procedure.
in	*val0*	first arg.
in	*val1*	
in	*val2*	
in	*val3*	
in	*val4*	
in	*val5*	
in	*val6*	
in	*val7*	

Definition at line 370 of file ArnRpc.cpp.

14.19.3.9 bool ArnRpc::invoke (const QString & *funcName*, Invoke *invokeFlags*, MQGenericArgument *val0* = MQGenericArgument (0), MQGenericArgument *val1* = MQGenericArgument (), MQGenericArgument *val2* = MQGenericArgument (), MQGenericArgument *val3* = MQGenericArgument (), MQGenericArgument *val4* = MQGenericArgument (), MQGenericArgument *val5* = MQGenericArgument (), MQGenericArgument *val6* = MQGenericArgument (), MQGenericArgument *val7* = MQGenericArgument ())

Calls a named remote procedure using invoke flags.

This is the low level way to call a remote procedure. It can freely call anything without declaring it. For high level calls use ArnSapi.

This function works similar to QMetaObject::invokeMethod(). The called name is prefixed before the final call is

made. Using the label in MQ_ARG() makes dubugging easier, as the parameter is named.

Example: `rpc->invoke("myfunc", ArnRpc::Invoke::NoQueue, MQ_ARG( QString, mypar, "Test XYZ"));`

Parameters

in	*funcName*	is the name of the called procedure.
in	*invokeFlags*	is flags for controlling the invoke
in	*val0*	first arg.
in	*val1*	
in	*val2*	
in	*val3*	
in	*val4*	
in	*val5*	
in	*val6*	
in	*val7*	

Definition at line 407 of file ArnRpc.cpp.

14.19.3.10 bool ArnRpc::isHeartBeatOk ( ) const

Get the state of heart beat.

Return values

false	if not getting heart beat in time

See also

heartBeatChanged()

Definition at line 314 of file ArnRpc.cpp.

14.19.3.11 ArnRpc::Mode ArnRpc::mode ( ) const

Get the mode.

Returns

current *mode*

Definition at line 290 of file ArnRpc.cpp.

14.19.3.12 bool ArnRpc::open (QString *pipePath*)

Definition at line 186 of file ArnRpc.cpp.

14.19.3.13 void ArnRpc::outOfSequence ( ) [signal]

Signal emitted when checked sequence order is wrong.

14.19.3.14 ArnPipe * ArnRpc::pipe ( ) const

Get the used *pipe*

Returns

pipe

Definition at line 238 of file ArnRpc.cpp.

14.19.3.15 void ArnRpc::pipeClosed ( ) [signal]

Signal emitted when the used pipe is closed.

The *pipe* closes when its *Arn Data Object* is destroyed, i.e. the session is considered ended.

14.19.3.16 QString ArnRpc::pipePath ( ) const

Get the path for the used *pipe*

Returns

path

Definition at line 178 of file ArnRpc.cpp.

14.19.3.17 ArnRpc * ArnRpc::rpcSender ( )

Definition at line 351 of file ArnRpc.cpp.

14.19.3.18 ArnRpc * ArnRpc::rpcSender (QObject * *receiver*) [static]

Definition at line 359 of file ArnRpc.cpp.

14.19.3.19 void ArnRpc::sendText (QString *txt*) [slot]

Send a general text message to the other end of the used *pipe*

Is used by ArnRpc to give errors and help messages, mostly for debugging.

Parameters

in	*txt*	is the text to be sent

See also

textReceived();

Definition at line 1235 of file ArnRpc.cpp.

14.19.3.20 void ArnRpc::setHeartBeatCheck (int *time*)

Set max time period for receiving heart beat message.

Setting time to zero will turn off checking.

Parameters

in	*time*	is the time period in seconds

See also

setHeartBeatSend();

Definition at line 305 of file ArnRpc.cpp.

14.19.3.21 void ArnRpc::setHeartBeatSend (int *time*)

Set period time for sending heart beat message.

Setting time to zero will turn off sending.

Parameters

in	*time*	is the time period in seconds

See also

setHeartBeatCheck();

Definition at line 296 of file ArnRpc.cpp.

14.19.3.22 void ArnRpc::setIncludeSender (bool *v*)

Add sender as argument when calling a rpc method.

Deprecated Use rpcSender()

Definition at line 278 of file ArnRpc.cpp.

14.19.3.23 void ArnRpc::setMethodPrefix (QString *prefix*)

Definition at line 271 of file ArnRpc.cpp.

14.19.3.24 void ArnRpc::setMode (Mode *mode*)

Definition at line 284 of file ArnRpc.cpp.

14.19.3.25 void ArnRpc::setPipe (ArnPipe * *pipe*)

Definition at line 221 of file ArnRpc.cpp.

14.19.3.26 bool ArnRpc::setReceiver (QObject * *receiver*, bool *useTrackRpcSender* = true)

Definition at line 244 of file ArnRpc.cpp.

14.19.3.27 void ArnRpc::textReceived (QString *text*) [signal]

Signal emitted when a general text message is received.

The text message is received from the other end of the used *pipe*.

Parameters

in	*text*	is the received text

See also

sendText();

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

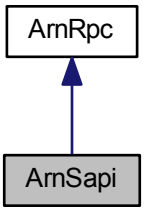
- src/ArnInc/ArnRpc.hpp (2.2.0)
- src/ArnRpc.cpp (2.2.0)

14.20 ArnSapi Class Reference

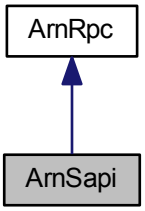
Service API.

`#include <ArnSapi.hpp>`

Inheritance diagram for ArnSapi:



Collaboration diagram for ArnSapi:



Public Member Functions

- ArnSapi (QObject *parent=0)
- bool open (QString pipePath, Mode mode=Mode(), const char *providerPrefix=0, const char *requesterPrefix=0)

  Open a new Service API.
- void batchConnectTo (const QObject *receiver, const QString &prefix=QString(), Mode mode=Mode())

Make batch connection from this ArnSapi:s signals to another receivers slots/signals.

- void batchConnectFrom (const QObject *sender, const QString &prefix=QString(), Mode mode=Mode())

  Make batch connection from one senders signals to this ArnSapi:s signals.

Additional Inherited Members

14.20.1 Detailed Description

Service API.

About RPC and SAPI

This class serves as a base class for *Service Application Programming Interface*. It should be derived to a custom class that descibe a specific *SAPI*.

By default all *provider* services are prefixed by "pv_" and all *requester* "services" are prefixed by "rq_". This standard can be changed.

The meta prefix *no_queue* is used to limit the filling of sendqueue with recuring RPC calls during some kind of client disconnection. Matched function name in sendqueue is overwritten by the last call. This functionality uses pipe anti congest. This is internally used for *heart beat*, but other typical usages can be *ping*, *request update* etc.

Example usage

```
class ChatSapi : public ArnSapi
{
    Q_OBJECT
public:
    explicit ChatSapi( QObject* parent = 0) : ArnSapi( parent)  {}

signals:
MQ_PUBLIC_ACCESS
    no_queue void  pv_list();
    void  pv_newMsg( QString name, QString msg);
    void  pv_infoQ();

    void  rq_updateMsg( int seq, QString name, QString msg);
    void  rq_info( QString name, QString ver);
};

    // In class declare  (MyClass)
    ChatSapi*  _commonSapi;

    // In class code  (MyClass)
    typedef ArnSapi::Mode  SMode;
    _commonSapi = new ChatSapi( this);
    _commonSapi->open("//Chat/Pipes/pipeCommon", SMode::Provider |
      SMode::UseDefaultCall);
    _commonSapi->batchConnectTo( this, "sapi");
.
.
void  ServerMain::sapiNewMsg( QString name, QString msg)
{
    int  seq = ...;
    _commonSapi->rq_updateMsg( seq, name, msg);
}

void  MyClass::sapiInfoQ()
{
    ChatSapi*  sapi = qobject_cast<ChatSapi*>( sender());
    sapi->rq_info("Arn Chat Demo", "1.0");
}

void  MainWindow::sapiDefault( const QByteArray& data)
{
    ChatSapi*  sapi = qobject_cast<ChatSapi*>( sender());
    qDebug() << "chatDefault:" << data;
    sapi->sendText("Chat Sapi: Can't find method, use $help.");
}
```

Examples:

ArnDemoChatServer/ChatSapi.hpp.

Definition at line 113 of file ArnSapi.hpp.

14.20.2 Constructor & Destructor Documentation

14.20.2.1 ArnSapi::ArnSapi (QObject * *parent* = 0) [explicit]

Examples:

ArnDemoChatServer/ChatSapi.hpp.

Definition at line 36 of file ArnSapi.cpp.

14.20.3 Member Function Documentation

14.20.3.1 void ArnSapi::batchConnectFrom (const QObject * *sender*, const QString & *prefix* = QString(), ArnRpc::Mode *mode* = Mode())

Make batch connection from one senders signals to this ArnSapi:s signals.

Used when there is a specific pattern in the naming of the signals. It's assumed that naming for signals are unique regardless of its case i.e. using both test() and tesT() are not allowed.

Example: Requester doing `_commonSapi.batchConnectFrom( mySender, "sapi");` Can connect signal: `sapiNewMsg(QString,QString)` to signal: `pv_newMsg(QString,QString)`

Parameters

in	*sender*	is the sending QObject.
in	*prefix*	is the prefix for sending signal names.
in	*mode*	

See also

ArnRpc::batchConnect(const QObject*, const QRegExp&, const QObject*, const QString&, Mode)

Definition at line 79 of file ArnSapi.cpp.

14.20.3.2 void ArnSapi::batchConnectTo (const QObject * *receiver*, const QString & *prefix* = QString(), ArnRpc::Mode *mode* = Mode())

Make batch connection from this ArnSapi:s signals to another receivers slots/signals.

Used when there is a specific pattern in the naming of the signals and slots. It's assumed that naming for slots are unique regardless of its case i.e. using both test() and tesT() are not allowed.

When Mode::UseDefaultCall is active, then also the defaultCall() signal is connected to the receiver. Method name will be using the prefix and end with "Default". E.g. prefix is "sapi" will give method name "sapiDefault".

Example: Provider doing `_commonSapi.batchConnectTo( myReceiver, "sapi");` Can connect signal: `pv_newMsg(QString,QString)` to slot: `sapiNewMsg(QString,QString)`

Parameters

in	*receiver*	is the receiving QObject.
in	*prefix*	is the prefix for receiving slot/signal names.
in	*mode*	

See also

ArnRpc::batchConnect(const QObject*, const QRegExp&, const QObject*, const QString&, Mode)

Definition at line 63 of file ArnSapi.cpp.

14.20.3.3 bool ArnSapi::open (QString *pipePath*, Mode *mode* = Mode (), const char * *providerPrefix* = 0, const char * *requesterPrefix* = 0)

Open a new Service API.

The opened Sapi can be either the *provider* side or the *requester* side, which is indicated by *mode*. The provider marker "!" in the *pipePath* will automatically be set/removed in accordance to the *mode*.

Typically the *provider* is only using *mode Provider*. The *requester* can use default *mode* for a static *pipe* and typically use the *UuidAutoDestroy mode* for dynamic session *pipes*.

Parameters

in	*pipePath*	is the path used for Sapi
in	*mode*	
in	*providerPrefix*	to set a custom prefix for *provider* signals.
in	*requesterPrefix*	to set a custom prefix for *requester* signals.

Return values

false	if error

See also

Pipe Arn Data Objects

Definition at line 42 of file ArnSapi.cpp.

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

- src/ArnInc/ArnSapi.hpp (2.2.0)
- src/ArnSapi.cpp (2.2.0)

14.21 ArnScript Class Reference

`#include <ArnScript.hpp>`

Signals

- void errorText (QString txt)

Public Member Functions

- ArnScript (QObject *parent=0)
- QScriptEngine & engine () const
- bool evaluate (QByteArray script, QString idName)
- bool evaluateFile (QString fileName)
- bool logUncaughtError (QScriptValue &scriptValue)
- QString idName () const
- virtual ArnClient * getClient (QString clientId)

Protected Member Functions

- void errorLog (QString errText, ArnError err=ArnError::Undef, void *reference=0)

Static Protected Member Functions

- static QScriptValue printFunction (QScriptContext *context, QScriptEngine *engine)

Protected Attributes

- QScriptEngine * _engine
- ArnItemProto * _itemProto
- ArnMonitorProto * _monitorProto
- ArnDepOfferProto * _depOfferProto
- ArnDepProto * _depProto

14.21.1 Detailed Description

Definition at line 197 of file ArnScript.hpp.

14.21.2 Constructor & Destructor Documentation

14.21.2.1 ArnScript::ArnScript (QObject * *parent* = 0) [explicit]

Definition at line 79 of file ArnScript.cpp.

14.21.3 Member Function Documentation

14.21.3.1 QScriptEngine & ArnScript::engine ( ) const

Definition at line 135 of file ArnScript.cpp.

14.21.3.2 void ArnScript::errorLog (QString *errText*, ArnError *err* = ArnError::Undef, void * *reference* = 0) [protected]

Definition at line 209 of file ArnScript.cpp.

14.21.3.3 void ArnScript::errorText (QString *txt*) [signal]

14.21.3.4 bool ArnScript::evaluate (QByteArray *script*, QString *idName*)

Definition at line 141 of file ArnScript.cpp.

14.21.3.5 bool ArnScript::evaluateFile (QString *fileName*)

Definition at line 152 of file ArnScript.cpp.

14.21.3.6 ArnClient * ArnScript::getClient (QString *clientId*) [virtual]

Definition at line 218 of file ArnScript.cpp.

14.21.3.7 QString ArnScript::idName ( ) const

Definition at line 177 of file ArnScript.cpp.

14.21.3.8 bool ArnScript::logUncaughtError (QScriptValue & *scriptValue*)

Definition at line 161 of file ArnScript.cpp.

14.21.3.9 QScriptValue ArnScript::printFunction (QScriptContext * *context*, QScriptEngine * *engine*) [static], [protected]

Definition at line 191 of file ArnScript.cpp.

14.21.4 Member Data Documentation

14.21.4.1 ArnDepOfferProto* ArnScript::_depOfferProto [protected]

Definition at line 226 of file ArnScript.hpp.

14.21.4.2 ArnDepProto* ArnScript::_depProto [protected]

Definition at line 227 of file ArnScript.hpp.

14.21.4.3 QScriptEngine* ArnScript::_engine [protected]

Definition at line 223 of file ArnScript.hpp.

14.21.4.4 ArnItemProto* ArnScript::_itemProto [protected]

Definition at line 224 of file ArnScript.hpp.

14.21.4.5 ArnMonitorProto* ArnScript::_monitorProto [protected]

Definition at line 225 of file ArnScript.hpp.

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

- src/ArnInc/ArnScript.hpp (2.2.0)
- src/ArnScript.cpp (2.2.0)

14.22 ArnScriptJob Class Reference

`#include <ArnScriptJob.hpp>`

Public Slots

- void setWatchDogTime (int time)
- void yield ()
- void quit ()
- void errorLog (QString txt)

Signals

- void sigQuit ()

Public Member Functions

- ArnScriptJob (int id, QObject *parent=0)

Properties

- bool sleepState
- int watchDog
- int poll
- QString name

14.22.1 Detailed Description

Interface class to be normally used, is also Script Job interface

Definition at line 134 of file ArnScriptJob.hpp.

14.22.2 Constructor & Destructor Documentation

14.22.2.1 ArnScriptJob::ArnScriptJob (int *id*, QObject * *parent* = 0) [explicit]

Definition at line 373 of file ArnScriptJob.cpp.

14.22.3 Member Function Documentation

14.22.3.1 void ArnScriptJob::errorLog (QString *txt*) [inline], [slot]

Definition at line 151 of file ArnScriptJob.hpp.

14.22.3.2 void ArnScriptJob::quit ( ) [inline], [slot]

Definition at line 150 of file ArnScriptJob.hpp.

14.22.3.3 void ArnScriptJob::setWatchDogTime (int *time*) [inline], [slot]

Definition at line 148 of file ArnScriptJob.hpp.

14.22.3.4 void ArnScriptJob::sigQuit ( ) [signal]

14.22.3.5 void ArnScriptJob::yield ( ) [inline], [slot]

Definition at line 149 of file ArnScriptJob.hpp.

14.22.4 Property Documentation

14.22.4.1 QString ArnScriptJob::name [read]

Definition at line 140 of file ArnScriptJob.hpp.

14.22.4.2 int ArnScriptJob::poll [read], [write]

Definition at line 139 of file ArnScriptJob.hpp.

14.22.4.3 bool ArnScriptJob::sleepState [read], [write]

Definition at line 137 of file ArnScriptJob.hpp.

14.22.4.4 int ArnScriptJob::watchDog [read], [write]

Definition at line 138 of file ArnScriptJob.hpp.

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

- src/ArnInc/ArnScriptJob.hpp (2.2.0)
- src/ArnScriptJob.cpp (2.2.0)

14.23 ArnScriptJobControl Class Reference

Is thread-safe (except doSetupJob)

`#include <ArnScriptJob.hpp>`

Public Slots

- void setScript (QByteArray script)

Signals

- void scriptChanged (int id)
- void errorText (QString txt)

Public Member Functions

- ArnScriptJobControl (QObject *parent=0)
- int id ()
- QString name () const
- void setName (QString name)
- void addInterface (QString id)
- void addInterfaceList (QStringList interfaceList)
- QByteArray script () const
- void loadScriptFile (QString fileName)
- QVariant config (const char *name) const
- bool setConfig (const char *name, const QVariant &value)
- void addConfig (QObject *obj)
- void setThreaded (bool isThreaded)
- void doSetupJob (ArnScriptJob *job, ArnScriptJobFactory *jobFactory)

  Not threadsafe, only run in same thread as script.

14.23.1 Detailed Description

Is thread-safe (except doSetupJob)

Definition at line 172 of file ArnScriptJob.hpp.

14.23.2 Constructor & Destructor Documentation

14.23.2.1 ArnScriptJobControl::ArnScriptJobControl (QObject * *parent* = 0) [explicit]

Definition at line 384 of file ArnScriptJob.cpp.

14.23.3 Member Function Documentation

14.23.3.1 void ArnScriptJobControl::addConfig (QObject * *obj*)

Definition at line 483 of file ArnScriptJob.cpp.

14.23.3.2 void ArnScriptJobControl::addInterface (QString *id*)

Definition at line 421 of file ArnScriptJob.cpp.

14.23.3.3 void ArnScriptJobControl::addInterfaceList (QStringList *interfaceList*)

Definition at line 430 of file ArnScriptJob.cpp.

14.23.3.4 QVariant ArnScriptJobControl::config (const char * *name*) const

Definition at line 517 of file ArnScriptJob.cpp.

14.23.3.5 void ArnScriptJobControl::doSetupJob (ArnScriptJob * *job,* ArnScriptJobFactory * *jobFactory*)

Not threadsafe, only run in same thread as script.

Definition at line 501 of file ArnScriptJob.cpp.

14.23.3.6 void ArnScriptJobControl::errorText (QString *txt*) [signal]

14.23.3.7 int ArnScriptJobControl::id ( )

Definition at line 401 of file ArnScriptJob.cpp.

14.23.3.8 void ArnScriptJobControl::loadScriptFile (QString *fileName*)

Definition at line 459 of file ArnScriptJob.cpp.

14.23.3.9 QString ArnScriptJobControl::name ( ) const

Definition at line 411 of file ArnScriptJob.cpp.

14.23.3.10 QByteArray ArnScriptJobControl::script ( ) const

Definition at line 449 of file ArnScriptJob.cpp.

14.23.3.11 void ArnScriptJobControl::scriptChanged (int *id*) [signal]

14.23.3.12 bool ArnScriptJobControl::setConfig (const char * *name*, const QVariant & *value*)

Definition at line 471 of file ArnScriptJob.cpp.

14.23.3.13 void ArnScriptJobControl::setName (QString *name*)

Definition at line 393 of file ArnScriptJob.cpp.

14.23.3.14 void ArnScriptJobControl::setScript (QByteArray *script*) [slot]

Definition at line 439 of file ArnScriptJob.cpp.

14.23.3.15 void ArnScriptJobControl::setThreaded (bool *isThreaded*)

Definition at line 494 of file ArnScriptJob.cpp.

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

- src/ArnInc/ArnScriptJob.hpp (2.2.0)
- src/ArnScriptJob.cpp (2.2.0)

14.24 ArnScriptJobFactory Class Reference

Must be thread-safe as subclassed.

`#include <ArnScriptJob.hpp>`

Public Member Functions

- ArnScriptJobFactory ()
- virtual ~ArnScriptJobFactory ()
- virtual bool installExtension (QString id, QScriptEngine &engine, const ArnScriptJobControl *jobControl=0)=0
- virtual ArnClient * getClient (QString id)

Static Protected Member Functions

- static void setupJsObj (const QString &id, const QScriptValue &jsObj, QScriptEngine &engine)
- static bool setupInterface (const QString &id, QObject *interface, QScriptEngine &engine)

14.24.1 Detailed Description

Must be thread-safe as subclassed.

Definition at line 156 of file ArnScriptJob.hpp.

14.24.2 Constructor & Destructor Documentation

14.24.2.1 ArnScriptJobFactory::ArnScriptJobFactory ( ) [explicit]

Definition at line 333 of file ArnScriptJob.cpp.

14.24.2.2 ArnScriptJobFactory::~ArnScriptJobFactory ( ) [virtual]

Definition at line 338 of file ArnScriptJob.cpp.

14.24.3 Member Function Documentation

14.24.3.1 ArnClient * ArnScriptJobFactory::getClient (QString *id*) [virtual]

Definition at line 343 of file ArnScriptJob.cpp.

14.24.3.2 virtual bool ArnScriptJobFactory::installExtension (QString *id,* QScriptEngine & *engine,* const ArnScriptJobControl * *jobControl* = 0) [pure virtual]

14.24.3.3 bool ArnScriptJobFactory::setupInterface (const QString & *id,* QObject * *interface,* QScriptEngine & *engine*) [static], [protected]

Definition at line 355 of file ArnScriptJob.cpp.

14.24.3.4 void ArnScriptJobFactory::setupJsObj (const QString & *id,* const QScriptValue & *jsObj,* QScriptEngine & *engine*) [static], [protected]

Definition at line 349 of file ArnScriptJob.cpp.

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

- src/ArnInc/ArnScriptJob.hpp (2.2.0)
- src/ArnScriptJob.cpp (2.2.0)

14.25 ArnScriptJobs Class Reference

`#include <ArnScriptJobs.hpp>`

Classes

- struct **JobSlot**
- struct Type

Public Member Functions

- ArnScriptJobs (QObject *parent=0)
- void addJob (ArnScriptJobControl *jobConfig, int prio=1)
- void setFactory (ArnScriptJobFactory *jobFactory)
- void start (Type type=Type::Cooperative)

14.25.1 Detailed Description

TODO: Add destructor that deletes jobs in _jobSlots

Definition at line 88 of file ArnScriptJobs.hpp.

14.25.2 Constructor & Destructor Documentation

14.25.2.1 ArnScriptJobs::ArnScriptJobs (QObject * *parent* = 0) [explicit]

Definition at line 140 of file ArnScriptJobs.cpp.

14.25.3 Member Function Documentation

14.25.3.1 void ArnScriptJobs::addJob (ArnScriptJobControl * *jobConfig*, int *prio* = 1)

Definition at line 149 of file ArnScriptJobs.cpp.

14.25.3.2 void ArnScriptJobs::setFactory (ArnScriptJobFactory * *jobFactory*)

Definition at line 161 of file ArnScriptJobs.cpp.

14.25.3.3 void ArnScriptJobs::start (Type *type* = Type::Cooperative)

Definition at line 167 of file ArnScriptJobs.cpp.

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

- src/ArnInc/ArnScriptJobs.hpp (2.2.0)
- src/ArnScriptJobs.cpp (2.2.0)

14.26 ArnServer Class Reference

Class for making an *Arn Server*.

`#include <ArnServer.hpp>`

Classes

- struct Type

Public Member Functions

- ArnServer (Type serverType, QObject *parent=0)

  Create an Arn server object.
- void start (int port=-1, QHostAddress listenAddr=QHostAddress::Any)

  Start the Arn server
- int port ()

  Port number of the Arn server
- QHostAddress listenAddress ()

  Address of the interface used to listening for connections to the Arn server

14.26.1 Detailed Description

Class for making an *Arn Server*.

About Sharing Arn Data Objects

Example usage

```
// In class declare
ArnServer*  _server;

// In class code
_server = new ArnServer( ArnServer::Type::NetSync
  , this);
_server->start();
```

Examples:

ArnDemoChatServer/MainWindow.cpp, and ArnDemoChatServer/MainWindow.hpp.

Definition at line 57 of file ArnServer.hpp.

14.26.2 Constructor & Destructor Documentation

14.26.2.1 ArnServer::ArnServer (Type *serverType*, QObject * *parent* = 0)

Create an Arn *server* object.

Parameters

in	*serverType*	For now only *NetSync* is available.
in	*parent*	

Definition at line 43 of file ArnServer.cpp.

14.26.3 Member Function Documentation

14.26.3.1 QHostAddress ArnServer::listenAddress ( )

Address of the interface used to listening for connections to the Arn *server*

Return values

is	the address (which usually is QHostAddress::Any).

See also

start()

Definition at line 84 of file ArnServer.cpp.

14.26.3.2 int ArnServer::port ( )

Port number of the Arn *server*

Return values

is	the port number.

Definition at line 78 of file ArnServer.cpp.

14.26.3.3 void ArnServer::start (int *port* = -1, QHostAddress *listenAddr* = QHostAddress::Any)

Start the Arn *server*

Parameters

in	*port*	is the server port, -1 gives Arn::defaultTcpPort, 0 gives dynamic port
in	*listenAddr*	is the interface address to listen for connections (default any)

Definition at line 52 of file ArnServer.cpp.

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

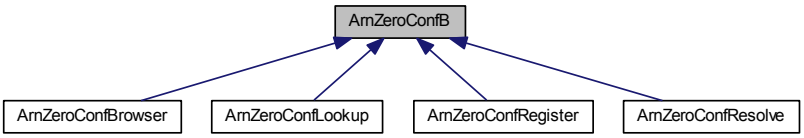
- src/ArnInc/ArnServer.hpp (2.2.0)
- src/ArnServer.cpp (2.2.0)

14.27 ArnZeroConfB Class Reference

Base class for Zero Config.

`#include <ArnZeroConf.hpp>`

Inheritance diagram for ArnZeroConfB:



Public Member Functions

- ArnZeroConfB (QObject *parent=0)
- virtual ~ArnZeroConfB ()
- QAbstractSocket::SocketType socketType () const

  Returns the socket type for this Zero Config.
- void setSocketType (QAbstractSocket::SocketType type)

  Sets the socket type for this Zero Config.
- QString serviceType () const

  Returns the service type for this Zero Config.
- void setServiceType (const QString &type)

  Returns the service type for this Zero Config.
- QString domain () const

  Returns the domain for this Zero Config.
- void setDomain (const QString &domain)

  Sets the domain for this Zero Config.
- ArnZeroConf::State state () const

  Returns the current state of the service.
- QString fullServiceType () const

  Returns the full service type for this Zero Config.

14.27.1 Detailed Description

Base class for Zero Config.

About Zero Config

This class contains methods and data which is usually a superset, i.e. not all data will be relevant / available for all uses.

Definition at line 112 of file ArnZeroConf.hpp.

14.27.2 Constructor & Destructor Documentation

14.27.2.1 ArnZeroConfB::ArnZeroConfB (QObject * *parent* = 0)

Definition at line 83 of file ArnZeroConf.cpp.

14.27.2.2 ArnZeroConfB::~ArnZeroConfB ( ) [virtual]

Definition at line 102 of file ArnZeroConf.cpp.

14.27.3 Member Function Documentation

14.27.3.1 QString ArnZeroConfB::domain ( ) const

Returns the domain for this Zero Config.

Returns

current domain.

See also

setDomain()

Definition at line 290 of file ArnZeroConf.cpp.

14.27.3.2 QString ArnZeroConfB::fullServiceType ( ) const

Returns the full service type for this Zero Config.

Service types are standardized by IANA.

The full service type is the standard format used by the Zeroconf specification, e.g. "_arn._tcp".

Returns

current full service type (see above)

See also

setServiceType()

Definition at line 325 of file ArnZeroConf.cpp.

14.27.3.3 QString ArnZeroConfB::serviceType ( ) const

Returns the service type for this Zero Config.

Returns

current service type, e.g. "arn", "ftp" ...

See also

setServiceType()

Definition at line 261 of file ArnZeroConf.cpp.

14.27.3.4 void ArnZeroConfB::setDomain (const QString & *domain*)

Sets the domain for this Zero Config.

Default set by this class is "local.".

Parameters

in	*domain*	

See also

domain()

Definition at line 296 of file ArnZeroConf.cpp.

14.27.3.5 void ArnZeroConfB::setServiceType (const QString & *type*)

Returns the service type for this Zero Config.

Service types are standardized by IANA.

The service type used here can be a name, like "arn", or the standard format used by the Zeroconf specification, e.g. "_arn._tcp".

Parameters

in	*type*	is the service type (se above).

See also

serviceType()

Definition at line 267 of file ArnZeroConf.cpp.

14.27.3.6 void ArnZeroConfB::setSocketType (QAbstractSocket::SocketType *type*)

Sets the socket type for this Zero Config.

Allowed Socket type is: QAbstractSocket::TcpSocket, QAbstractSocket::UdpSocket.

Parameters

in	*type*	is one of the allowed types.

See also

socketType()

Definition at line 255 of file ArnZeroConf.cpp.

14.27.3.7 QAbstractSocket::SocketType ArnZeroConfB::socketType ( ) const

Returns the socket type for this Zero Config.

- Socket type can be: QAbstractSocket::TcpSocket, QAbstractSocket::UdpSocket, QAbstractSocket::-UnknownSocketType.
- Default set by this class is QAbstractSocket::TcpSocket.
- QAbstractSocket::UnknownSocketType is only used when socket type can't be determined.

Returns

current socket type.

See also

setSocketType()

Definition at line 249 of file ArnZeroConf.cpp.

14.27.3.8 ArnZeroConf::State ArnZeroConfB::state ( ) const

Returns the current state of the service.

Return values

the	state of the service

Definition at line 191 of file ArnZeroConf.cpp.

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

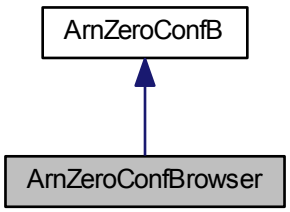
- src/ArnInc/ArnZeroConf.hpp (2.2.0)
- src/ArnZeroConf.cpp (2.2.0)

14.28 ArnZeroConfBrowser Class Reference

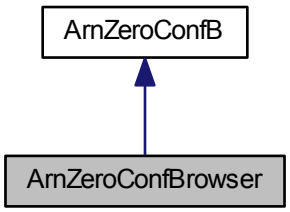
Browsing for ZeroConfig services.

`#include <ArnZeroConf.hpp>`

Inheritance diagram for ArnZeroConfBrowser:



Collaboration diagram for ArnZeroConfBrowser:



Public Slots

- void browse (bool enable=true)

  Change state of browsing.
- void stopBrowse ()

  Stop browsing.

Signals

- void serviceChanged (bool isAdded, int id, const QString &serviceName, const QString &domain)

  Indicate service has been added / removed.
- void serviceAdded (int id, const QString &serviceName, const QString &domain)

  Indicate service has been added (discovered)
- void serviceRemoved (int id, const QString &serviceName, const QString &domain)

  Indicate service has been removed.
- void browseError (int errorCode)

  Indicate unsuccessfull browsing.

Public Member Functions

- ArnZeroConfBrowser (QObject *parent=0)

  Standard constructor of an ArnZeroConfBrowser object.
- ArnZeroConfBrowser (const QString &serviceType, QObject *parent=0)

  Constructor of an ArnZeroConfBrowser object.
- virtual ~ArnZeroConfBrowser ()

  Destructor of an ArnZeroConfBrowser object.
- void setSubType (const QString &subtype)

  Set subtype (filter)
- QString subType ()

  Return current subtype (filter)
- QStringList activeServiceNames () const

  Return current list of active service names.
- int serviceNameToId (const QString &name)

  Return the id for a service by its service name.
- bool isBrowsing () const

  Return the status of the browsing.

Static Public Member Functions

- static int getNextId ()

  Return the next id number for zero config objects.

Friends

- class ArnZeroConfIntern

14.28.1 Detailed Description

Browsing for ZeroConfig services.

About Zero Config

This class handles browsing of ZeroConfig services.

Example usage

```
    // In class declare
    ArnZeroConfBrowser*  _serviceBrowser;

    // In class code
    _serviceBrowser = new ArnZeroConfBrowser( this);
    connect(_serviceBrowser, SIGNAL(browseError(int)),
            this, SLOT(onBrowseError(int)));
    connect(_serviceBrowser, SIGNAL(serviceAdded(int,QString,
      QString)),
            this, SLOT(onServiceAdded(int,QString,QString)));
    connect(_serviceBrowser, SIGNAL(serviceRemoved(int,QString,
      QString)),
            this, SLOT(onServiceRemoved(int,QString,QString)));

void  XXX::onServiceAdded( int id, QString name, QString domain)
{
    ArnZeroConfResolve*  ds = new ArnZeroConfResolve
      ( name, this);
    ds->setId( id);
    connect( ds, SIGNAL(resolveError(int,int)), this, SLOT(onResolveError(int,
      int)));
    connect( ds, SIGNAL(resolved(int,QByteArray)), this, SLOT(onResolved(int,
      QByteArray)));
    ds->resolve();
}
```

```
void  XXX::onServiceRemoved( int id, QString name, QString domain)
{
}
```

Definition at line 936 of file ArnZeroConf.hpp.

14.28.2 Constructor & Destructor Documentation

14.28.2.1 ArnZeroConfBrowser::ArnZeroConfBrowser (QObject * *parent* = 0)

Standard constructor of an ArnZeroConfBrowser object.

All needed for browsing an "arn" service type.

Parameters

in	*parent*	

Definition at line 889 of file ArnZeroConf.cpp.

14.28.2.2 ArnZeroConfBrowser::ArnZeroConfBrowser (const QString & *serviceType*, QObject * *parent* = 0)

Constructor of an ArnZeroConfBrowser object.

All needed parameters for browsing a service.

The service type can be a name or the standard format used by the Zeroconf specification, e.g. "_arn._tcp".

Parameters

in	*serviceType*	the service type, e.g. "arn" or "_arn._tcp".
in	*parent*	

Definition at line 896 of file ArnZeroConf.cpp.

14.28.2.3 ArnZeroConfBrowser::~ArnZeroConfBrowser ( ) [virtual]

Destructor of an ArnZeroConfBrowser object.

If browsing is active, it will be stopped.

Definition at line 904 of file ArnZeroConf.cpp.

14.28.3 Member Function Documentation

14.28.3.1 QStringList ArnZeroConfBrowser::activeServiceNames ( ) const

Return current list of active service names.

Return values

the	active service names

See also

serviceAdded()

Definition at line 914 of file ArnZeroConf.cpp.

14.28.3.2 void ArnZeroConfBrowser::browse (bool *enable* = `true`) [slot]

Change state of browsing.

When browsing is started, services will be discovered.

Parameters

in	*enable*	if true browsing is started, otherwise it is stopped

See also

stopBrowse()

Definition at line 946 of file ArnZeroConf.cpp.

14.28.3.3 void ArnZeroConfBrowser::browseError (int *errorCode*) [signal]

Indicate unsuccessfull browsing.

Parameters

in	*errorCode*	

See also

browse()

14.28.3.4 static int ArnZeroConfBrowser::getNextId ( ) [inline], [static]

Return the next id number for zero config objects.

Returns

id number

Definition at line 1002 of file ArnZeroConf.hpp.

14.28.3.5 bool ArnZeroConfBrowser::isBrowsing ( ) const

Return the status of the browsing.

Return values

true	if browsing is started

See also

browse()

Definition at line 926 of file ArnZeroConf.cpp.

14.28.3.6 void ArnZeroConfBrowser::serviceAdded (int *id*, const QString & *serviceName*, const QString & *domain*) [signal]

Indicate service has been added (discovered)

id will not be reused for any other service, it is unique within this program.

Parameters

in	*id*	is the id number for the service
in	*serviceName*	e.g. "My House Registry"
in	*domain*	e.g. "local."

See also

serviceRemoved()
serviceChanged()

14.28.3.7 void ArnZeroConfBrowser::serviceChanged (bool *isAdded,* int *id,* const QString & *serviceName,* const QString & *domain*) [signal]

Indicate service has been added / removed.

id will not be reused for any other service, it is unique within this program.

Parameters

in	*isAdded*	is true when service has been added, otherwise false
in	*id*	is the id number for the service
in	*serviceName*	e.g. "My House Registry"
in	*domain*	e.g. "local."

See also

serviceAdded()
serviceRemoved()
browse()

14.28.3.8 int ArnZeroConfBrowser::serviceNameToId (const QString & *name*)

Return the id for a service by its service name.

Parameters

in	*name*	the service name, e.g. "My House Registry"

Returns

the id for the service

See also

serviceAdded()

Definition at line 920 of file ArnZeroConf.cpp.

14.28.3.9 void ArnZeroConfBrowser::serviceRemoved (int *id,* const QString & *serviceName,* const QString & *domain*) [signal]

Indicate service has been removed.

Parameters

in	*id*	is the id number for the service
in	*serviceName*	e.g. "My House Registry"
in	*domain*	e.g. "local."

See also

serviceAdded()
serviceChanged()

14.28.3.10 void ArnZeroConfBrowser::setSubType (const QString & *subtype*)

Set subtype (filter)

If passing empy subtype, this is taken as subtype (filter) disabled. When subtype (filter) is enabled, only services that have the same subtype is discovered.

Parameters

in	*subtype*	the filter, e.g. "myGroup1"

See also

subType()
browse()
ArnZeroConfRegister::setSubTypes()

Definition at line 932 of file ArnZeroConf.cpp.

14.28.3.11 void ArnZeroConfBrowser::stopBrowse ( ) [slot]

Stop browsing.

See also

browse()

Definition at line 980 of file ArnZeroConf.cpp.

14.28.3.12 QString ArnZeroConfBrowser::subType ( )

Return current subtype (filter)

Empy subtype, is taken as subtype (filter) disabled.

Returns

subtype, e.g. "myGroup1"

See also

setSubType()

Definition at line 938 of file ArnZeroConf.cpp.

14.28.4 Friends And Related Function Documentation

14.28.4.1 friend class ArnZeroConfIntern [friend]

Definition at line 938 of file ArnZeroConf.hpp.

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

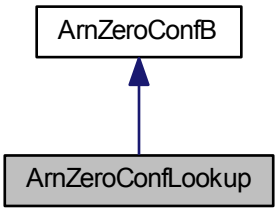
- src/ArnInc/ArnZeroConf.hpp (2.2.0)
- src/ArnZeroConf.cpp (2.2.0)

14.29 ArnZeroConfLookup Class Reference

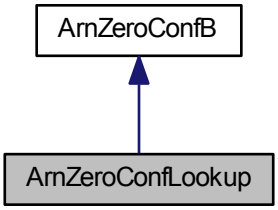
Lookup a host.

`#include <ArnZeroConf.hpp>`

Inheritance diagram for ArnZeroConfLookup:



Collaboration diagram for ArnZeroConfLookup:



Signals

- void lookuped (int id)

  Indicate successfull lookup of host.
- void lookupError (int id, int code)

  Indicate unsuccessfull lookup of host.

Public Member Functions

- ArnZeroConfLookup (QObject *parent=0)

  Standard constructor of an ArnZeroConfLookup object.
- ArnZeroConfLookup (const QString &hostName, QObject *parent=0)

  Constructor of an ArnZeroConfLookup object.
- virtual ~ArnZeroConfLookup ()

  Destructor of an ArnZeroConfLookup object.
- int id () const

  Returns the id number for this lookup.
- void setId (int id)

  Sets the id number for this this lookup.
- QString host () const

  Returns the host name for this Lookup.
- void setHost (const QString &host)

  Set the host name for this Lookup.
- QHostAddress hostAddr () const

  Returns the host address for this Lookup.
- void lookup (bool forceMulticast=false)

  Lookup the host address.
- void releaseLookup ()

  Release the lookup.

Static Public Member Functions

- static bool isForceQtDnsLookup ()

  Return Force using Qt for DNS lookup.
- static void setForceQtDnsLookup (bool isForceQtDnsLookup)

  Set Force using Qt for DNS lookup.

Friends

- class ArnZeroConfIntern

14.29.1 Detailed Description

Lookup a host.

About Zero Config

This class handles lookup of a host. It can be booth Multicast and Unicast DNS lookup.

Example usage

```
    ArnZeroConfLookup*  ds = new ArnZeroConfLookup
      ("myhost.local", this);
    ds->setId( myId);  // Optional id, later used in the signals
    connect( ds, SIGNAL(lookupError(int,int)), this, SLOT(
      onLookupError(int,int)));
    connect( ds, SIGNAL(lookuped(int)), this, SLOT(onLookuped(int)));
    ds->lookup();

void  XXX::onLookuped( int id)
{
    ArnZeroConfLookup*  ds = qobject_cast<ArnZeroConfLookup
      *>( sender());
    QString  hostName = ds->host();
    QHostAddress  hostIp = ds->hostAddr();
    ds->releaseLookup();
    ds->deleteLater();
}
```

Definition at line 783 of file ArnZeroConf.hpp.

14.29.2 Constructor & Destructor Documentation

14.29.2.1 ArnZeroConfLookup::ArnZeroConfLookup (QObject * *parent* = 0)

Standard constructor of an ArnZeroConfLookup object.

Parameters

in	*parent*	

Definition at line 685 of file ArnZeroConf.cpp.

14.29.2.2 ArnZeroConfLookup::ArnZeroConfLookup (const QString & *hostName*, QObject * *parent* = 0)

Constructor of an ArnZeroConfLookup object.

All needed parameters for a lookup of a host.

Parameters

in	*hostName*	the name of the host.
in	*parent*	

Definition at line 692 of file ArnZeroConf.cpp.

14.29.2.3 ArnZeroConfLookup::~ArnZeroConfLookup ( ) [virtual]

Destructor of an ArnZeroConfLookup object.

If the lookup is ongoing, it will be released.

Definition at line 701 of file ArnZeroConf.cpp.

14.29.3 Member Function Documentation

14.29.3.1 QString ArnZeroConfLookup::host ( ) const [inline]

Returns the host name for this Lookup.

Returns

current host name

See also

setHost()

Definition at line 824 of file ArnZeroConf.hpp.

14.29.3.2 QHostAddress ArnZeroConfLookup::hostAddr ( ) const [inline]

Returns the host address for this Lookup.

Returns

current host adress

Definition at line 838 of file ArnZeroConf.hpp.

14.29.3.3 int ArnZeroConfLookup::id ( ) const

Returns the id number for this lookup.

Return values

the	id number

See also

setId()

Definition at line 711 of file ArnZeroConf.cpp.

14.29.3.4 bool ArnZeroConfLookup::isForceQtDnsLookup ( ) [static]

Return Force using Qt for DNS lookup.

Return values

true	if Force using Qt for DNS lookup

See also

setForceQtDnsLookup()

Definition at line 867 of file ArnZeroConf.cpp.

14.29.3.5 void ArnZeroConfLookup::lookup (bool *forceMulticast* = false)

Lookup the host address.

Tries to lookup the host address necessary to establish a connection.

Result is indicated by lookuped() and lookupError() signals.

Parameters

in	*forceMulticast*	when true, ArnZeroConfLookup will use a mDns request to lookup the host address, even if the host name is a unicast address, i.e. outside the local network.

See also

lookuped()
lookupError()

Definition at line 723 of file ArnZeroConf.cpp.

14.29.3.6 void ArnZeroConfLookup::lookuped (int *id*) [signal]

Indicate successfull lookup of host.

Parameters

in	*id*	is the id number for this lookup

See also

lookup()

14.29.3.7 void ArnZeroConfLookup::lookupError (int *id*, int *code*) [signal]

Indicate unsuccessfull lookup of host.

Parameters

in	*id*	is the id number for this lookup
in	*code*	error code.

See also

lookup()

14.29.3.8 void ArnZeroConfLookup::releaseLookup ( )

Release the lookup.

Any lookup attempts in progress will be aborted.

Definition at line 779 of file ArnZeroConf.cpp.

14.29.3.9 void ArnZeroConfLookup::setForceQtDnsLookup (bool *isForceQtDnsLookup*) [static]

Set Force using Qt for DNS lookup.

If mDns lookup doesn't work for a platform, try force using Qt:s built in DNS-lookup.

This is a global setting for all instances of ArnZeroConfLookup.

Parameters

in	*isForceQtDns-Lookup*	

See also

isForceQtDnsLookup()

Definition at line 873 of file ArnZeroConf.cpp.

14.29.3.10 void ArnZeroConfLookup::setHost (const QString & *host*) [inline]

Set the host name for this Lookup.

Usually hostname contain domain, e.g. "myserver.local" but it can also be "myserver".

Parameters

in	*host*	is the current host name (se above)

See also

host()

Definition at line 832 of file ArnZeroConf.hpp.

14.29.3.11 void ArnZeroConfLookup::setId (int *id*)

Sets the id number for this this lookup.

This id can be used to identify different lookup:s when using a common handler.

When not set, it will be automatically asigned during lookup().

Parameters

in	*id*	the id number

See also

id()

Definition at line 717 of file ArnZeroConf.cpp.

14.29.4 Friends And Related Function Documentation

14.29.4.1 friend class ArnZeroConfIntern [friend]

Definition at line 785 of file ArnZeroConf.hpp.

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

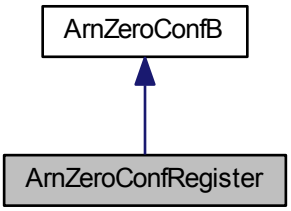
- src/ArnInc/ArnZeroConf.hpp (2.2.0)
- src/ArnZeroConf.cpp (2.2.0)

14.30 ArnZeroConfRegister Class Reference

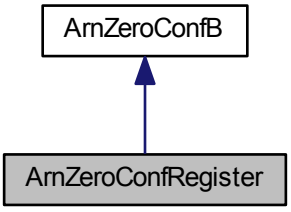
Registering a ZeroConfig service.

`#include <ArnZeroConf.hpp>`

Inheritance diagram for ArnZeroConfRegister:



Collaboration diagram for ArnZeroConfRegister:



Signals

- void registered (QString serviceName)

  Indicate successfull registration of service.
- void registrationError (int code)

  Indicate unsuccessfull registration of service.

Public Member Functions

- ArnZeroConfRegister (QObject *parent=0)

  Standard constructor of an ArnZeroConfRegister object.
- ArnZeroConfRegister (const QString &serviceName, QObject *parent=0)

  Constructor of an ArnZeroConfRegister object.
- ArnZeroConfRegister (const QString &serviceName, const QString &serviceType, quint16 port, QObject *parent=0)

  Constructor of an ArnZeroConfRegister object.
- virtual ~ArnZeroConfRegister ()

  Destructor of an ArnZeroConfRegister object.
- QStringList subTypes () const

  Returns the list of current subtypes.

- void setSubTypes (const QStringList &subtypes)

  Sets the list of current subtypes.
- void addSubType (const QString &subtype)

  Add a subtype to the list of current subtypes.
- quint16 port () const

  Returns the port number for connecting to the service.
- void setPort (quint16 port)

  Sets the port number for connecting to the service.
- QString serviceName () const

  Returns the service name for this Zero Config.
- QString currentServiceName () const

  Returns the current service name for this Zero Config.
- void setServiceName (const QString &name)

  Set the service name for this Zero Config.
- QString host () const

  Returns the host name for this Zero Config.
- void setHost (const QString &host)

  Set the host name for this Zero Config.
- bool getTxtRecordMap (Arn::XStringMap &xsm)

  Load a XStringMap with parameters from the Txt Record.
- void setTxtRecordMap (const Arn::XStringMap &xsm)

  Save a XStringMap with parameters to the Txt Record.
- QByteArray txtRecord () const

  Return the Txt Record for this Zero Config.
- void setTxtRecord (const QByteArray &txt)

  Set the Txt Record for this Zero Config.
- void registerService (bool noAutoRename=false)

  Register the service.
- void releaseService ()

  Release the service.

Friends

- class ArnZeroConfIntern

14.30.1 Detailed Description

Registering a ZeroConfig service.

About Zero Config

This class handles registration of a ZeroConfig service. The service name can be any string, giving a clear human readable naming of the service. If the given service name is already in use, it will have a number added to make it unique. A given TXT record can be registered together with the service.

Example usage

```
// In class declare
ArnZeroConfRegister*  _advertService;

// In class code
_advertService = new ArnZeroConfRegister("My
   TestService. In the attic", this);
_advertService->addSubType("server");
Arn::XStringMap xsmPar;
xsmPar.add("ver", "1.0").add("server", "1");
_advertService->setTxtRecordMap( xsmPar);
```

```
connect(_advertService, SIGNAL(registered()), this, SLOT(
  onRegistered()));
connect(_advertService, SIGNAL(registrationError(int)),
        this, SLOT(onRegisterError(int)));
_advertService->registerService();
```

Definition at line 366 of file ArnZeroConf.hpp.

14.30.2 Constructor & Destructor Documentation

14.30.2.1 ArnZeroConfRegister::ArnZeroConfRegister (QObject * *parent* = 0)

Standard constructor of an ArnZeroConfRegister object.

The service name can be automatically generated based on the system's hostname.

Parameters

in	*parent*	

Definition at line 370 of file ArnZeroConf.cpp.

14.30.2.2 ArnZeroConfRegister::ArnZeroConfRegister (const QString & *serviceName*, QObject * *parent* = 0)

Constructor of an ArnZeroConfRegister object.

All needed parameters for an "arn" service type, using standard arn-port at this computer.

Parameters

in	*serviceName*	the human readable naming of the service, e.g. "My fantastic service".
in	*parent*	

Definition at line 377 of file ArnZeroConf.cpp.

14.30.2.3 ArnZeroConfRegister::ArnZeroConfRegister (const QString & *serviceName*, const QString & *serviceType*, quint16 *port*, QObject * *parent* = 0)

Constructor of an ArnZeroConfRegister object.

All needed parameters for a service at this computer.

The service type can be a name or the standard format used by the Zeroconf specification, e.g. "_arn._tcp".

Parameters

in	*serviceName*	the human readable naming of the service, e.g. "My fantastic service".
in	*serviceType*	the service type, e.g. "arn" or "_arn._tcp".
in	*port*	the service port num
in	*parent*	

Definition at line 386 of file ArnZeroConf.cpp.

14.30.2.4 ArnZeroConfRegister::~ArnZeroConfRegister ( ) [virtual]

Destructor of an ArnZeroConfRegister object.

If the service is registered, it will be unregistered.

Definition at line 398 of file ArnZeroConf.cpp.

14.30.3 Member Function Documentation

14.30.3.1 void ArnZeroConfRegister::addSubType (const QString & *subtype*) [inline]

Add a subtype to the list of current subtypes.

Parameters

in	*subtype*	the subtype to add, e.g. "myGroup1"

See also

subTypes()
setSubTypes()

Definition at line 427 of file ArnZeroConf.hpp.

14.30.3.2 QString ArnZeroConfRegister::currentServiceName ( ) const

Returns the current service name for this Zero Config.

At first, the requested service name is returned. Later the service name is internally updated with real name when registered() signal is emitted.

Returns

current service name, e.g. "My House Registry (2)"

See also

setServiceName()
serviceName()
registered()

Definition at line 409 of file ArnZeroConf.cpp.

14.30.3.3 bool ArnZeroConfRegister::getTxtRecordMap (Arn::XStringMap & *xsm*) [inline]

Load a XStringMap with parameters from the Txt Record.

It is assumed that the Txt Record has already been received.

After loading XStringMap is successfull it contains the parameters from the Txt Record, e.g. Arn::XStringMap::toXString() can return "protovers=1.0 MyParam=xyz".

Parameters

out	*xsm*	is the loaded XStringMap if successfull, otherwise undefined.

Return values

true	if successfull.

See also

setTxtRecordMap()
Arn::XStringMap

Definition at line 509 of file ArnZeroConf.hpp.

14.30.3.4 QString ArnZeroConfRegister::host ( ) const [inline]

Returns the host name for this Zero Config.

Usually hostname is empty, automatically using the computers name, but it can also be like "myserver".

Returns

current host name (se above)

See also

setHost()

Definition at line 487 of file ArnZeroConf.hpp.

14.30.3.5 quint16 ArnZeroConfRegister::port ( ) const [inline]

Returns the port number for connecting to the service.

Return values

the	port number

See also

setPort()

Definition at line 434 of file ArnZeroConf.hpp.

14.30.3.6 void ArnZeroConfRegister::registered (QString *serviceName*) [signal]

Indicate successfull registration of service.

The service name will also be internally updated, it can be accesed via currentServiceName().

Parameters

in	*serviceName*	is the realy registered name e.g. "My House Registry (2)"

See also

registerService()
setServiceName()
serviceName()

14.30.3.7 void ArnZeroConfRegister::registerService (bool *noAutoRename* = false)

Register the service.

Tries to register the service on the local network.

Result is indicated by registered() and registrationError() signals.

Parameters

in	*noAutoRename*	when true, registration will fail if another service with the same service type already is registered with the same service name.

See also

registered()
registrationError()

Definition at line 422 of file ArnZeroConf.cpp.

14.30.3.8 void ArnZeroConfRegister::registrationError (int *code*) [signal]

Indicate unsuccessfull registration of service.

Parameters

in	*code*	error code.

See also

registerService()

14.30.3.9 void ArnZeroConfRegister::releaseService ( )

Release the service.

If the service is registered, it will be unregistered. Any registration attempts in progress will be aborted.

Definition at line 467 of file ArnZeroConf.cpp.

14.30.3.10 QString ArnZeroConfRegister::serviceName ( ) const [inline]

Returns the service name for this Zero Config.

The returned service name is always the requested name. For real name use currentServiceName().

Returns

current service name, e.g. "My House Registry"

See also

setServiceName()
currentServiceName()
registered()

Definition at line 454 of file ArnZeroConf.hpp.

14.30.3.11 void ArnZeroConfRegister::setHost (const QString & *host*) [inline]

Set the host name for this Zero Config.

Usually hostname is empty, automatically using the computers name, but it can also be like "myserver".

Parameters

in	*host*	is the current host name (se above)

See also

host()

Definition at line 496 of file ArnZeroConf.hpp.

14.30.3.12 void ArnZeroConfRegister::setPort (quint16 *port*) [inline]

Sets the port number for connecting to the service.

When registering a service with a port number of 0, the service will not be found when browsing, but the service name will be marked as reserved.

Parameters

in	*port*	the port number

See also

port()

Definition at line 443 of file ArnZeroConf.hpp.

14.30.3.13 void ArnZeroConfRegister::setServiceName (const QString & *name*)

Set the service name for this Zero Config.

Service names can be any human readable id. It should be easy to understand, without any cryptic coding, and can usually be modified by the end user.

The requested service name is not guaranted to be registered, as it has to be unique within the local network. The realy used name comes with the registered() signal and can be accessed via currentServiceName().

Parameters

in	*name*	is service name, e.g. "My House Registry"

See also

serviceName()
currentServiceName()
registered()

Definition at line 415 of file ArnZeroConf.cpp.

14.30.3.14 void ArnZeroConfRegister::setSubTypes (const QStringList & *subtypes*) [inline]

Sets the list of current subtypes.

Parameters

in	*subtypes*	The new list of subtypes, e.g. ("myGroup1", "myGroup2")

See also

subTypes()
addSubType()
ArnZeroConfBrowser::setSubType()

Definition at line 419 of file ArnZeroConf.hpp.

14.30.3.15 void ArnZeroConfRegister::setTxtRecord (const QByteArray & *txt*) [inline]

Set the Txt Record for this Zero Config.

The binary format should be the standardized from the Zeroconfig specification. This Txt Record will typically be used later for publishing in zero config.

Parameters

in	*txt*	is The Txt Record (in binary format)

See also

txtRecord()
setTxtRecordMap()

Definition at line 540 of file ArnZeroConf.hpp.

14.30.3.16 void ArnZeroConfRegister::setTxtRecordMap (const Arn::XStringMap & *xsm*) [inline]

Save a XStringMap with parameters to the Txt Record.

The XStringMap contains the parameters to be saved into the Txt Record. This Txt Record will typically be used later for publishing in zero config.

Parameters

in	*xsm*	is the XStringMap to be saved into the Txt Record.

See also

getTxtRecordMap()
Arn::XStringMap

Definition at line 519 of file ArnZeroConf.hpp.

14.30.3.17 QStringList ArnZeroConfRegister::subTypes ( ) const [inline]

Returns the list of current subtypes.

Return values

the	subtype list, e.g. ("myGroup1", "myGroup2")

See also

setSubTypes()
addSubType()

Definition at line 410 of file ArnZeroConf.hpp.

14.30.3.18 QByteArray ArnZeroConfRegister::txtRecord ( ) const [inline]

Return the Txt Record for this Zero Config.

It is assumed that the Txt Record has already been received.

The binary format should be the standardized from the Zeroconfig specification.

Returns

The Txt Record (in binary format)

See also

setTxtRecord()
getTxtRecordMap()

Definition at line 530 of file ArnZeroConf.hpp.

14.30.4 Friends And Related Function Documentation

14.30.4.1 friend class ArnZeroConfIntern [friend]

Definition at line 368 of file ArnZeroConf.hpp.

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

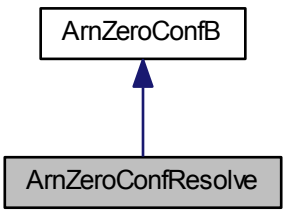
- src/ArnInc/ArnZeroConf.hpp (2.2.0)
- src/ArnZeroConf.cpp (2.2.0)

14.31 ArnZeroConfResolve Class Reference

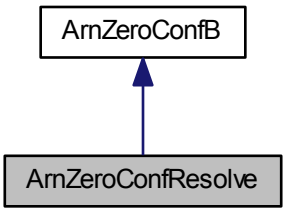
Resolv a ZeroConfig service.

`#include <ArnZeroConf.hpp>`

Inheritance diagram for ArnZeroConfResolve:



Collaboration diagram for ArnZeroConfResolve:



Signals

- void resolved (int id, const QByteArray &escFullDomain)

  Indicate successfull resolve of service.
- void resolveError (int id, int code)

  Indicate unsuccessfull resolve of service.

Public Member Functions

- ArnZeroConfResolve (QObject *parent=0)

  Standard constructor of an ArnZeroConfResolv object.
- ArnZeroConfResolve (const QString &serviceName, QObject *parent=0)

  Constructor of an ArnZeroConfResolv object.
- ArnZeroConfResolve (const QString &serviceName, const QString &serviceType, QObject *parent=0)

  Constructor of an ArnZeroConfResolv object.
- virtual ~ArnZeroConfResolve ()

  Destructor of an ArnZeroConfResolv object.
- int id () const

  Returns the id number for this resolv.
- void setId (int id)

  Sets the id number for this this resolv.
- QString host () const

  Returns the host name for this resolv.
- quint16 port () const

  Returns the port number for connecting to the service.
- QString serviceName () const

  Returns the service name used for this resolv.
- void setServiceName (const QString &name)

  Set the service name used for this resolv.
- bool getTxtRecordMap (Arn::XStringMap &xsm)

  Load a XStringMap with parameters from the Txt Record.
- QByteArray txtRecord () const

  Return the Txt Record for this Zero Config.
- void resolve (bool forceMulticast=false)

  Resolve the service.
- void releaseResolve ()

  Release the resolving.

Friends

- class ArnZeroConfIntern

14.31.1 Detailed Description

Resolv a ZeroConfig service.

About Zero Config

This class handles resolving of a ZeroConfig service. The service name can be given directly if known, but typically it comes from ArnZeroConfBrowser.

Example usage

```
    // In class code
    ArnZeroConfResolve*  ds = new ArnZeroConfResolve
      ("My TestService. In the attic", this);
    ds->setId( myId);  // Optional id, later used in the signals
    connect( ds, SIGNAL(resolveError(int,int)), this, SLOT(
      onResolveError(int,int)));
    connect( ds, SIGNAL(resolved(int,QByteArray)), this, SLOT(
      onResolved(int,QByteArray)));
    ds->resolve();

void XXX::onResolved( int id, QByteArray escFullDomain)
{
    ArnZeroConfResolve*  ds = qobject_cast<ArnZeroConfResolve
      *>( sender());
    Arn::XStringMap  xsmPar;
    ds->getTxtRecordMap( xsmPar);
    QString  info = QString()
                  +  " Domain=" + ds->domain()
                  +  " Host="   + ds->host()
                  +  " Port="   + QString::number( ds->port())
                  +  " Txt: "   + QString::fromUtf8( xsmPar.toXString().
      constData());
    QString  ver = xsmPar.valueString("MyVers");
    ds->releaseService();
    ds->deleteLater();
}
```

Definition at line 616 of file ArnZeroConf.hpp.

14.31.2 Constructor & Destructor Documentation

14.31.2.1 ArnZeroConfResolve::ArnZeroConfResolve (QObject * *parent* = 0)

Standard constructor of an ArnZeroConfResolv object.

Parameters

in	*parent*	

Definition at line 523 of file ArnZeroConf.cpp.

14.31.2.2 ArnZeroConfResolve::ArnZeroConfResolve (const QString & *serviceName*, QObject * *parent* = 0)

Constructor of an ArnZeroConfResolv object.

All needed parameters for an "arn" service type.

Parameters

in	*serviceName*	the human readable naming of the service, e.g. "My fantastic service".
in	*parent*	

Definition at line 530 of file ArnZeroConf.cpp.

14.31.2.3 ArnZeroConfResolve::ArnZeroConfResolve (const QString & *serviceName,* const QString & *serviceType,* QObject * *parent* = 0)

Constructor of an ArnZeroConfResolv object.

All needed parameters for a service.

The service type can be a name or the standard format used by the Zeroconf specification, e.g. "_arn._tcp".

Parameters

in	*serviceName*	the human readable naming of the service, e.g. "My fantastic service".
in	*serviceType*	the service type, e.g. "arn" or "_arn._tcp".
in	*parent*	

Definition at line 539 of file ArnZeroConf.cpp.

14.31.2.4 ArnZeroConfResolve::~ArnZeroConfResolve ( ) [virtual]

Destructor of an ArnZeroConfResolv object.

If the service is registered, it will be unregistered.

Definition at line 550 of file ArnZeroConf.cpp.

14.31.3 Member Function Documentation

14.31.3.1 bool ArnZeroConfResolve::getTxtRecordMap (Arn::XStringMap & *xsm*) [inline]

Load a XStringMap with parameters from the Txt Record.

It is assumed that the Txt Record has already been received.

After loading XStringMap is successfull it contains the parameters from the Txt Record, e.g. Arn::XStringMap::toX-String() can return "protovers=1.0 MyParam=xyz".

Parameters

out	*xsm*	is the loaded XStringMap if successfull, otherwise undefined.

Return values

true	if successfull.

See also

Arn::XStringMap

Definition at line 703 of file ArnZeroConf.hpp.

14.31.3.2 QString ArnZeroConfResolve::host ( ) const [inline]

Returns the host name for this resolv.

Hostname contain domain, e.g. "myserver.local".

Returns

current host name (se above)

Definition at line 670 of file ArnZeroConf.hpp.

14.31.3.3 int ArnZeroConfResolve::id ( ) const

Returns the id number for this resolv.

Returns

the id number

See also

setId()

Definition at line 560 of file ArnZeroConf.cpp.

14.31.3.4 quint16 ArnZeroConfResolve::port ( ) const [inline]

Returns the port number for connecting to the service.

Return values

the	port number

Definition at line 676 of file ArnZeroConf.hpp.

14.31.3.5 void ArnZeroConfResolve::releaseResolve ( )

Release the resolving.

Any resolve attempts in progress will be aborted.

Definition at line 610 of file ArnZeroConf.cpp.

14.31.3.6 void ArnZeroConfResolve::resolve (bool *forceMulticast* = false)

Resolve the service.

Tries to resolve the service to determine the host and port necessary to establish a connection.

Result is indicated by resolved() and resolveError() signals.

Parameters

in	*forceMulticast*	when true, ArnZeroConfResolv will use a multicast request to resolve the service, even if the host name is a unicast address, i.e. outside the local network.

See also

resolved()
resolveError()

Definition at line 572 of file ArnZeroConf.cpp.

14.31.3.7 void ArnZeroConfResolve::resolved (int *id,* const QByteArray & *escFullDomain*) [signal]

Indicate successfull resolve of service.

Parameters

in	*id*	is the id number for this resolve
in	*escFullDomain*	is the raw full domain with esc sequences

See also

resolve()

14.31.3.8 void ArnZeroConfResolve::resolveError (int *id,* int *code*) [signal]

Indicate unsuccessfull resolve of service.

Parameters

in	*id*	is the id number for this resolve
in	*code*	is the error code.

See also

resolve()

14.31.3.9 QString ArnZeroConfResolve::serviceName ( ) const [inline]

Returns the service name used for this resolv.

Returns

current service name, e.g. "My House Registry"

Definition at line 682 of file ArnZeroConf.hpp.

14.31.3.10 void ArnZeroConfResolve::setId (int *id*)

Sets the id number for this this resolv.

This id can be used to identify different resolves when using a common handler.

When not set, it will be automatically assigned during resolve().

Parameters

in	*id*	the id number

See also

id()

Definition at line 566 of file ArnZeroConf.cpp.

14.31.3.11 void ArnZeroConfResolve::setServiceName (const QString & *name*) [inline]

Set the service name used for this resolv.

Service names can be any human readable id. It will be used when reolving the service.

Parameters

in	*name*	is service name, e.g. "My House Registry"

See also

serviceName()

Definition at line 691 of file ArnZeroConf.hpp.

14.31.3.12 QByteArray ArnZeroConfResolve::txtRecord ( ) const [inline]

Return the Txt Record for this Zero Config.

It is assumed that the Txt Record has already been received.

The binary format should be the standardized from the Zeroconfig specification.

Returns

The Txt Record (in binary format)

See also

getTxtRecordMap()

Definition at line 713 of file ArnZeroConf.hpp.

14.31.4 Friends And Related Function Documentation

14.31.4.1 friend class ArnZeroConfIntern [friend]

Definition at line 618 of file ArnZeroConf.hpp.

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

- src/ArnInc/ArnZeroConf.hpp (2.2.0)
- src/ArnZeroConf.cpp (2.2.0)

14.32 Arn::Coding Struct Reference

```
#include <Arn.hpp>
```

Public Types

- enum E { Binary = 0x0000, Text = 0x1000 }

14.32.1 Detailed Description

Definition at line 130 of file Arn.hpp.

14.32.2 Member Enumeration Documentation

14.32.2.1 enum Arn::Coding::E

Enumerator:

Binary No special coding, can be anything.

Text Text coding, can be any character set.

Definition at line 131 of file Arn.hpp.

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

- src/ArnInc/Arn.hpp (2.2.0)

14.33 ArnClient::ConnectStat Struct Reference

`#include <ArnClient.hpp>`

Public Types

- enum E {
  Init = 0, Connecting, Connected, Error,
  Disconnected, TriedAll }

14.33.1 Detailed Description

Definition at line 75 of file ArnClient.hpp.

14.33.2 Member Enumeration Documentation

14.33.2.1 enum ArnClient::ConnectStat::E

Enumerator:

Init Initialized, not yet any result of trying to connect ...

Connecting Trying to connect to an Arn host.

Connected Successfully connected to an Arn host.

Error Unsuccessfull when trying to connect to an Arn host.

Disconnected TCP connection is broken (has been successfull)

TriedAll Unsuccessfully tried to connect to all hosts in the Arn connection List.

Definition at line 76 of file ArnClient.hpp.

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

- src/ArnInc/ArnClient.hpp (2.2.0)

14.34 Arn::DataType Struct Reference

Data type of an *Arn Data Object*

`#include <Arn.hpp>`

Public Types

- enum E {
  Null = 0, Int = 1, Double = 2, ByteArray = 3,
  String = 4, Variant = 5 }

14.34.1 Detailed Description

Data type of an *Arn Data Object*

Definition at line 65 of file Arn.hpp.

14.34.2 Member Enumeration Documentation

14.34.2.1 enum Arn::DataType::E

Enumerator:

Null

Int

Double

ByteArray

String

Variant

Definition at line 66 of file Arn.hpp.

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

- src/ArnInc/Arn.hpp (2.2.0)

14.35 ArnZeroConf::Error Struct Reference

Errors of ZeroConfig, other values are defined in dns_sd.h.

`#include <ArnZeroConf.hpp>`

Public Types

- enum E {
  Ok = 0, Running = -1, BadReqSeq = -2, Timeout = -3,
  UDnsFail = -4 }

14.35.1 Detailed Description

Errors of ZeroConfig, other values are defined in dns_sd.h.

Definition at line 53 of file ArnZeroConf.hpp.

14.35.2 Member Enumeration Documentation

14.35.2.1 enum ArnZeroConf::Error::E

Enumerator:

Ok Ok, defined as kDNSServiceErr_NoError in dns_sd.h.

Running Operation in progress.

BadReqSeq Bad request sequence.

Timeout Operation timeout.

UDnsFail Unicast DNS lookup fail.

Definition at line 54 of file ArnZeroConf.hpp.

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

- src/ArnInc/ArnZeroConf.hpp (2.2.0)

14.36 ArnItemB::ExportCode Struct Reference

Code used in blob for arnExport() and arnImport()

`#include <ArnItemB.hpp>`

Public Types

- enum E {
  ByteArray = 3, String = 4, Variant = 5, VariantTxt = 16,
  VariantBin = 17 }

14.36.1 Detailed Description

Code used in blob for arnExport() and arnImport()

Definition at line 69 of file ArnItemB.hpp.

14.36.2 Member Enumeration Documentation

14.36.2.1 enum ArnItemB::ExportCode::E

Enumerator:

ByteArray

String

Variant

VariantTxt

VariantBin

Definition at line 70 of file ArnItemB.hpp.

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

- src/ArnInc/ArnItemB.hpp (2.2.0)

14.37 ArnClient::HostAddrPort Struct Reference

`#include <ArnClient.hpp>`

Public Member Functions

- HostAddrPort ()

Public Attributes

- QString addr
- quint16 port

14.37.1 Detailed Description

Definition at line 93 of file ArnClient.hpp.

14.37.2 Constructor & Destructor Documentation

14.37.2.1 ArnClient::HostAddrPort::HostAddrPort ( ) [inline]

Definition at line 97 of file ArnClient.hpp.

14.37.3 Member Data Documentation

14.37.3.1 QString ArnClient::HostAddrPort::addr

Definition at line 94 of file ArnClient.hpp.

14.37.3.2 quint16 ArnClient::HostAddrPort::port

Definition at line 95 of file ArnClient.hpp.

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

- src/ArnInc/ArnClient.hpp (2.2.0)

14.38 ArnRpc::Invoke Struct Reference

`#include <ArnRpc.hpp>`

Public Types

- enum E { NoQueue = 0x01 }

14.38.1 Detailed Description

Definition at line 152 of file ArnRpc.hpp.

14.38.2 Member Enumeration Documentation

14.38.2.1 enum ArnRpc::Invoke::E

Enumerator:

NoQueue This invoke is not queued, multiple calls to same method might overwrite.

Definition at line 153 of file ArnRpc.hpp.

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

- src/ArnInc/ArnRpc.hpp (2.2.0)

14.39 Arn::LinkFlags Struct Reference

Link flags when accessing an *Arn Data Object*

`#include <Arn.hpp>`

Public Types

- enum E { Folder = 0x01, CreateAllowed = 0x02, SilentError = 0x04, Threaded = 0x08 }

14.39.1 Detailed Description

Link flags when accessing an *Arn Data Object*

Definition at line 107 of file Arn.hpp.

14.39.2 Member Enumeration Documentation

14.39.2.1 enum Arn::LinkFlags::E

Enumerator:

Folder

CreateAllowed

SilentError

Threaded

Definition at line 108 of file Arn.hpp.

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

- src/ArnInc/Arn.hpp (2.2.0)

14.40 ArnRpc::Mode Struct Reference

`#include <ArnRpc.hpp>`

Public Types

- enum E {
  Provider = 0x0001, AutoDestroy = 0x0002, UuidPipe = 0x0004, NoDefaultArgs = 0x0008,
  SendSequence = 0x0010, CheckSequence = 0x0020, OnlyPosArgIn = 0x0040, NamedArg = 0x0080,
  NamedTypedArg = 0x0100, UseDefaultCall = 0x0200, Debug = 0x8000, UuidAutoDestroy = UuidPipe | AutoDestroy }

14.40.1 Detailed Description

Examples:

ArnDemoChatServer/MainWindow.cpp.

Definition at line 122 of file ArnRpc.hpp.

14.40.2 Member Enumeration Documentation

14.40.2.1 enum ArnRpc::Mode::E

Enumerator:

Provider Provider side (opposed to requester)

AutoDestroy Use *AutoDestroy* for the pipe, i.e. it is closed when tcp/ip is broken.

UuidPipe Use an unique uuid in the pipe name.

NoDefaultArgs If guarantied no default arguments, full member name overload is ok.

SendSequence Send sequence order information to pipe.

CheckSequence Check sequence order information from pipe. Can generate signal outOfSequence().

OnlyPosArgIn Only allow calling in with positional argument (typed)

NamedArg When calling out, uses named argument e.g "myFunc count=123".

NamedTypedArg When calling out, uses named argument with type e.g "myFunc count:int=123".

UseDefaultCall When receiver method missing, send defaultCall() signal instead of error.

Debug Debug mode, dumping info for the batch connections.

UuidAutoDestroy Convenience, combined *UuidPipe* and *AutoDestroy*

Definition at line 123 of file ArnRpc.hpp.

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

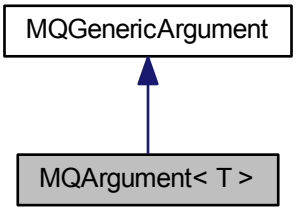
- src/ArnInc/ArnRpc.hpp (2.2.0)

14.41 MQArgument< T > Class Template Reference

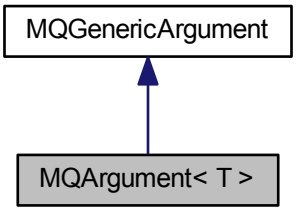
Similar to QArgument but with added argument label (parameter name)

`#include <ArnRpc.hpp>`

Inheritance diagram for MQArgument< T >:



Collaboration diagram for MQArgument< T >:



Public Member Functions

- MQArgument (const char *aName, const char *aLabel, const T &aData)

14.41.1 Detailed Description

template<class T>class MQArgument< T >

Similar to QArgument but with added argument label (parameter name)

Definition at line 74 of file ArnRpc.hpp.

14.41.2 Constructor & Destructor Documentation

14.41.2.1 template<class T > MQArgument< T >::MQArgument (const char * *aName*, const char * *aLabel*, const T & *aData*) [inline]

Definition at line 77 of file ArnRpc.hpp.

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

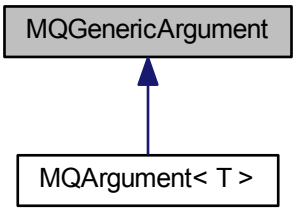
- src/ArnInc/ArnRpc.hpp (2.2.0)

14.42 MQGenericArgument Class Reference

Similar to QGenericArgument but with added argument label (parameter name)

`#include <ArnRpc.hpp>`

Inheritance diagram for MQGenericArgument:



Public Member Functions

- MQGenericArgument (const char *aName=0, const char *aLabel=0, const void *aData=0)
- MQGenericArgument (const QGenericArgument &qgenArg)
- const char * label () const

14.42.1 Detailed Description

Similar to QGenericArgument but with added argument label (parameter name)

Definition at line 58 of file ArnRpc.hpp.

14.42.2 Constructor & Destructor Documentation

14.42.2.1 MQGenericArgument::MQGenericArgument (const char * *aName* = `0`, const char * *aLabel* = `0`, const void * *aData* = `0`) `[inline]`

Definition at line 61 of file ArnRpc.hpp.

14.42.2.2 MQGenericArgument::MQGenericArgument (const QGenericArgument & *qgenArg*) `[inline]`

Definition at line 63 of file ArnRpc.hpp.

14.42.3 Member Function Documentation

14.42.3.1 const char* MQGenericArgument::label ( ) const `[inline]`

Definition at line 65 of file ArnRpc.hpp.

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

- src/ArnInc/ArnRpc.hpp (2.2.0)

14.43 Arn::NameF Struct Reference

`#include <Arn.hpp>`

Public Types

- enum E { NoFolderMark = 0x01, EmptyOk = 0x02, Relative = 0x04 }
  Selects a format for path or item name.

14.43.1 Detailed Description

Definition at line 117 of file Arn.hpp.

14.43.2 Member Enumeration Documentation

14.43.2.1 enum Arn::NameF::E

Selects a format for path or item name.

Enumerator:

NoFolderMark Only on discrete names, no effect on path. "test/" ==> "test".
EmptyOk Path: "/@/test" ==> "//test", Item: "@" ==> "".
Relative Only on path, no effect on discrete names. "/test/value" ==> "test/value".

Definition at line 119 of file Arn.hpp.

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

- src/ArnInc/Arn.hpp (2.2.0)

14.44 Arn::ObjectMode Struct Reference

General global mode of an *Arn Data Object*

`#include <Arn.hpp>`

Public Types

- enum E { BiDir = 0x01, Pipe = 0x02, Save = 0x04 }

14.44.1 Detailed Description

General global mode of an *Arn Data Object*

Definition at line 79 of file Arn.hpp.

14.44.2 Member Enumeration Documentation

14.44.2.1 enum Arn::ObjectMode::E

Enumerator:

BiDir A two way object, typically for validation or pipe.

Pipe Implies *BiDir* and all data is preserved as a stream.

Save Data is persistent and will be saved.

Definition at line 80 of file Arn.hpp.

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

- src/ArnInc/Arn.hpp (2.2.0)

14.45 Arn::ObjectSyncMode Struct Reference

The client session sync mode of an *Arn Data Object*

`#include <Arn.hpp>`

Public Types

- enum E { Normal = 0x000, Monitor = 0x001, Master = 0x100, AutoDestroy = 0x200 }

14.45.1 Detailed Description

The client session sync mode of an *Arn Data Object*

Definition at line 92 of file Arn.hpp.

14.45.2 Member Enumeration Documentation

14.45.2.1 enum Arn::ObjectSyncMode::E

Enumerator:

Normal default

Monitor Monitor of server object for client.

Master The client is default generator of data.

AutoDestroy Destroy this *Arn Data Object* when client (tcp/ip) closes.

Definition at line 93 of file Arn.hpp.

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

- src/ArnInc/Arn.hpp (2.2.0)

14.46 ArnRpc::MethodsParam::Params Struct Reference

`#include <ArnRpc.hpp>`

Public Attributes

- QList< QByteArray > paramNames
- QList< QList< int > > methodIdsTab
- QList< int > allMethodIds

14.46.1 Detailed Description

Definition at line 424 of file ArnRpc.hpp.

14.46.2 Member Data Documentation

14.46.2.1 QList<int> ArnRpc::MethodsParam::Params::allMethodIds

Definition at line 427 of file ArnRpc.hpp.

14.46.2.2 QList< QList<int> > ArnRpc::MethodsParam::Params::methodIdsTab

Definition at line 426 of file ArnRpc.hpp.

14.46.2.3 QList<QByteArray> ArnRpc::MethodsParam::Params::paramNames

Definition at line 425 of file ArnRpc.hpp.

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

- src/ArnInc/ArnRpc.hpp (2.2.0)

14.47 Arn::SameValue Struct Reference

Action when assigning same value to an ArnItem.

`#include <Arn.hpp>`

Public Types

- enum E { Accept = 0, Ignore = 1, DefaultAction = -1 }

14.47.1 Detailed Description

Action when assigning same value to an ArnItem.

Definition at line 52 of file Arn.hpp.

14.47.2 Member Enumeration Documentation

14.47.2.1 enum Arn::SameValue::E

Enumerator:

Accept Assigning same value generates an update of the *Arn Data Object*

Ignore Assigning same value is ignored.

DefaultAction Assigning same value gives default action set in ArnM or ArnItem.

Definition at line 53 of file Arn.hpp.

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

- src/ArnInc/Arn.hpp (2.2.0)

14.48 ArnZeroConf::State Struct Reference

States of ZeroConfig, limited valid for each ArnZeroConfB subclass / These values must be synced with: ArnDiscover::State.

`#include <ArnZeroConf.hpp>`

Public Types

- enum E {
  None = 0x0000, Registering = 0x0100, Registered = 0x0001, Register = 0x0101,
  Browsing = 0x0200, Resolving = 0x0400, Resolved = 0x0004, Resolve = 0x0404,
  LookingUp = 0x0800, Lookuped = 0x0008, Lookup = 0x0808, InProgress = 0x0f00 }

14.48.1 Detailed Description

States of ZeroConfig, limited valid for each ArnZeroConfB subclass / These values must be synced with: ArnDiscover::State.

Definition at line 71 of file ArnZeroConf.hpp.

14.48.2 Member Enumeration Documentation

14.48.2.1 enum ArnZeroConf::State::E

Enumerator:

None Inactive state.

Registering Registering service in progress.

Registered Registering service has finished sucessfully.

Register isAny(): Registering service in progress or has finished sucessfully

Browsing Browsing for service in progress.

Resolving Resolving service in progress.

Resolved Resolving service has finished sucessfully.

Resolve isAny(): Resolving service in progress or has finished sucessfully

LookingUp Lookup host in progress.

Lookuped Lookup host has finished sucessfully.

Lookup isAny(): Lookup host in progress or has finished sucessfully

InProgress isAny(): Operation in progress

Definition at line 72 of file ArnZeroConf.hpp.

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

- src/ArnInc/ArnZeroConf.hpp (2.2.0)

14.49 ArnDiscoverAdvertise::State Struct Reference

States of DiscoverAdvertise / These values must be synced with: ArnZeroConf::State.

`#include <ArnDiscover.hpp>`

Public Types

- enum E { None = 0x0000, StartupAdvertise = 0x0100, Advertising = 0x0001, Advertise = 0x0101 }

14.49.1 Detailed Description

States of DiscoverAdvertise / These values must be synced with: ArnZeroConf::State.

Definition at line 623 of file ArnDiscover.hpp.

14.49.2 Member Enumeration Documentation

14.49.2.1 enum ArnDiscoverAdvertise::State::E

Enumerator:

None Inactive state.

StartupAdvertise Startup advertising in progress.

Advertising Is now advertising. Startup has finished sucessfully.

Advertise isAny(): Startup advertising in progress or has finished sucessfully.

Definition at line 624 of file ArnDiscover.hpp.

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

- src/ArnInc/ArnDiscover.hpp (2.2.0)

14.50 ArnDiscoverInfo::State Struct Reference

State of Arn discover browse data. Can be tested by relative order.

```
#include <ArnDiscover.hpp>
```

Public Types

- enum E {
  Init, ServiceName, HostInfoErr, HostInfo,
  HostIpErr, HostIp }

14.50.1 Detailed Description

State of Arn discover browse data. Can be tested by relative order.

Definition at line 73 of file ArnDiscover.hpp.

14.50.2 Member Enumeration Documentation

14.50.2.1 enum ArnDiscoverInfo::State::E

Enumerator:

Init Initialized null state.

ServiceName Got service name and domain (from browsing)

HostInfoErr Got error during resolving HostName, HostPort, type and properties.

HostInfo Also got HostName, HostPort, type and properties (from resolving)

HostIpErr Got error during DNS lookup HostIp.

HostIp Also got HostIp (from DNS lookup)

Definition at line 74 of file ArnDiscover.hpp.

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

- src/ArnInc/ArnDiscover.hpp (2.2.0)

14.51 ArnError::StdCode Struct Reference

`#include <ArnError.hpp>`

Public Types

- enum E {
  Ok = 0, Info = 1, Warning = 2, Err_Undef = 15,
  Err_Custom = 16 }

14.51.1 Detailed Description

Definition at line 40 of file ArnError.hpp.

14.51.2 Member Enumeration Documentation

14.51.2.1 enum ArnError::StdCode::E

Enumerator:

Ok

Info

Warning

Err_Undef

Err_Custom

Definition at line 42 of file ArnError.hpp.

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

- src/ArnInc/ArnError.hpp (2.2.0)

14.52 ArnItemValve::SwitchMode Struct Reference

`#include <ArnItemValve.hpp>`

Public Types

- enum E { InStream = 0x01, OutStream = 0x02, InOutStream = InStream | OutStream }

14.52.1 Detailed Description

Definition at line 80 of file ArnItemValve.hpp.

14.52.2 Member Enumeration Documentation

14.52.2.1 enum ArnItemValve::SwitchMode::E

Enumerator:

InStream Control target item notifying (signal) updated value.

OutStream Control target item accepting assign of value (setValue)

InOutStream Convenience, combined *InStream* and *OutStream*

Definition at line 81 of file ArnItemValve.hpp.

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

- src/ArnInc/ArnItemValve.hpp (2.2.0)

14.53 ArnServer::Type Struct Reference

`#include <ArnServer.hpp>`

Public Types

- enum E { NetSync }

14.53.1 Detailed Description

Definition at line 61 of file ArnServer.hpp.

14.53.2 Member Enumeration Documentation

14.53.2.1 enum ArnServer::Type::E

Enumerator:

NetSync

Definition at line 62 of file ArnServer.hpp.

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

- src/ArnInc/ArnServer.hpp (2.2.0)

14.54 ArnDiscover::Type Struct Reference

Types of Arn discover advertise.

`#include <ArnDiscover.hpp>`

Public Types

- enum E { None, Server, Client }

14.54.1 Detailed Description

Types of Arn discover advertise.

Definition at line 48 of file ArnDiscover.hpp.

14.54.2 Member Enumeration Documentation

14.54.2.1 enum ArnDiscover::Type::E

Enumerator:

None Undefined Arn discover.

Server Server Arn discover.

Client Client Arn discover.

Definition at line 49 of file ArnDiscover.hpp.

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

- src/ArnInc/ArnDiscover.hpp (2.2.0)

14.55 ArnScriptJobs::Type Struct Reference

`#include <ArnScriptJobs.hpp>`

Public Types

- enum E { Null, Cooperative, Preemptive }

14.55.1 Detailed Description

Definition at line 92 of file ArnScriptJobs.hpp.

14.55.2 Member Enumeration Documentation

14.55.2.1 enum ArnScriptJobs::Type::E

Enumerator:

Null

Cooperative

Preemptive

Definition at line 93 of file ArnScriptJobs.hpp.

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

- src/ArnInc/ArnScriptJobs.hpp (2.2.0)

14.56 Arn::XStringMap Class Reference

Container class with string representation for serialized data.

`#include <XStringMap.hpp>`

Public Member Functions

- XStringMap ()
- XStringMap (const QByteArray &xString)
- XStringMap (const QVariantMap &variantMap)
- ~XStringMap ()
- int size () const
- void clear (bool freeMem=false)
- void squeeze ()
- int indexOf (const char *key, int from=0) const
- int indexOf (const QByteArray &key, int from=0) const
- int indexOf (const QString &key, int from=0) const
- int indexOfValue (const QByteArray &value, int from=0) const
- int indexOfValue (const QString &value, int from=0) const
- int maxEnumOf (const char *keyPrefix) const
- XStringMap & add (const char *key, const QByteArray &val)
- XStringMap & add (const char *key, const char *val)
- XStringMap & add (const char *keyPrefix, uint eNum, const QByteArray &val)
- XStringMap & add (const QByteArray &key, const QByteArray &val)
- XStringMap & add (const char *key, const QString &val)
- XStringMap & add (const char *keyPrefix, uint eNum, const QString &val)
- XStringMap & add (const QByteArray &key, const QString &val)
- XStringMap & add (const QString &key, const QString &val)
- XStringMap & add (const XStringMap &other)
- XStringMap & add (const QVariantMap &variantMap)
- void set (int i, const QByteArray &val)
- void set (const char *key, const QByteArray &val)
- void set (const char *key, const char *val)
- void set (const QByteArray &key, const QByteArray &val)
- void set (const char *key, const QString &val)
- void set (const QByteArray &key, const QString &val)
- void set (const QString &key, const QString &val)
- const QByteArray & keyRef (int i) const
- QByteArray key (int i, const char *def=0) const
- QByteArray key (const QByteArray &value, const char *def=0) const
- QByteArray key (const QString &value, const char *def=0) const
- QString keyString (int i, const QString &def=QString()) const
- QString keyString (const QString &value, const QString &def=QString()) const
- const QByteArray & valueRef (int i) const
- QByteArray value (int i, const char *def=0) const
- QByteArray value (const char *key, const char *def=0) const
- QByteArray value (const char *keyPrefix, uint eNum, const char *def=0) const
- QByteArray value (const QByteArray &key, const char *def=0) const
- QByteArray value (const QByteArray &key, const QByteArray &def) const
- QString valueString (int i, const QString &def=QString()) const
- QString valueString (const char *key, const QString &def=QString()) const
- QString valueString (const char *keyPrefix, uint eNum, const QString &def=QString()) const
- QString valueString (const QByteArray &key, const QString &def=QString()) const

- QString valueString (const QString &key, const QString &def=QString()) const
- void remove (int index)
- void remove (const char *key)
- void remove (const QByteArray &key)
- void remove (const QString &key)
- QByteArray toXString () const
- bool fromXString (const QByteArray &inXString, int size=-1)
- void setEmptyKeysToValue ()
- QStringList keys () const
- QStringList values (const char *keyPrefix=0) const
- QVariantMap toVariantMap () const
- void append (const char *key, const QByteArray &val)
- void append (const char *key, const char *val)
- void append (const char *keyPrefix, uint eNum, const QByteArray &val)
- void append (const QByteArray &key, const QByteArray &val)
- void append (const char *key, const QString &val)
- void append (const char *keyPrefix, uint eNum, const QString &val)
- void append (const QByteArray &key, const QString &val)
- void append (const QString &key, const QString &val)
- void append (const XStringMap &other)
- void append (const QVariantMap &other)
- XStringMap & operator+= (const XStringMap &other)
- XStringMap & operator+= (const QVariantMap &other)

Static Public Member Functions

- static void stringCode (QByteArray &dst, const QByteArray &src)
- static void stringDecode (QByteArray &dst, const QByteArray &src)

14.56.1 Detailed Description

Container class with string representation for serialized data.

The primary usage is for creating and parsing serialized data. it's optimized for giving an easy readable representation which never contains char codes below 32 (space).

This class can store data with a key like QMaps. There is a guarantied order of storing, i.e. its not sorted like QMaps.

The stored data can be ascii as well as binary.

Following mapping is done when serialized to the XString:

> Special codes below 32: code 0 -> "\0", code 10 -> "\n", code 13 -> "\r"
> General codes below 32: code 1 -> "^A", code 2 -> "^B" and so on to code 31
> code 32 (space) -> "_", "_" -> "_", "^" -> "\^", "\" -> "\\"

The XString can be imported to the XStringMap. To get back stored values, XStringMap is Queried with the keys or by index.

```
Arn::XStringMap xsm;
xsm.add("", "put");
xsm.add("id", "level");
xsm.add("val", QByteArray::number(12));
qDebug() << "XString: " << xsm.toXString();
```

This will print "XString: put id=level val=12"

Definition at line 72 of file XStringMap.hpp.

14.56.2 Constructor & Destructor Documentation

14.56.2.1 Arn::XStringMap::XStringMap ( ) [explicit]

Definition at line 39 of file ArnXStringMap.cpp.

14.56.2.2 Arn::XStringMap::XStringMap (const QByteArray & *xString*) [explicit]

Definition at line 45 of file ArnXStringMap.cpp.

14.56.2.3 Arn::XStringMap::XStringMap (const QVariantMap & *variantMap*) [explicit]

Definition at line 52 of file ArnXStringMap.cpp.

14.56.2.4 Arn::XStringMap::~XStringMap ( )

Definition at line 59 of file ArnXStringMap.cpp.

14.56.3 Member Function Documentation

14.56.3.1 XStringMap & Arn::XStringMap::add (const char * *key,* const QByteArray & *val*)

Definition at line 153 of file ArnXStringMap.cpp.

14.56.3.2 XStringMap & Arn::XStringMap::add (const char * *key,* const char * *val*)

Definition at line 173 of file ArnXStringMap.cpp.

14.56.3.3 XStringMap & Arn::XStringMap::add (const char * *keyPrefix,* uint *eNum,* const QByteArray & *val*)

Definition at line 179 of file ArnXStringMap.cpp.

14.56.3.4 XStringMap & Arn::XStringMap::add (const QByteArray & *key,* const QByteArray & *val*)

Definition at line 189 of file ArnXStringMap.cpp.

14.56.3.5 XStringMap & Arn::XStringMap::add (const char * *key,* const QString & *val*)

Definition at line 195 of file ArnXStringMap.cpp.

14.56.3.6 XStringMap & Arn::XStringMap::add (const char * *keyPrefix,* uint *eNum,* const QString & *val*)

Definition at line 201 of file ArnXStringMap.cpp.

14.56.3.7 XStringMap & Arn::XStringMap::add (const QByteArray & *key,* const QString & *val*)

Definition at line 207 of file ArnXStringMap.cpp.

14.56.3.8 XStringMap & Arn::XStringMap::add (const QString & *key,* const QString & *val*)

Definition at line 213 of file ArnXStringMap.cpp.

14.56.3.9 XStringMap & Arn::XStringMap::add (const XStringMap & *other*)

Definition at line 219 of file ArnXStringMap.cpp.

14.56.3.10 XStringMap & Arn::XStringMap::add (const QVariantMap & *variantMap*)

Definition at line 229 of file ArnXStringMap.cpp.

14.56.3.11 void Arn::XStringMap::append (const char * *key,* const QByteArray & *val*) [inline]

Definition at line 145 of file XStringMap.hpp.

14.56.3.12 void Arn::XStringMap::append (const char * *key,* const char * *val*) [inline]

Definition at line 147 of file XStringMap.hpp.

14.56.3.13 void Arn::XStringMap::append (const char * *keyPrefix,* uint *eNum,* const QByteArray & *val*) [inline]

Definition at line 149 of file XStringMap.hpp.

14.56.3.14 void Arn::XStringMap::append (const QByteArray & *key,* const QByteArray & *val*) [inline]

Definition at line 151 of file XStringMap.hpp.

14.56.3.15 void Arn::XStringMap::append (const char * *key,* const QString & *val*) [inline]

Definition at line 153 of file XStringMap.hpp.

14.56.3.16 void Arn::XStringMap::append (const char * *keyPrefix,* uint *eNum,* const QString & *val*) [inline]

Definition at line 155 of file XStringMap.hpp.

14.56.3.17 void Arn::XStringMap::append (const QByteArray & *key,* const QString & *val*) [inline]

Definition at line 157 of file XStringMap.hpp.

14.56.3.18 void Arn::XStringMap::append (const QString & *key,* const QString & *val*) [inline]

Definition at line 159 of file XStringMap.hpp.

14.56.3.19 void Arn::XStringMap::append (const XStringMap & *other*) [inline]

Definition at line 161 of file XStringMap.hpp.

14.56.3.20 void Arn::XStringMap::append (const QVariantMap & *other*) [inline]

Definition at line 163 of file XStringMap.hpp.

14.56.3.21 void Arn::XStringMap::clear (bool *freeMem* = false)

Definition at line 70 of file ArnXStringMap.cpp.

14.56.3.22 bool Arn::XStringMap::fromXString (const QByteArray & *inXString,* int *size* = -1)

Definition at line 543 of file ArnXStringMap.cpp.

14.56.3.23 int Arn::XStringMap::indexOf (const char * *key,* int *from* = 0) const

Definition at line 90 of file ArnXStringMap.cpp.

14.56.3.24 int Arn::XStringMap::indexOf (const QByteArray & *key,* int *from* = 0) const

Definition at line 103 of file ArnXStringMap.cpp.

14.56.3.25 int Arn::XStringMap::indexOf (const QString & *key,* int *from* = 0) const

Definition at line 114 of file ArnXStringMap.cpp.

14.56.3.26 int Arn::XStringMap::indexOfValue (const QByteArray & *value,* int *from* = 0) const

Definition at line 120 of file ArnXStringMap.cpp.

14.56.3.27 int Arn::XStringMap::indexOfValue (const QString & *value,* int *from* = 0) const

Definition at line 131 of file ArnXStringMap.cpp.

14.56.3.28 QByteArray Arn::XStringMap::key (int *i,* const char * *def* = 0) const

Definition at line 304 of file ArnXStringMap.cpp.

14.56.3.29 QByteArray Arn::XStringMap::key (const QByteArray & *value,* const char * *def* = 0) const

Definition at line 312 of file ArnXStringMap.cpp.

14.56.3.30 QByteArray Arn::XStringMap::key (const QString & *value,* const char * *def* = 0) const

Definition at line 321 of file ArnXStringMap.cpp.

14.56.3.31 const QByteArray & Arn::XStringMap::keyRef (int *i*) const

Definition at line 296 of file ArnXStringMap.cpp.

14.56.3.32 QStringList Arn::XStringMap::keys ( ) const

Definition at line 485 of file ArnXStringMap.cpp.

14.56.3.33 QString Arn::XStringMap::keyString (int *i,* const QString & *def* = `QString()`) const

Definition at line 327 of file ArnXStringMap.cpp.

14.56.3.34 QString Arn::XStringMap::keyString (const QString & *value,* const QString & *def* = `QString()`) const

Definition at line 336 of file ArnXStringMap.cpp.

14.56.3.35 int Arn::XStringMap::maxEnumOf (const char * *keyPrefix*) const

Definition at line 137 of file ArnXStringMap.cpp.

14.56.3.36 XStringMap & Arn::XStringMap::operator+= (const XStringMap & *other*)

Definition at line 702 of file ArnXStringMap.cpp.

14.56.3.37 XStringMap & Arn::XStringMap::operator+= (const QVariantMap & *other*)

Definition at line 696 of file ArnXStringMap.cpp.

14.56.3.38 void Arn::XStringMap::remove (int *index*)

Definition at line 442 of file ArnXStringMap.cpp.

14.56.3.39 void Arn::XStringMap::remove (const char * *key*)

Definition at line 456 of file ArnXStringMap.cpp.

14.56.3.40 void Arn::XStringMap::remove (const QByteArray & *key*)

Definition at line 462 of file ArnXStringMap.cpp.

14.56.3.41 void Arn::XStringMap::remove (const QString & *key*)

Definition at line 468 of file ArnXStringMap.cpp.

14.56.3.42 void Arn::XStringMap::set (int *i,* const QByteArray & *val*)

Definition at line 245 of file ArnXStringMap.cpp.

14.56.3.43 void Arn::XStringMap::set (const char * *key,* const QByteArray & *val*)

Definition at line 256 of file ArnXStringMap.cpp.

14.56.3.44 void Arn::XStringMap::set (const char * *key,* const char * *val*)

Definition at line 266 of file ArnXStringMap.cpp.

14.56.3.45 void Arn::XStringMap::set (const QByteArray & *key,* const QByteArray & *val*)

Definition at line 272 of file ArnXStringMap.cpp.

14.56.3.46 void Arn::XStringMap::set (const char * *key,* const QString & *val*)

Definition at line 278 of file ArnXStringMap.cpp.

14.56.3.47 void Arn::XStringMap::set (const QByteArray & *key,* const QString & *val*)

Definition at line 284 of file ArnXStringMap.cpp.

14.56.3.48 void Arn::XStringMap::set (const QString & *key,* const QString & *val*)

Definition at line 290 of file ArnXStringMap.cpp.

14.56.3.49 void Arn::XStringMap::setEmptyKeysToValue ( )

Definition at line 474 of file ArnXStringMap.cpp.

14.56.3.50 int Arn::XStringMap::size ( ) const [inline]

Definition at line 80 of file XStringMap.hpp.

14.56.3.51 void Arn::XStringMap::squeeze ( )

Definition at line 81 of file ArnXStringMap.cpp.

14.56.3.52 void Arn::XStringMap::stringCode (QByteArray & *dst,* const QByteArray & *src*) [static]

Definition at line 588 of file ArnXStringMap.cpp.

14.56.3.53 void Arn::XStringMap::stringDecode (QByteArray & *dst,* const QByteArray & *src*) [static]

Definition at line 642 of file ArnXStringMap.cpp.

14.56.3.54 QVariantMap Arn::XStringMap::toVariantMap ( ) const

Definition at line 511 of file ArnXStringMap.cpp.

14.56.3.55 QByteArray Arn::XStringMap::toXString ( ) const

Definition at line 525 of file ArnXStringMap.cpp.

14.56.3.56 QByteArray Arn::XStringMap::value (int *i*, const char * *def* = 0) const

Definition at line 351 of file ArnXStringMap.cpp.

14.56.3.57 QByteArray Arn::XStringMap::value (const char * *key*, const char * *def* = 0) const

Definition at line 359 of file ArnXStringMap.cpp.

14.56.3.58 QByteArray Arn::XStringMap::value (const char * *keyPrefix*, uint *eNum*, const char * *def* = 0) const

Definition at line 368 of file ArnXStringMap.cpp.

14.56.3.59 QByteArray Arn::XStringMap::value (const QByteArray & *key*, const char * *def* = 0) const

Definition at line 381 of file ArnXStringMap.cpp.

14.56.3.60 QByteArray Arn::XStringMap::value (const QByteArray & *key*, const QByteArray & *def*) const

Definition at line 390 of file ArnXStringMap.cpp.

14.56.3.61 const QByteArray & Arn::XStringMap::valueRef (int *i*) const

Definition at line 343 of file ArnXStringMap.cpp.

14.56.3.62 QStringList Arn::XStringMap::values (const char * *keyPrefix* = 0) const

Definition at line 496 of file ArnXStringMap.cpp.

14.56.3.63 QString Arn::XStringMap::valueString (int *i*, const QString & *def* = QString()) const

Definition at line 400 of file ArnXStringMap.cpp.

14.56.3.64 QString Arn::XStringMap::valueString (const char * *key*, const QString & *def* = QString()) const

Definition at line 409 of file ArnXStringMap.cpp.

14.56.3.65 QString Arn::XStringMap::valueString (const char * *keyPrefix*, uint *eNum*, const QString & *def* = QString()) const

Definition at line 416 of file ArnXStringMap.cpp.

14.56.3.66 QString Arn::XStringMap::valueString (const QByteArray & *key*, const QString & *def* = QString()) const

Definition at line 428 of file ArnXStringMap.cpp.

14.56.3.67 QString Arn::XStringMap::valueString (const QString & *key*, const QString & *def* = QString()) const

Definition at line 435 of file ArnXStringMap.cpp.

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

- src/ArnInc/XStringMap.hpp (2.2.0)
- src/ArnXStringMap.cpp (2.2.0)

Chapter 15

File Documentation

15.1 doc/Description.md File Reference

15.2 doc/HelpIndex.txt File Reference

15.3 doc/Install.md File Reference

15.4 doc/Internals.md File Reference

15.5 doc/Todo.md File Reference

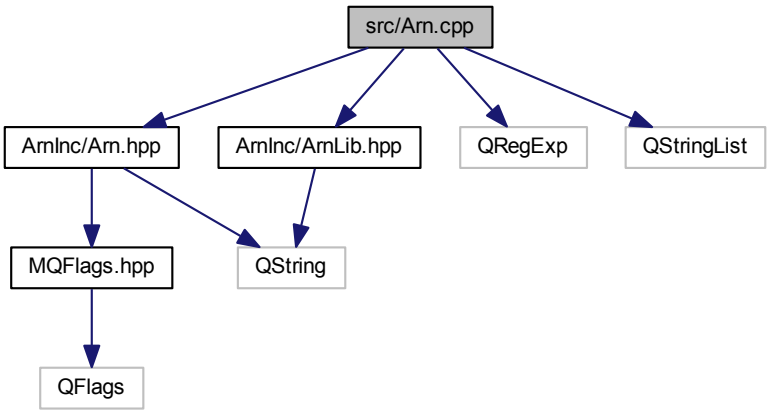
15.6 examples/Examples.txt File Reference

15.7 README.md File Reference

15.8 src/Arn.cpp File Reference

```
#include "ArnInc/Arn.hpp"
#include "ArnInc/ArnLib.hpp"
#include <QRegExp>
#include <QStringList>
```

Include dependency graph for Arn.cpp:



Namespaces

- namespace Arn

Functions

- QString Arn::convertName (const QString &name, Arn::NameF nameF=Arn::NameF())

  Convert a name to a specific format.
- QString Arn::fullPath (const QString &path)

  Convert a path to a full absolute path.
- QString Arn::itemName (const QString &path)

  The last part of a path
- QString Arn::childPath (const QString &parentPath, const QString &posterityPath)

  Get substring for child from a path (posterityPath)
- QString Arn::changeBasePath (const QString &oldBasePath, const QString &newBasePath, const QString &path)

  Change the base (start) of a path.
- QString Arn::makePath (const QString &parentPath, const QString &itemName)

  Make a path from a parent and an item name.
- QString Arn::addPath (const QString &parentPath, const QString &childRelPath, Arn::NameF nameF=Arn::-NameF::EmptyOk)

  Make a path from a parent and an additional relative path.
- QString Arn::convertPath (const QString &path, Arn::NameF nameF=Arn::NameF::EmptyOk)

  Convert a path to a specific format.
- QString Arn::twinPath (const QString &path)

  Get the bidirectional twin to a given path
- QString Arn::providerPath (const QString &path, bool giveProviderPath=true)

  Get provider path or requester path
- bool Arn::isFolderPath (const QString &path)

  Test if path is a folder path
- bool Arn::isProviderPath (const QString &path)

Test if path is a provider path

- QString Arn::makeHostWithInfo (const QString &host, const QString &info)

  Make a combined host and info string, i.e. HostWithInfo

- QString Arn::hostFromHostWithInfo (const QString &hostWithInfo)

  Get the host from the HostWithInfo string.

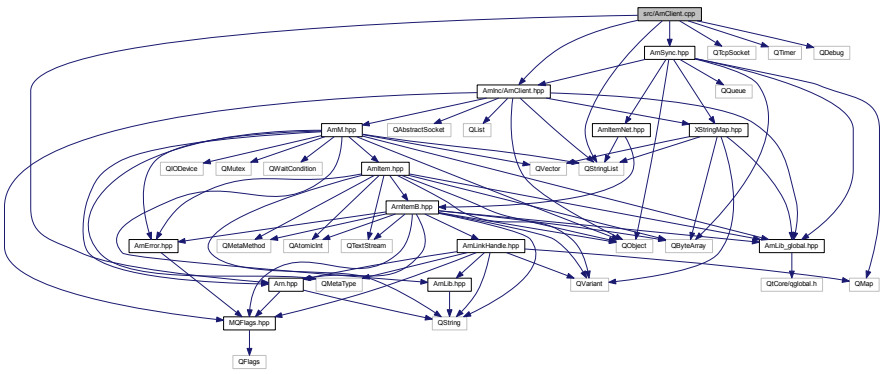
Variables

- const QString Arn::pathLocal = "/Local/"
- const QString Arn::pathLocalSys = "Sys/"
- const QString Arn::pathDiscover = "Sys/Discover/"
- const QString Arn::pathDiscoverThis = "Sys/Discover/This/"
- const QString Arn::pathDiscoverConnect = "Sys/Discover/Connect/"

15.9 src/ArnClient.cpp File Reference

```
#include "ArnInc/ArnClient.hpp"
#include "ArnInc/Arn.hpp"
#include "ArnSync.hpp"
#include <QTcpSocket>
#include <QStringList>
#include <QTimer>
#include <QDebug>
```

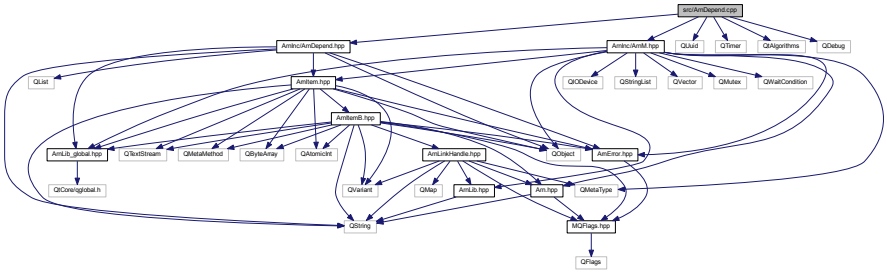
Include dependency graph for ArnClient.cpp:



15.10 src/ArnDepend.cpp File Reference

```
#include "ArnInc/ArnDepend.hpp"
#include "ArnInc/ArnM.hpp"
#include <QUuid>
#include <QTimer>
#include <QtAlgorithms>
#include <QDebug>
```

Include dependency graph for ArnDepend.cpp:



Variables

- const char * ArnDependPath = "//.sys/Depend/"

15.10.1 Variable Documentation

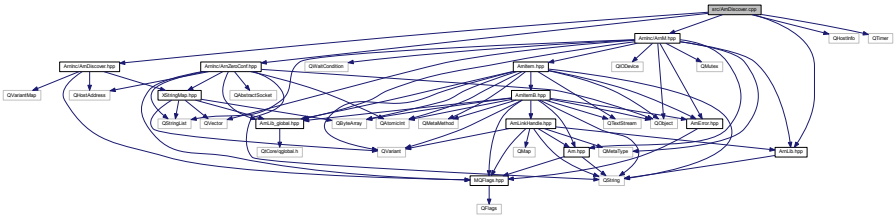
15.10.1.1 const char* ArnDependPath = "//.sys/Depend/"

Definition at line 39 of file ArnDepend.cpp.

15.11 src/ArnDiscover.cpp File Reference

```
#include "ArnInc/ArnDiscover.hpp"
#include "ArnInc/ArnZeroConf.hpp"
#include "ArnInc/ArnM.hpp"
#include "ArnInc/ArnLib.hpp"
#include <QHostInfo>
#include <QTimer>
```

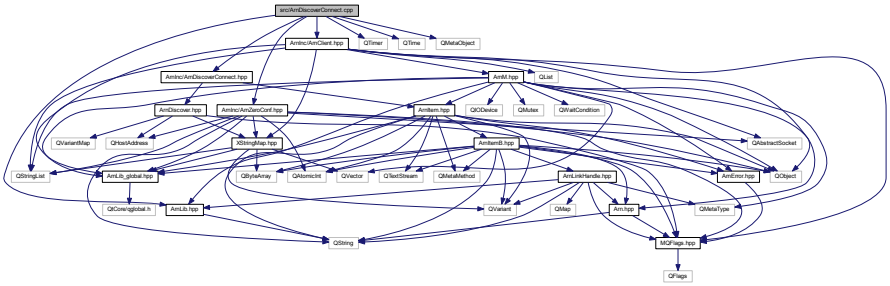
Include dependency graph for ArnDiscover.cpp:



15.12 src/ArnDiscoverConnect.cpp File Reference

```
#include "ArnInc/ArnDiscoverConnect.hpp"
#include "ArnInc/ArnZeroConf.hpp"
#include "ArnInc/ArnClient.hpp"
#include "ArnInc/ArnLib.hpp"
#include <QTimer>
#include <QTime>
#include <QMetaObject>
```

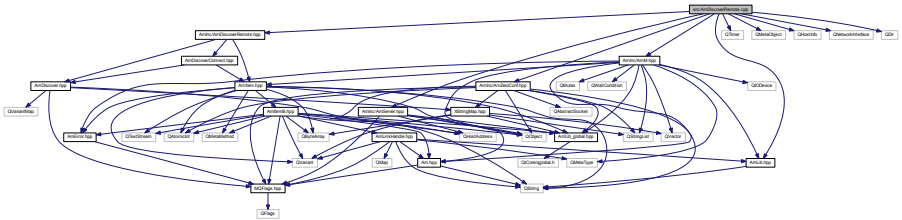
Include dependency graph for ArnDiscoverConnect.cpp:



15.13 src/ArnDiscoverRemote.cpp File Reference

```
#include "ArnInc/ArnDiscoverRemote.hpp"
#include "ArnInc/ArnZeroConf.hpp"
#include "ArnInc/ArnServer.hpp"
#include "ArnInc/ArnM.hpp"
#include "ArnInc/ArnLib.hpp"
#include <QTimer>
#include <QMetaObject>
#include <QHostInfo>
#include <QNetworkInterface>
#include <QDir>
```

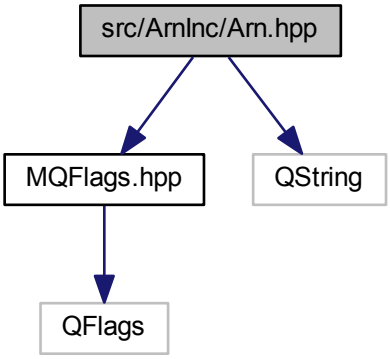
Include dependency graph for ArnDiscoverRemote.cpp:



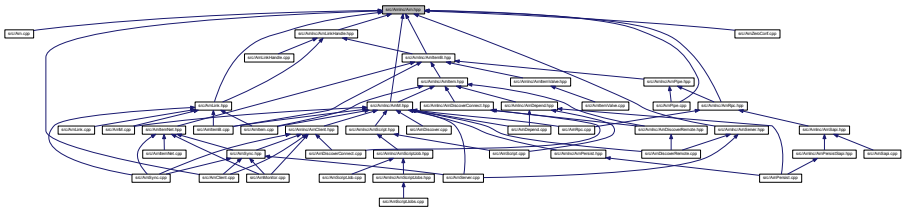
15.14 src/ArnInc/Arn.hpp File Reference

```
#include "MQFlags.hpp"
#include <QString>
```

Include dependency graph for Arn.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- struct Arn::SameValue

  Action when assigning same value to an ArnItem.
- struct Arn::DataType

  Data type of an Arn Data Object
- struct Arn::ObjectMode

  General global mode of an Arn Data Object
- struct Arn::ObjectSyncMode

  The client session sync mode of an Arn Data Object
- struct Arn::LinkFlags

  Link flags when accessing an Arn Data Object
- struct Arn::NameF
- struct Arn::Coding

Namespaces

- namespace Arn

Macros

- #define DATASTREAM_VER QDataStream::Qt_4_6

Functions

- QString Arn::convertName (const QString &name, Arn::NameF nameF=Arn::NameF())
  Convert a name to a specific format.
- QString Arn::fullPath (const QString &path)
  Convert a path to a full absolute path.
- bool Arn::isFolderPath (const QString &path)
  Test if path is a folder path
- bool Arn::isProviderPath (const QString &path)
  Test if path is a provider path
- QString Arn::itemName (const QString &path)
  The last part of a path
- QString Arn::childPath (const QString &parentPath, const QString &posterityPath)
  Get substring for child from a path (posterityPath)
- QString Arn::changeBasePath (const QString &oldBasePath, const QString &newBasePath, const QString &path)
  Change the base (start) of a path.
- QString Arn::makePath (const QString &parentPath, const QString &itemName)
  Make a path from a parent and an item name.
- QString Arn::addPath (const QString &parentPath, const QString &childRelPath, Arn::NameF nameF=Arn::NameF::EmptyOk)
  Make a path from a parent and an additional relative path.
- QString Arn::convertPath (const QString &path, Arn::NameF nameF=Arn::NameF::EmptyOk)
  Convert a path to a specific format.
- QString Arn::twinPath (const QString &path)
  Get the bidirectional twin to a given path
- QString Arn::providerPath (const QString &path, bool giveProviderPath=true)
  Get provider path or requester path
- QString Arn::makeHostWithInfo (const QString &host, const QString &info)
  Make a combined host and info string, i.e. HostWithInfo
- QString Arn::hostFromHostWithInfo (const QString &hostWithInfo)
  Get the host from the HostWithInfo string.

Variables

- const quint16 Arn::defaultTcpPort = 2022

15.14.1 Macro Definition Documentation

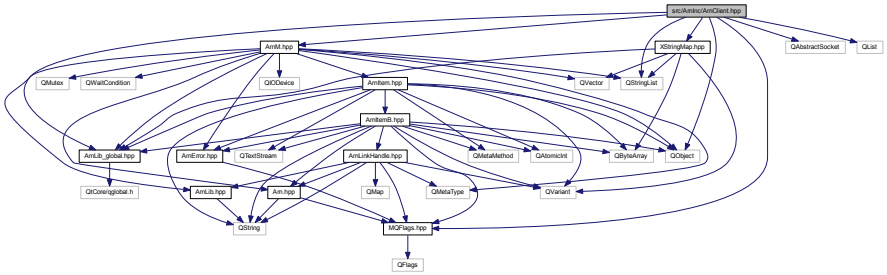
15.14.1.1 #define DATASTREAM_VER QDataStream::Qt_4_6

Definition at line 38 of file Arn.hpp.

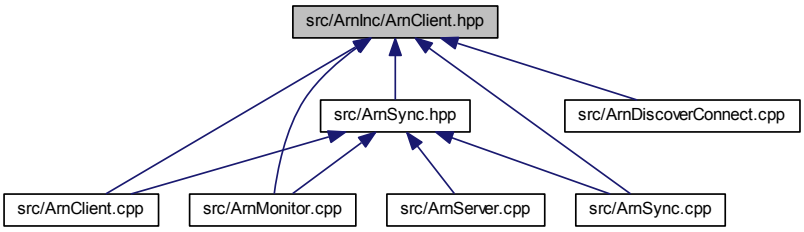
15.15 src/ArnInc/ArnClient.hpp File Reference

```
#include "ArnLib_global.hpp"
#include "ArnM.hpp"
#include "XStringMap.hpp"
#include "MQFlags.hpp"
#include <QObject>
#include <QAbstractSocket>
#include <QStringList>
#include <QList>
```

Include dependency graph for ArnClient.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- class ArnClient

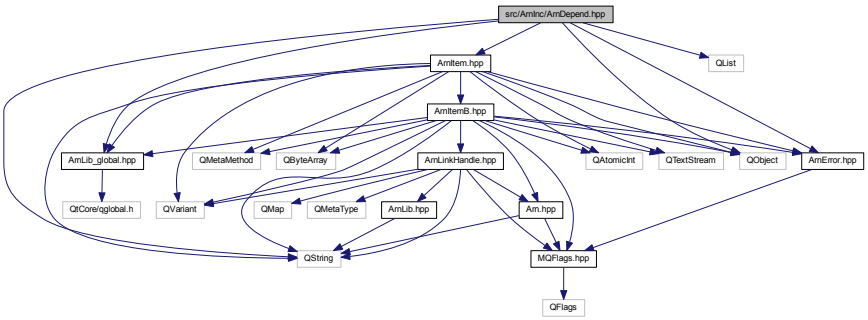
  Class for connecting to an Arn Server.

- struct ArnClient::ConnectStat
- struct ArnClient::HostAddrPort
- struct **ArnClient::MountPointSlot**

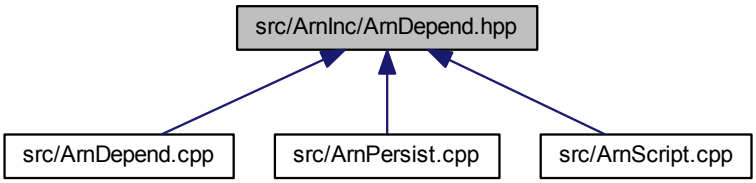
15.16 src/ArnInc/ArnDepend.hpp File Reference

```
#include "ArnLib_global.hpp"
#include "ArnError.hpp"
#include "ArnItem.hpp"
#include <QList>
#include <QString>
#include <QObject>
```

Include dependency graph for ArnDepend.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- class ArnDependOffer

  Class for advertising that a service is available.

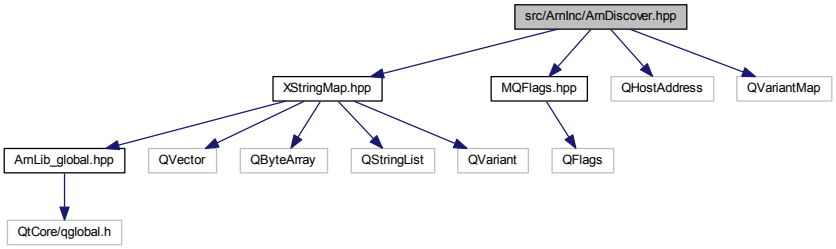
- class ArnDepend

  Class for setting up dependencis to needed services.

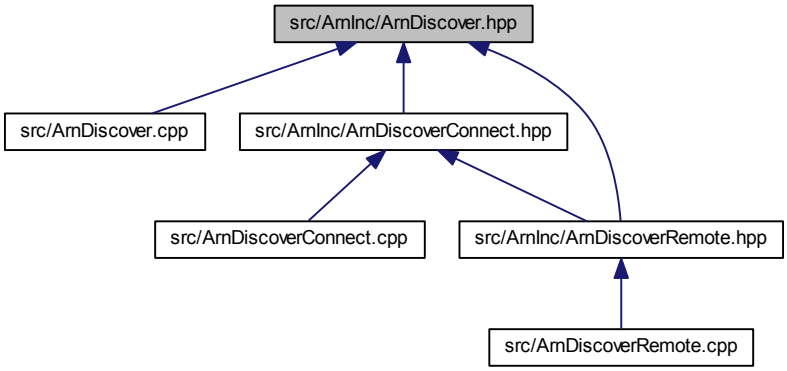
15.17 src/ArnInc/ArnDiscover.hpp File Reference

```
#include "XStringMap.hpp"
#include "MQFlags.hpp"
#include <QHostAddress>
#include <QVariantMap>
```

Include dependency graph for ArnDiscover.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- struct ArnDiscover::Type

  Types of Arn discover advertise.
- class ArnDiscoverInfo

  Class for holding current discover info of one service.
- struct ArnDiscoverInfo::State

  State of Arn discover browse data. Can be tested by relative order.
- class ArnDiscoverBrowserB

  Browse() and resolve() together, may never be used to the same instance.
- class ArnDiscoverBrowser

  Browsing for Arn services.
- class ArnDiscoverResolver

  Resolv an Arn service.
- class ArnDiscoverAdvertise

  Advertise an Arn service.
- struct ArnDiscoverAdvertise::State

  States of DiscoverAdvertise / These values must be synced with: ArnZeroConf::State.

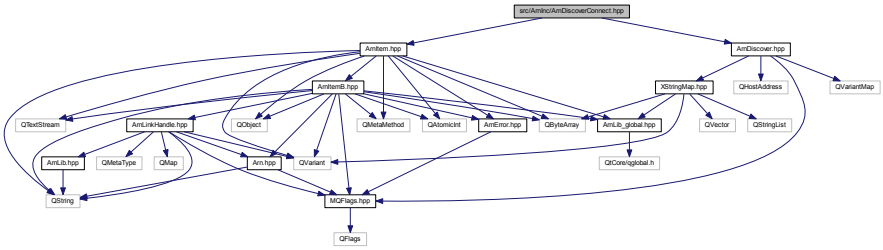
Namespaces

- namespace ArnDiscover

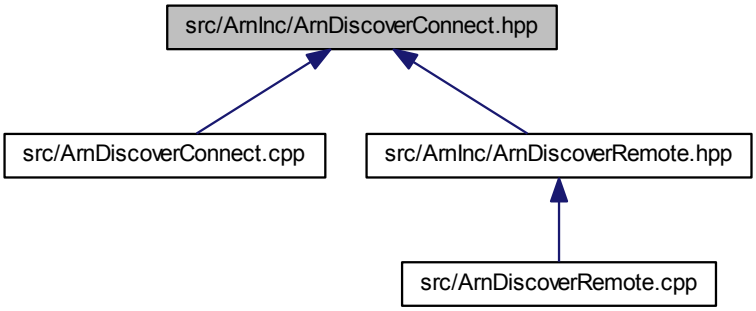
15.18 src/ArnInc/ArnDiscoverConnect.hpp File Reference

```
#include "ArnDiscover.hpp"
#include "ArnItem.hpp"
```

Include dependency graph for ArnDiscoverConnect.hpp:



This graph shows which files directly or indirectly include this file:



Classes

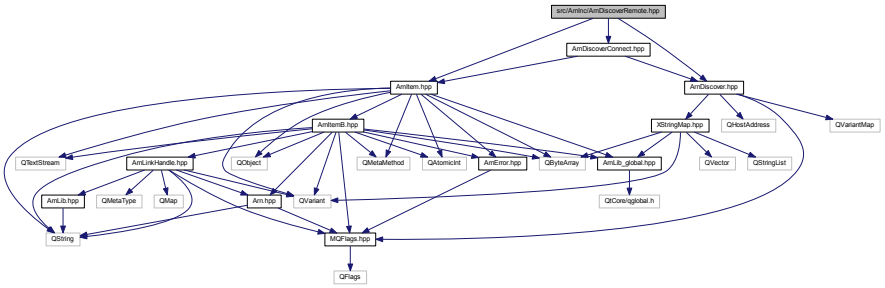
- class ArnDiscoverConnector

  An automatic client discover connector.

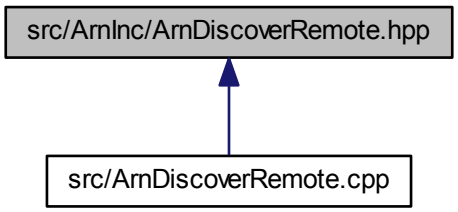
15.19 src/ArnInc/ArnDiscoverRemote.hpp File Reference

```
#include "ArnDiscover.hpp"
#include "ArnDiscoverConnect.hpp"
#include "ArnItem.hpp"
```

Include dependency graph for ArnDiscoverRemote.hpp:



This graph shows which files directly or indirectly include this file:



Classes

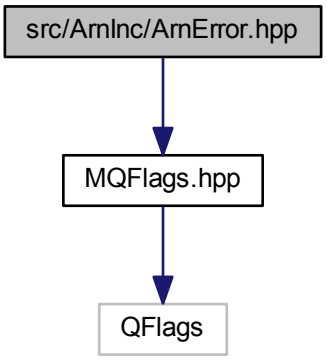
- class ArnDiscoverRemote

  Discover with remote setting.

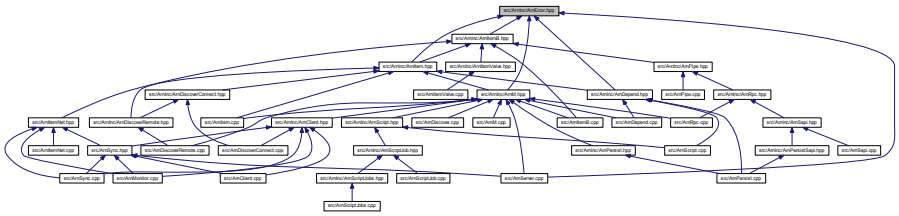
15.20 src/ArnInc/ArnError.hpp File Reference

```
#include "MQFlags.hpp"
```

Include dependency graph for ArnError.hpp:



This graph shows which files directly or indirectly include this file:



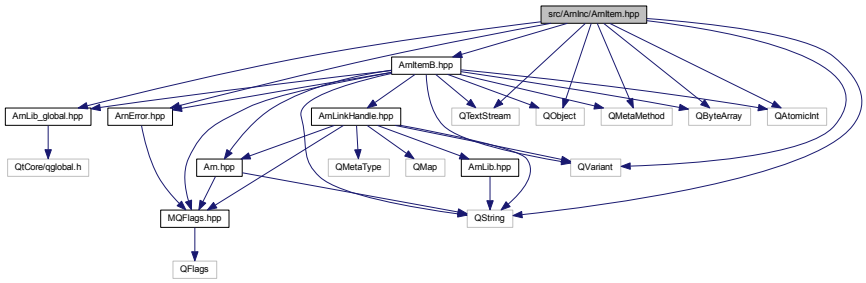
Classes

- struct ArnError
- struct ArnError::StdCode

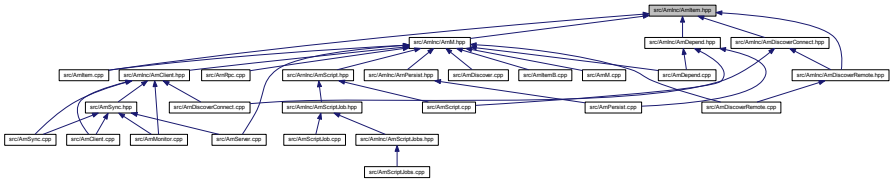
15.21 src/ArnInc/ArnItem.hpp File Reference

```
#include "ArnLib_global.hpp"
#include "ArnItemB.hpp"
#include "ArnError.hpp"
#include <QTextStream>
#include <QObject>
#include <QMetaMethod>
#include <QString>
#include <QByteArray>
#include <QVariant>
#include <QAtomicInt>
```

Include dependency graph for ArnItem.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- class ArnItem

  Handle for an Arn Data Object.

Functions

- QTextStream & operator<< (QTextStream &out, const ArnItem &item)

15.21.1 Function Documentation

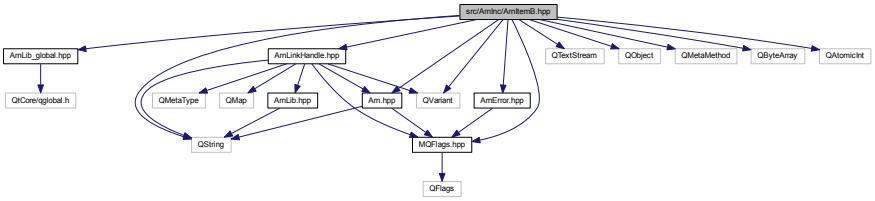
15.21.1.1 QTextStream& operator<< (QTextStream & *out,* const ArnItem & *item*)

Definition at line 405 of file ArnItem.cpp.

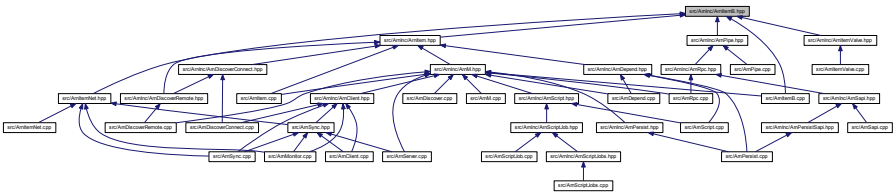
15.22 src/ArnInc/ArnItemB.hpp File Reference

```
#include "ArnLib_global.hpp"
#include "ArnLinkHandle.hpp"
#include "ArnError.hpp"
#include "Arn.hpp"
#include "MQFlags.hpp"
#include <QTextStream>
#include <QObject>
#include <QMetaMethod>
#include <QString>
#include <QByteArray>
#include <QVariant>
#include <QAtomicInt>
```

Include dependency graph for ArnItemB.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- class ArnItemB

  Base class handle for an Arn Data Object.

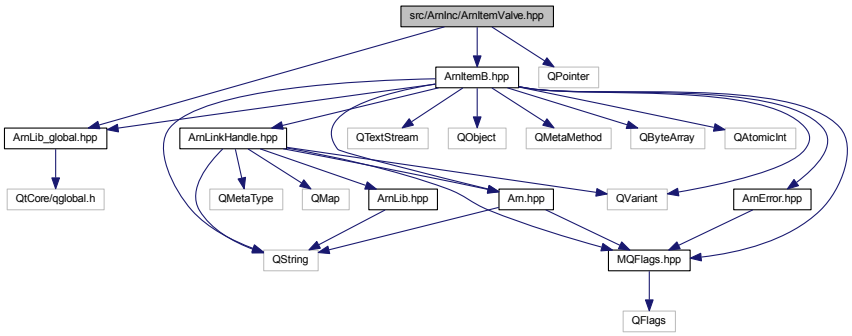
- struct ArnItemB::ExportCode

  Code used in blob for arnExport() and arnImport()

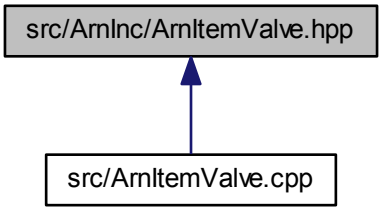
15.23 src/ArnInc/ArnItemValve.hpp File Reference

```
#include "ArnLib_global.hpp"
#include "ArnItemB.hpp"
#include <QPointer>
```

Include dependency graph for ArnItemValve.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- class ArnItemValve

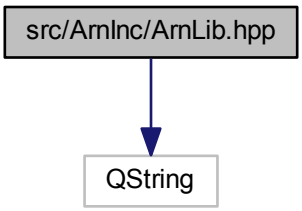
  Valve for controlling stream to/from an ArnItemB.

- struct ArnItemValve::SwitchMode

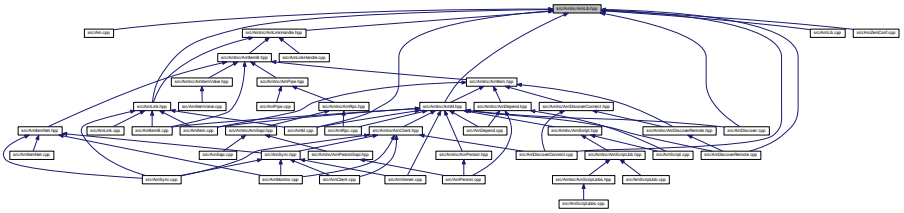
15.24 src/ArnInc/ArnLib.hpp File Reference

```
#include <QString>
```

Include dependency graph for ArnLib.hpp:



This graph shows which files directly or indirectly include this file:



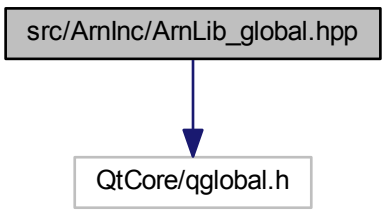
Namespaces

- namespace Arn

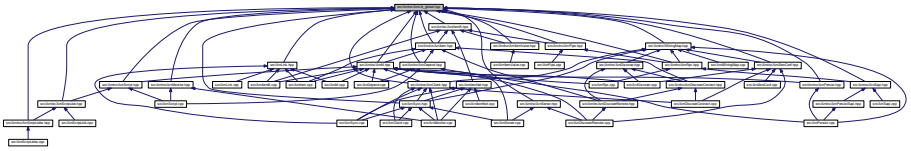
15.25 src/ArnInc/ArnLib_global.hpp File Reference

```
#include <QtCore/qglobal.h>
```

Include dependency graph for ArnLib_global.hpp:



This graph shows which files directly or indirectly include this file:



Macros

- #define ARNLIBSHARED_EXPORT Q_DECL_IMPORT

15.25.1 Macro Definition Documentation

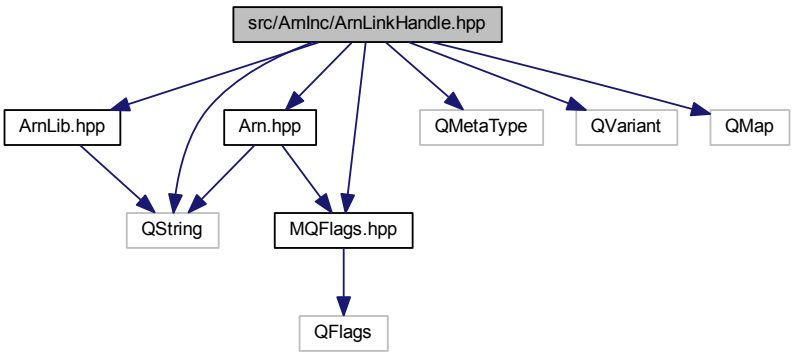
15.25.1.1 #define ARNLIBSHARED_EXPORT Q_DECL_IMPORT

Definition at line 11 of file ArnLib_global.hpp.

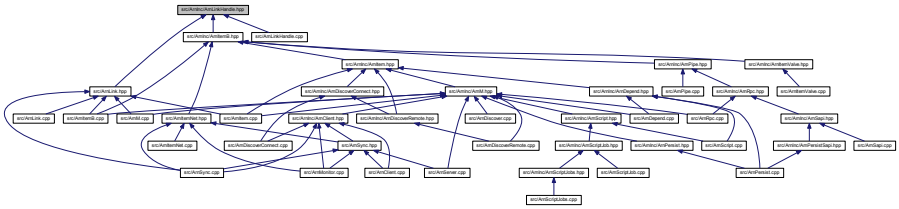
15.26 src/ArnInc/ArnLinkHandle.hpp File Reference

```
#include "ArnLib.hpp"
#include "Arn.hpp"
#include "MQFlags.hpp"
#include <QMetaType>
#include <QString>
#include <QVariant>
#include <QMap>
```

Include dependency graph for ArnLinkHandle.hpp:



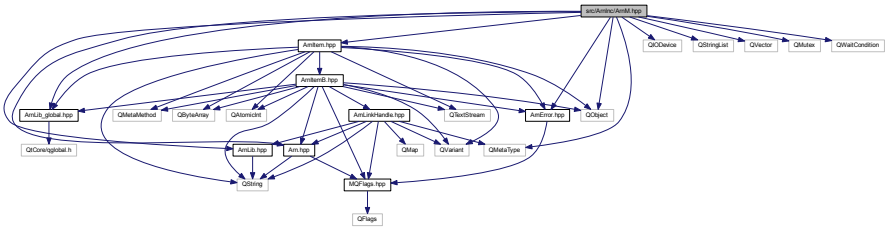
This graph shows which files directly or indirectly include this file:



15.27 src/ArnInc/ArnM.hpp File Reference

```
#include "ArnLib_global.hpp"
#include "ArnLib.hpp"
#include "Arn.hpp"
#include "ArnError.hpp"
#include "ArnItem.hpp"
#include <QIODevice>
#include <QStringList>
#include <QVector>
#include <QMetaType>
#include <QObject>
#include <QMutex>
#include <QWaitCondition>
```

Include dependency graph for ArnM.hpp:



This graph shows which files directly or indirectly include this file:

Classes

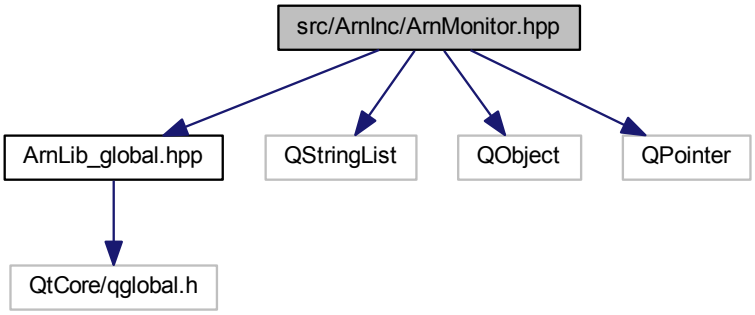
- class ArnM

15.28 src/ArnInc/ArnMonitor.hpp File Reference

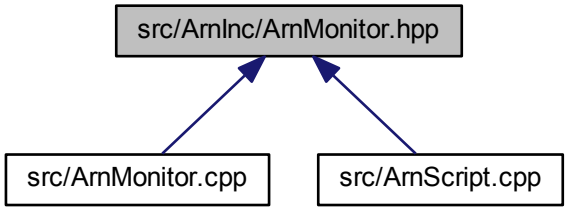
```
#include "ArnLib_global.hpp"
```

```
#include <QStringList>
#include <QObject>
#include <QPointer>
```

Include dependency graph for ArnMonitor.hpp:



This graph shows which files directly or indirectly include this file:



Classes

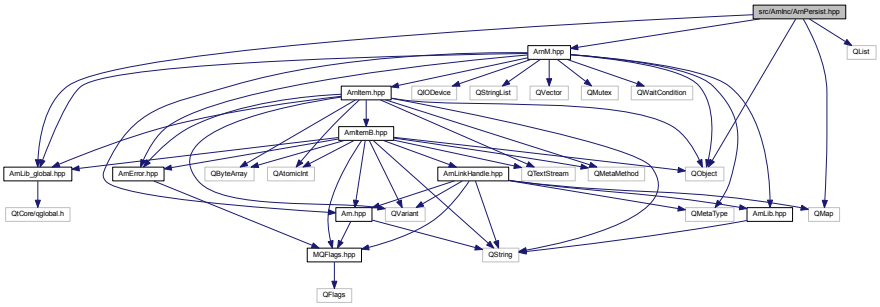
- class ArnMonitor

  A client remote monitor to detect changes at server.

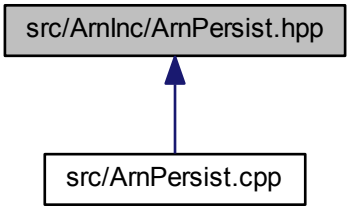
15.29 src/ArnInc/ArnPersist.hpp File Reference

```
#include "ArnLib_global.hpp"
#include "ArnM.hpp"
#include <QMap>
#include <QList>
#include <QObject>
```

Include dependency graph for ArnPersist.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- class ArnPersist

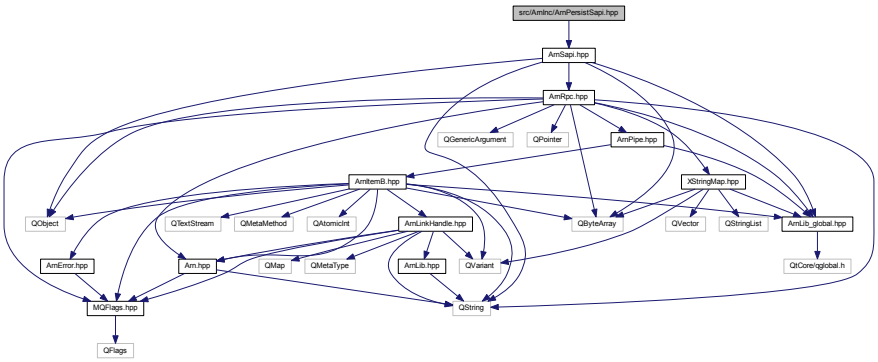
Namespaces

- namespace Arn

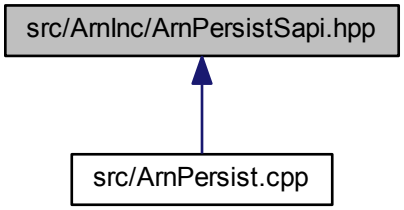
15.30 src/ArnInc/ArnPersistSapi.hpp File Reference

```
#include "ArnSapi.hpp"
```

Include dependency graph for ArnPersistSapi.hpp:



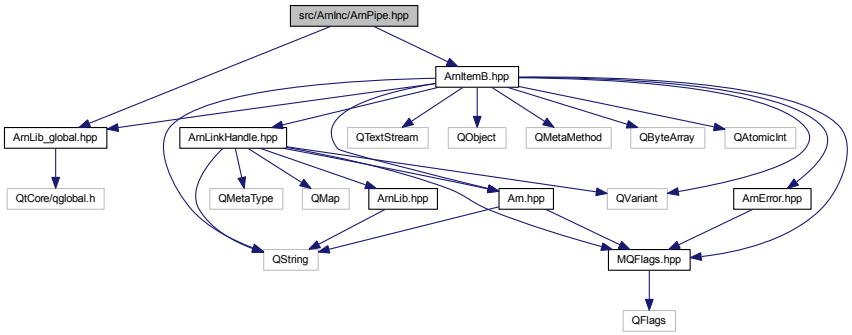
This graph shows which files directly or indirectly include this file:



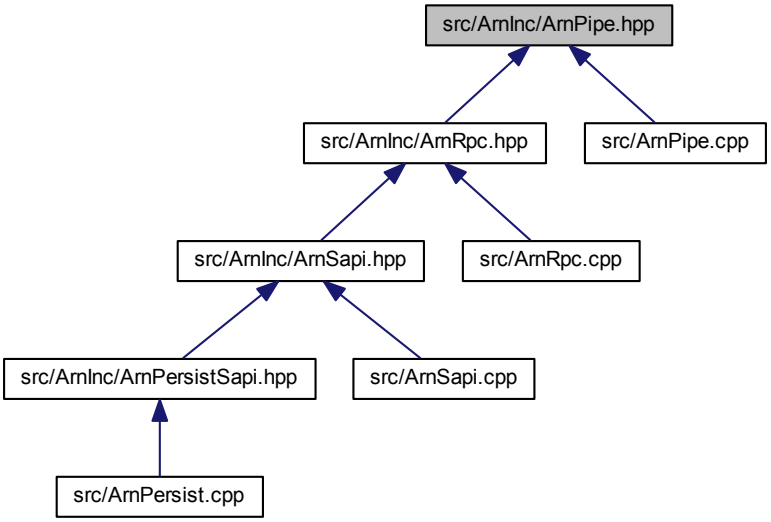
15.31 src/ArnInc/ArnPipe.hpp File Reference

```
#include "ArnLib_global.hpp"
#include "ArnItemB.hpp"
```

Include dependency graph for ArnPipe.hpp:



This graph shows which files directly or indirectly include this file:



Classes

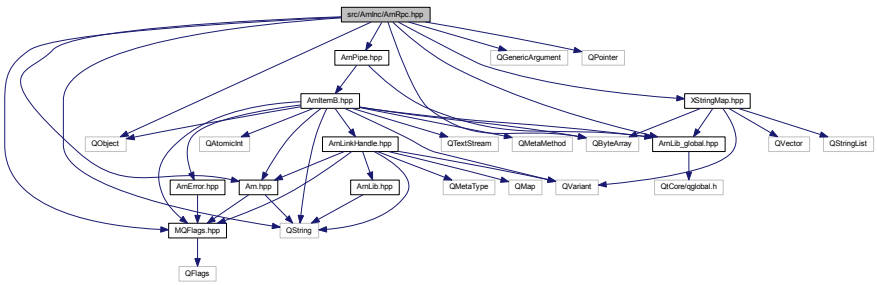
- class ArnPipe

  ArnItem specialized as a pipe.

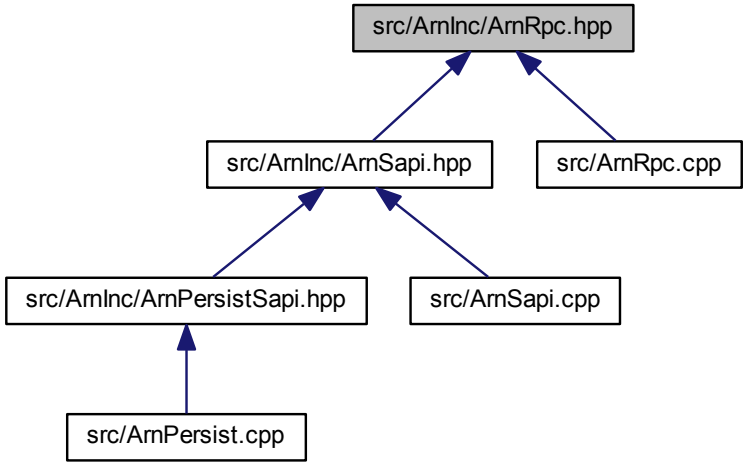
15.32 src/ArnInc/ArnRpc.hpp File Reference

```
#include "ArnLib_global.hpp"
#include "Arn.hpp"
#include "ArnPipe.hpp"
#include "XStringMap.hpp"
#include "MQFlags.hpp"
#include <QGenericArgument>
#include <QPointer>
#include <QString>
#include <QByteArray>
#include <QObject>
```

Include dependency graph for ArnRpc.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- class MQGenericArgument

  Similar to QGenericArgument but with added argument label (parameter name)
- class MQArgument< T >

  Similar to QArgument but with added argument label (parameter name)
- class ArnRpc

  Remote Procedure Call.
- struct ArnRpc::Mode
- struct ArnRpc::Invoke
- struct **ArnRpc::RpcTypeInfo**
- struct **ArnRpc::ArgInfo**
- struct **ArnRpc::MethodsParam**
- struct ArnRpc::MethodsParam::Params

Macros

- #define no_queue
- #define MQ_ARG(type, label, data) MQArgument<type >(#type, #label, data)

  Similar to Q_ARG but with added argument label (parameter name)

15.32.1 Macro Definition Documentation

15.32.1.1 #define MQ_ARG(*type, label, data*) MQArgument<type >(#type, #label, data)

Similar to Q_ARG but with added argument label (parameter name)

Definition at line 49 of file ArnRpc.hpp.

15.32.1.2 #define no_queue

Examples:

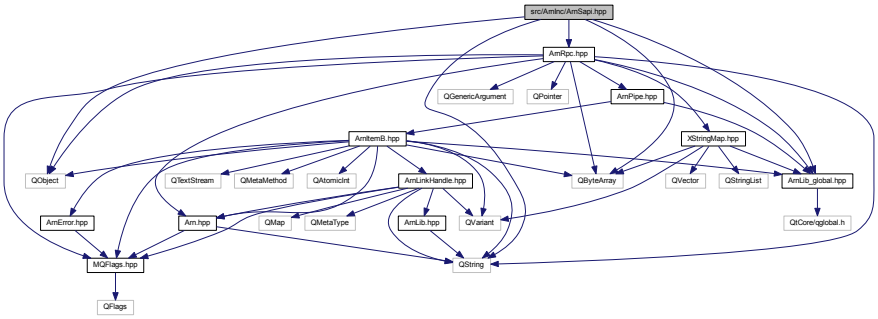
ArnDemoChatServer/ChatSapi.hpp.

Definition at line 35 of file ArnRpc.hpp.

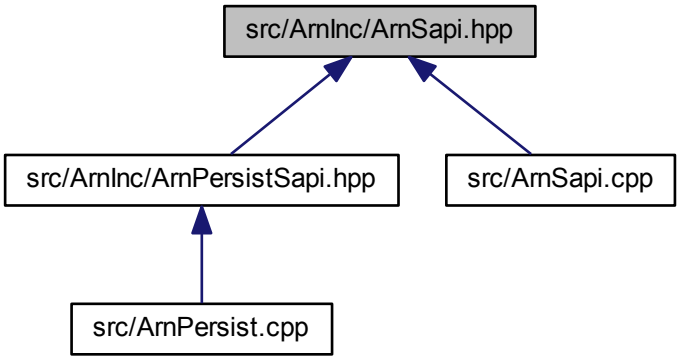
15.33 src/ArnInc/ArnSapi.hpp File Reference

```
#include "ArnLib_global.hpp"
#include "ArnRpc.hpp"
#include <QString>
#include <QByteArray>
#include <QObject>
```

Include dependency graph for ArnSapi.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- class ArnSapi

  Service API.

Macros

- #define MQ_PUBLIC_ACCESS

15.33.1 Macro Definition Documentation

15.33.1.1 #define MQ_PUBLIC_ACCESS

Examples:

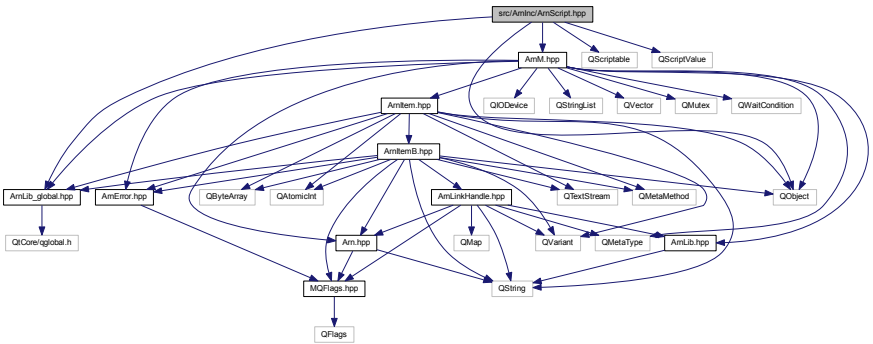
ArnDemoChatServer/ChatSapi.hpp.

Definition at line 44 of file ArnSapi.hpp.

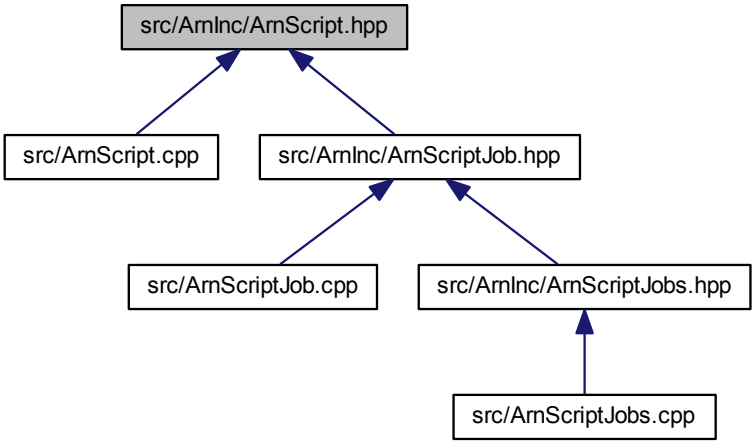
15.34 src/ArnInc/ArnScript.hpp File Reference

```
#include "ArnLib_global.hpp"
#include "ArnM.hpp"
#include <QObject>
#include <QScriptable>
#include <QScriptValue>
```

Include dependency graph for ArnScript.hpp:



This graph shows which files directly or indirectly include this file:



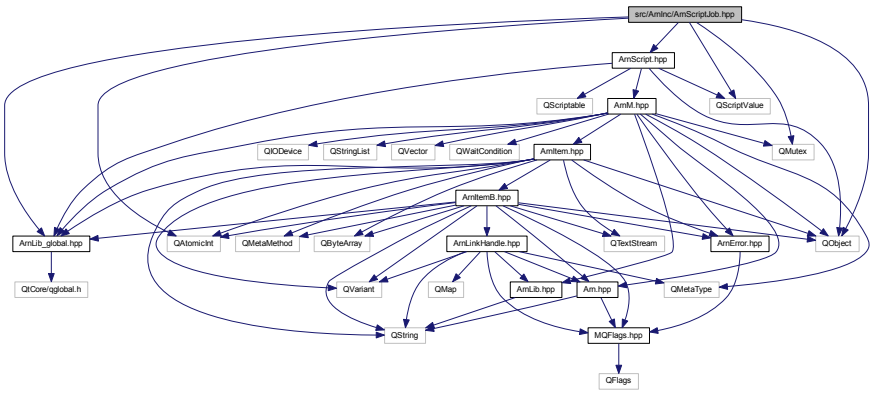
Classes

- class ArnScript

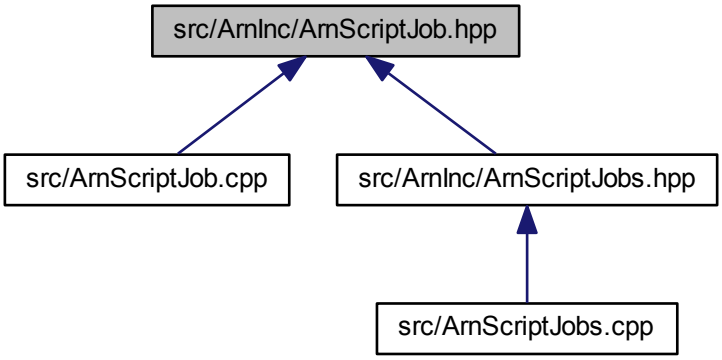
15.35 src/ArnInc/ArnScriptJob.hpp File Reference

```
#include "ArnLib_global.hpp"
#include "ArnScript.hpp"
#include <QScriptValue>
#include <QObject>
#include <QAtomicInt>
#include <QMutex>
```

Include dependency graph for ArnScriptJob.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- class ArnScriptJob
- class ArnScriptJobFactory

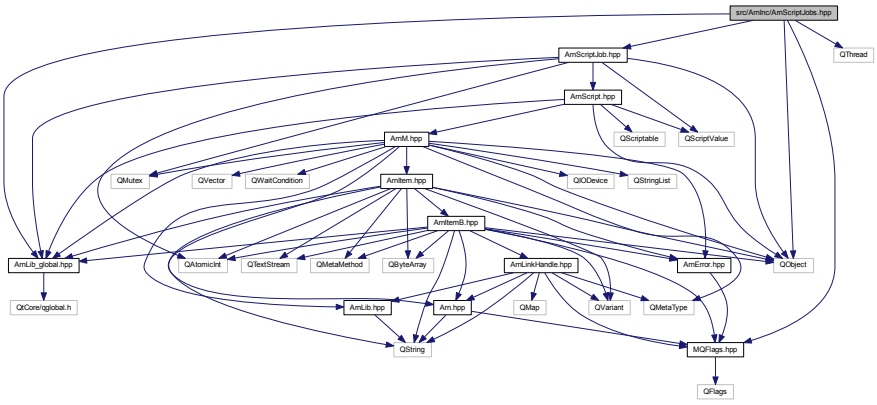
  Must be thread-safe as subclassed.
- class ArnScriptJobControl

  Is thread-safe (except doSetupJob)

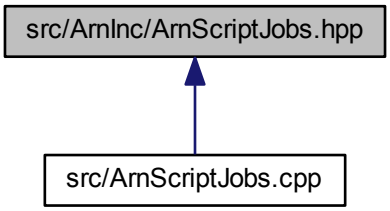
15.36 src/ArnInc/ArnScriptJobs.hpp File Reference

```
#include "ArnLib_global.hpp"
#include "ArnScriptJob.hpp"
#include "MQFlags.hpp"
#include <QThread>
#include <QObject>
```

Include dependency graph for ArnScriptJobs.hpp:



This graph shows which files directly or indirectly include this file:



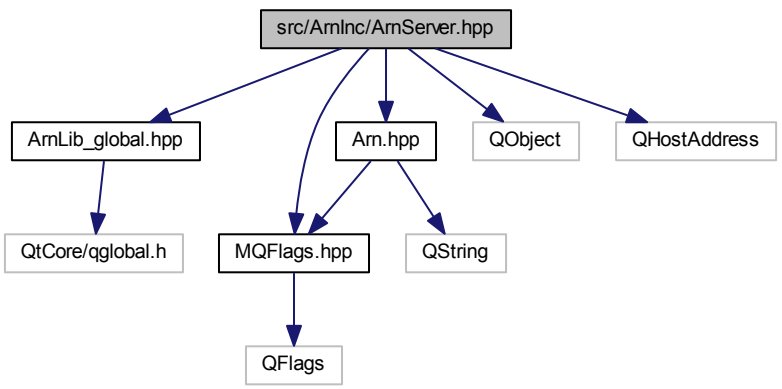
Classes

- class ArnScriptJobs
- struct ArnScriptJobs::Type
- struct **ArnScriptJobs::JobSlot**

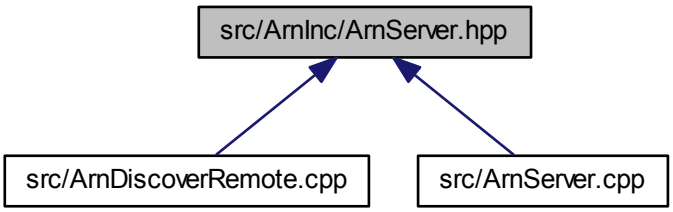
15.37 src/ArnInc/ArnServer.hpp File Reference

```
#include "ArnLib_global.hpp"
#include "Arn.hpp"
#include "MQFlags.hpp"
#include <QObject>
#include <QHostAddress>
```

Include dependency graph for ArnServer.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- class ArnServer

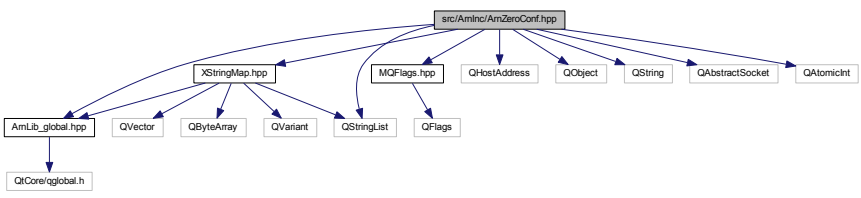
  Class for making an Arn Server.

- struct ArnServer::Type

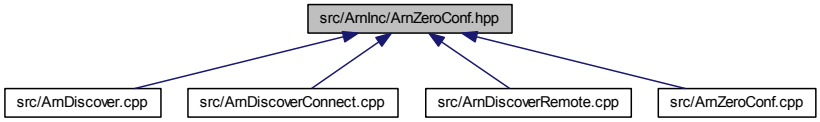
15.38 src/ArnInc/ArnZeroConf.hpp File Reference

```
#include "ArnLib_global.hpp"
#include "XStringMap.hpp"
#include "MQFlags.hpp"
#include <QHostAddress>
#include <QObject>
#include <QStringList>
#include <QString>
#include <QAbstractSocket>
#include <QAtomicInt>
```

Include dependency graph for ArnZeroConf.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- struct ArnZeroConf::Error

  Errors of ZeroConfig, other values are defined in dns_sd.h.
- struct ArnZeroConf::State

  States of ZeroConfig, limited valid for each ArnZeroConfB subclass / These values must be synced with: ArnDiscover-::State.
- class ArnZeroConfB

  Base class for Zero Config.
- class ArnZeroConfRegister

  Registering a ZeroConfig service.
- class ArnZeroConfResolve

  Resolv a ZeroConfig service.
- class ArnZeroConfLookup

  Lookup a host.
- class ArnZeroConfBrowser

  Browsing for ZeroConfig services.

Namespaces

- namespace ArnZeroConf

Typedefs

- typedef struct _DNSServiceRef_t * DNSServiceRef

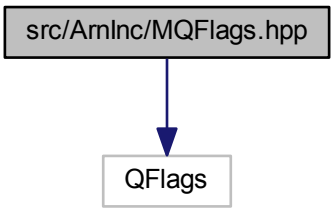
15.38.1 Typedef Documentation

15.38.1.1 typedef struct _DNSServiceRef_t* DNSServiceRef

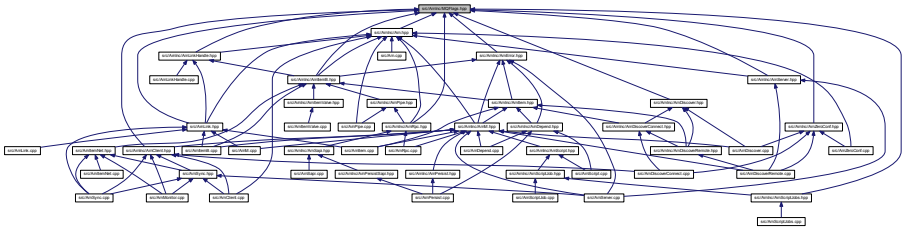
Definition at line 45 of file ArnZeroConf.hpp.

15.39 src/ArnInc/MQFlags.hpp File Reference

`#include <QFlags>`
Include dependency graph for MQFlags.hpp:



This graph shows which files directly or indirectly include this file:



Macros

- #define MQ_DECLARE_FLAGS(FEStruct)

  Flags.
- #define MQ_DECLARE_OPERATORS_FOR_FLAGS(FEStruct) Q_DECLARE_OPERATORS_FOR_FLAGS(FEStruct::F)
- #define MQ_DECLARE_ENUM(EStruct)

  Enums.

15.39.1 Macro Definition Documentation

15.39.1.1 #define MQ_DECLARE_ENUM(*EStruct*)

Value:

```
E  e; \
    inline EStruct(E v_ = E(0)) : e( v_)  {} \
    inline static EStruct  fromInt( int v_)  {return EStruct( E( v_));} \
    inline int  toInt()  const {return e;} \
    inline operator int()  const {return e;} \
    inline bool  operator!()  const {return !e;}
```

Enums.

Definition at line 57 of file MQFlags.hpp.

15.39.1.2 #define MQ_DECLARE_FLAGS(*FEStruct*)

Value:

```
Q_DECLARE_FLAGS(F, E) \
    F  f; \
    inline FEStruct(F v_ = F(0)) : f( v_)  {} \
    inline FEStruct(E e_) : f( e_)  {} \
    inline static E  flagIf( bool test, E e)  {return test ? e : E(0);} \
    inline bool  is(E e)  const {return f.testFlag(e);} \
    inline bool  isAny(E e)  const {return ((f & e) != 0) && (e != 0 || f == 0
      );} \
    inline FEStruct&  set(E e, bool v_ = true)  {f = v_ ? (f | e) : (f & ~e);
      return *this;} \
    inline static FEStruct  fromInt( int v_)  {return FEStruct( F( v_));} \
    inline int  toInt()  const {return f;} \
    inline operator int()  const {return f;} \
    inline bool  operator!()  const {return !f;}
```

Flags.

Definition at line 38 of file MQFlags.hpp.

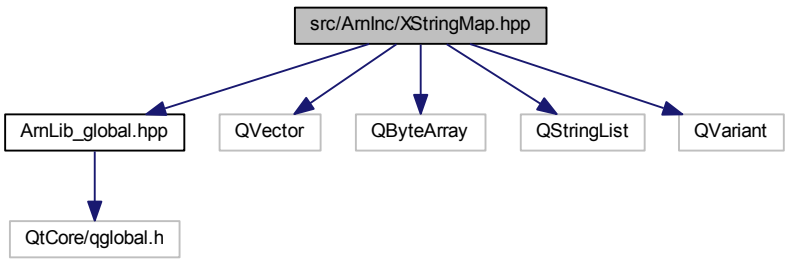
15.39.1.3 #define MQ_DECLARE_OPERATORS_FOR_FLAGS(*FEStruct*) Q_DECLARE_OPERATORS_FOR_FLAGS(FEStruct::F)

Definition at line 52 of file MQFlags.hpp.

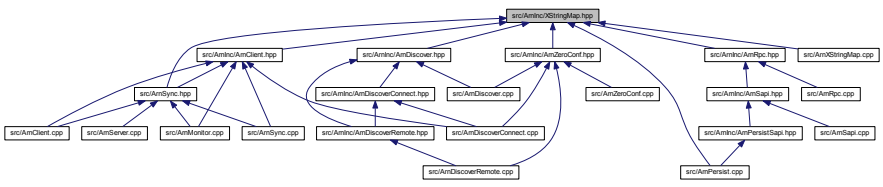
15.40 src/ArnInc/XStringMap.hpp File Reference

```
#include "ArnLib_global.hpp"
#include <QVector>
#include <QByteArray>
#include <QStringList>
#include <QVariant>
```

Include dependency graph for XStringMap.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- class Arn::XStringMap

  Container class with string representation for serialized data.

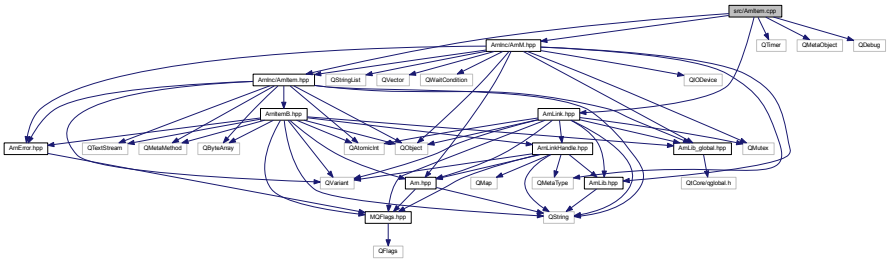
Namespaces

- namespace Arn

15.41 src/ArnItem.cpp File Reference

```
#include "ArnInc/ArnItem.hpp"
#include "ArnInc/ArnM.hpp"
#include "ArnLink.hpp"
#include <QTimer>
#include <QMetaObject>
#include <QDebug>
```

Include dependency graph for ArnItem.cpp:



Functions

- QTextStream & operator<< (QTextStream &out, const ArnItem &item)

15.41.1 Function Documentation

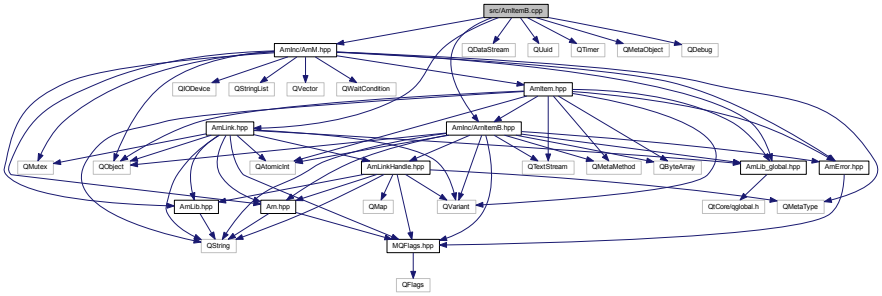
15.41.1.1 QTextStream& operator<< (QTextStream & *out,* const ArnItem & *item*)

Definition at line 405 of file ArnItem.cpp.

15.42 src/ArnItemB.cpp File Reference

```
#include "ArnInc/ArnItemB.hpp"
#include "ArnInc/ArnM.hpp"
#include "ArnLink.hpp"
#include <QDataStream>
#include <QUuid>
#include <QTimer>
#include <QMetaObject>
#include <QDebug>
```

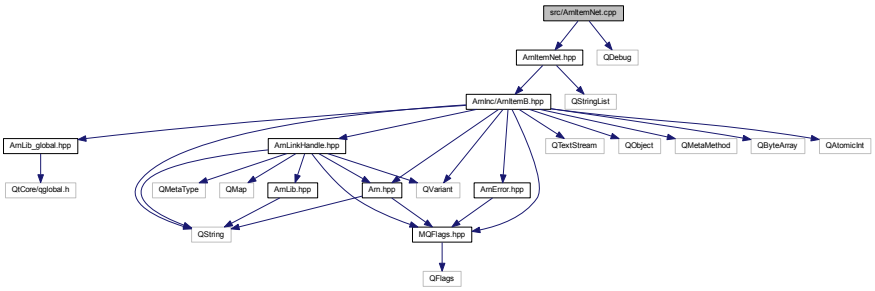
Include dependency graph for ArnItemB.cpp:



15.43 src/ArnItemNet.cpp File Reference

```
#include "ArnItemNet.hpp"
#include <QDebug>
```

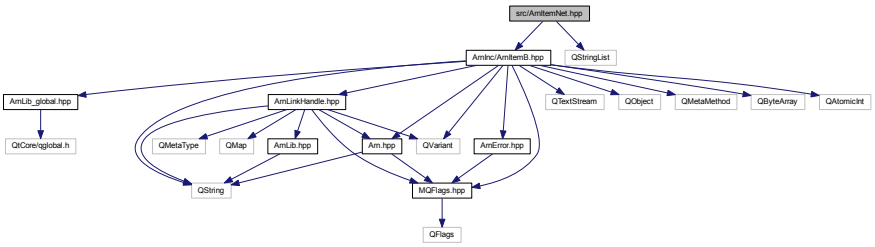
Include dependency graph for ArnItemNet.cpp:



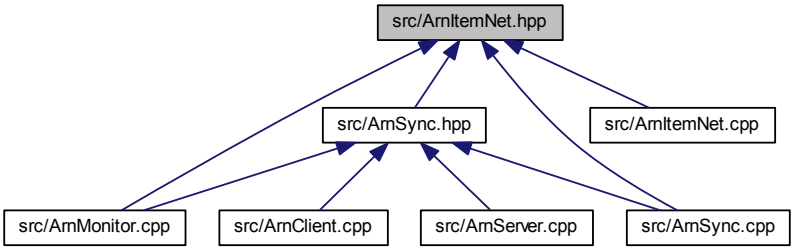
15.44 src/ArnItemNet.hpp File Reference

```
#include "ArnInc/ArnItemB.hpp"
#include <QStringList>
```

Include dependency graph for ArnItemNet.hpp:



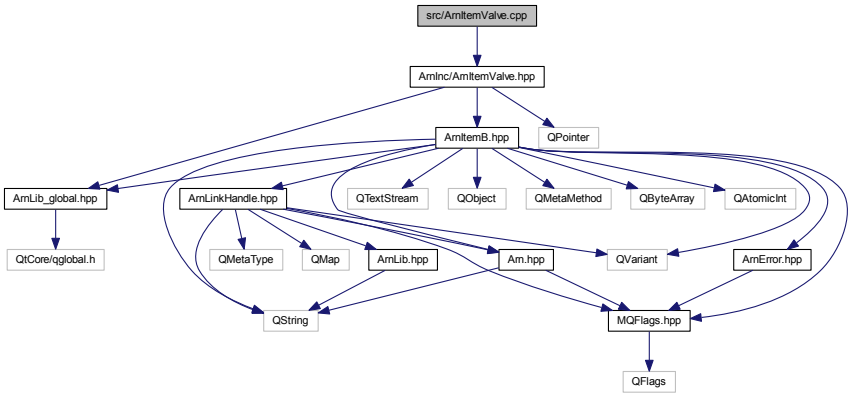
This graph shows which files directly or indirectly include this file:



15.45 src/ArnItemValve.cpp File Reference

```
#include "ArnInc/ArnItemValve.hpp"
```

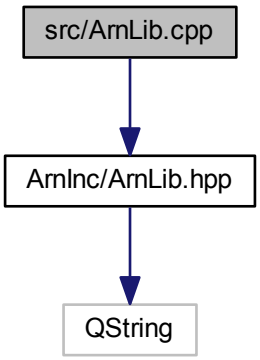
Include dependency graph for ArnItemValve.cpp:



15.46 src/ArnLib.cpp File Reference

```
#include "ArnInc/ArnLib.hpp"
```

Include dependency graph for ArnLib.cpp:



Namespaces

- namespace Arn

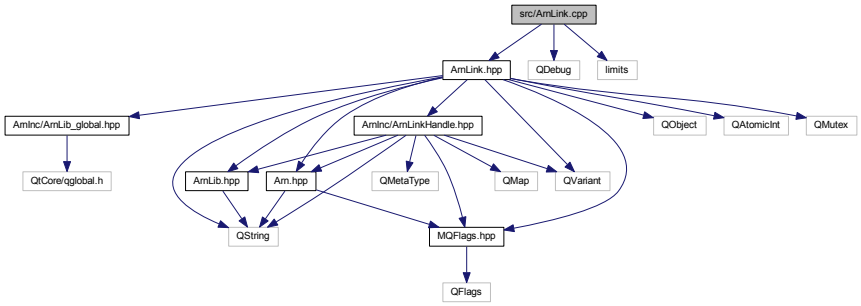
Variables

- bool Arn::debugThreading = false
- bool Arn::debugLinkRef = false
- bool Arn::debugLinkDestroy = false
- bool Arn::debugRecInOut = false
- bool Arn::debugShareObj = false
- bool Arn::debugMonitor = false
- bool Arn::debugMonitorTest = false
- bool Arn::debugRPC = false
- bool Arn::debugDepend = false
- bool Arn::debugDiscover = false
- bool Arn::debugZeroConf = false
- bool Arn::debugMDNS = false
- bool Arn::warningMDNS = false
- const QString Arn::resourceArnLib = ":/ArnLib/"
- const QString Arn::resourceArnRoot = ":/ArnLib/ArnRoot/"

15.47 src/ArnLink.cpp File Reference

```
#include "ArnLink.hpp"
#include <QDebug>
#include <limits>
```

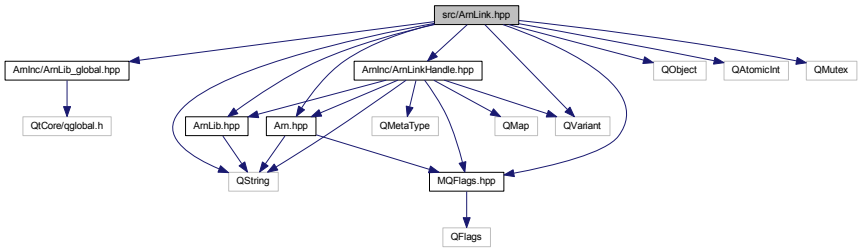
Include dependency graph for ArnLink.cpp:



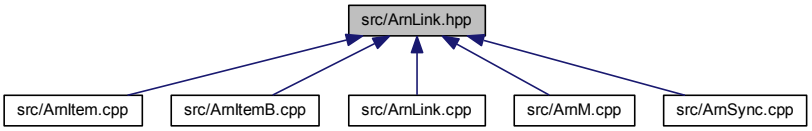
15.48 src/ArnLink.hpp File Reference

```
#include "ArnInc/ArnLib_global.hpp"
#include "ArnInc/ArnLinkHandle.hpp"
#include "ArnInc/ArnLib.hpp"
#include "ArnInc/Arn.hpp"
#include "ArnInc/MQFlags.hpp"
#include <QObject>
#include <QString>
#include <QVariant>
#include <QAtomicInt>
#include <QMutex>
```

Include dependency graph for ArnLink.hpp:



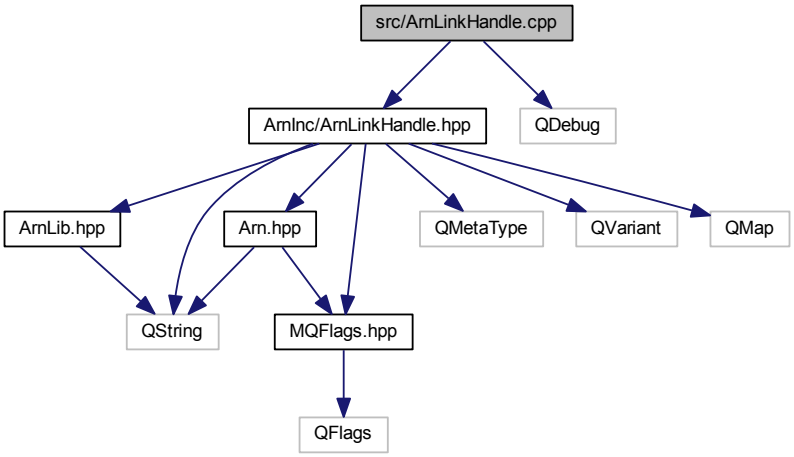
This graph shows which files directly or indirectly include this file:



15.49 src/ArnLinkHandle.cpp File Reference

```
#include "ArnInc/ArnLinkHandle.hpp"
#include <QDebug>
```

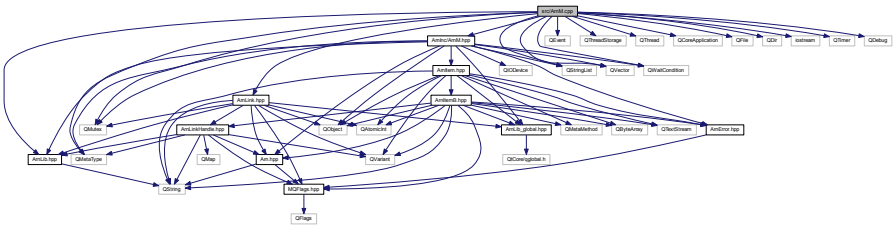
Include dependency graph for ArnLinkHandle.cpp:



15.50 src/ArnM.cpp File Reference

```
#include "ArnInc/ArnM.hpp"
#include "ArnInc/ArnLib.hpp"
#include "ArnLink.hpp"
#include <QEvent>
#include <QMutex>
#include <QWaitCondition>
#include <QThreadStorage>
#include <QThread>
#include <QCoreApplication>
#include <QMetaType>
#include <QFile>
#include <QDir>
#include <iostream>
#include <QTimer>
#include <QStringList>
#include <QVector>
#include <QDebug>
```

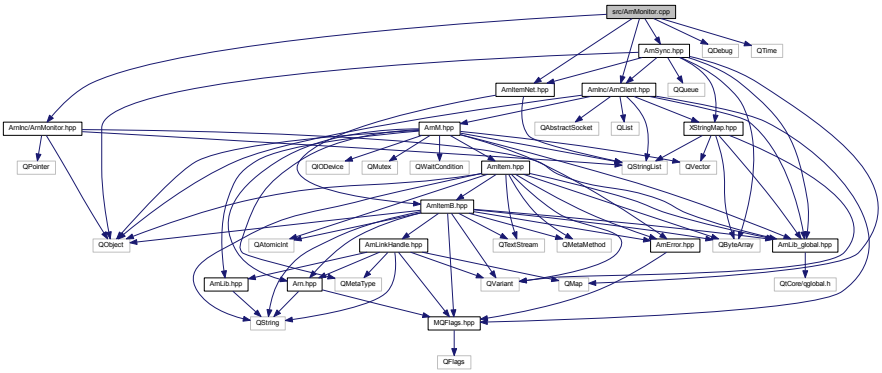
Include dependency graph for ArnM.cpp:



15.51 src/ArnMonitor.cpp File Reference

```
#include "ArnInc/ArnMonitor.hpp"
#include "ArnInc/ArnClient.hpp"
#include "ArnSync.hpp"
#include "ArnItemNet.hpp"
#include <QDebug>
#include <QTime>
```

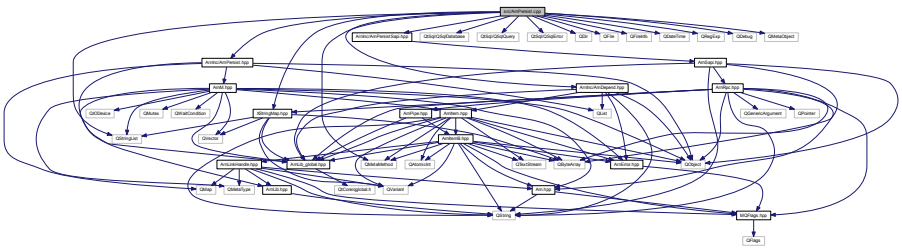
Include dependency graph for ArnMonitor.cpp:



15.52 src/ArnPersist.cpp File Reference

```
#include "ArnInc/ArnPersist.hpp"
#include "ArnInc/ArnPersistSapi.hpp"
#include "ArnInc/ArnDepend.hpp"
#include "ArnInc/XStringMap.hpp"
#include <QtSql/QSqlDatabase>
#include <QtSql/QSqlQuery>
#include <QtSql/QSqlError>
#include <QDir>
#include <QFile>
#include <QFileInfo>
#include <QDateTime>
#include <QRegExp>
#include <QStringList>
#include <QDebug>
#include <QMetaObject>
#include <QMetaMethod>
```

Include dependency graph for ArnPersist.cpp:



Variables

- const int arnDbSaveVer = 200

15.52.1 Variable Documentation

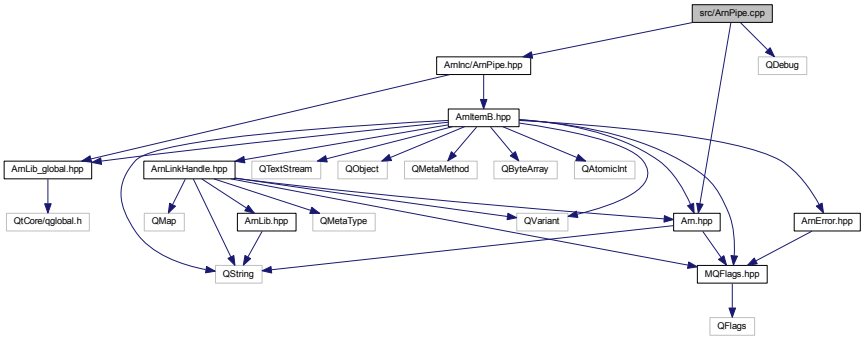
15.52.1.1 const int arnDbSaveVer = 200

Definition at line 52 of file ArnPersist.cpp.

15.53 src/ArnPipe.cpp File Reference

```
#include "ArnInc/ArnPipe.hpp"
#include "ArnInc/Arn.hpp"
#include <QDebug>
```

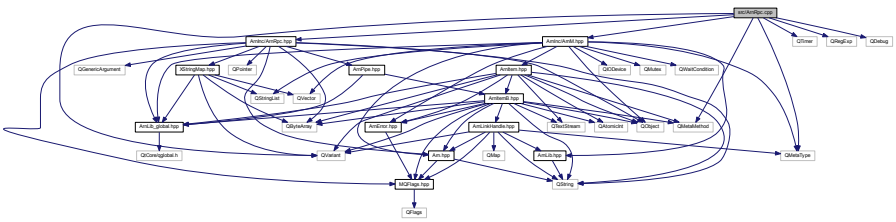
Include dependency graph for ArnPipe.cpp:



15.54 src/ArnRpc.cpp File Reference

```
#include "ArnInc/ArnRpc.hpp"
#include "ArnInc/ArnM.hpp"
#include <QMetaType>
#include <QMetaMethod>
#include <QTimer>
#include <QRegExp>
#include <QVariant>
#include <QDebug>
```

Include dependency graph for ArnRpc.cpp:



Macros

- #define RPC_STORAGE_NAME "_ArnRpcStorage"

15.54.1 Macro Definition Documentation

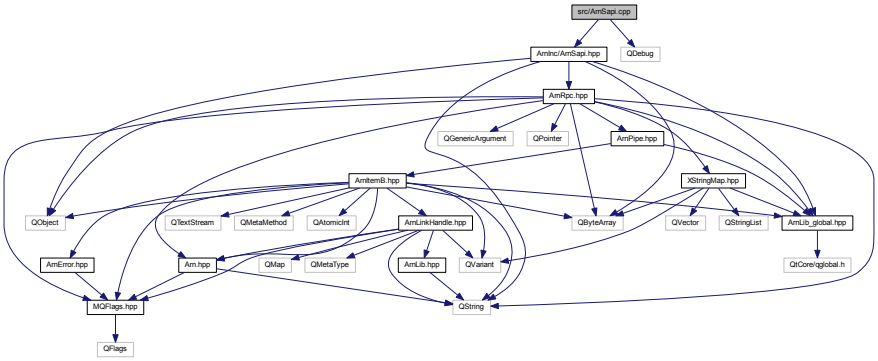
15.54.1.1 #define RPC_STORAGE_NAME "_ArnRpcStorage"

Definition at line 43 of file ArnRpc.cpp.

15.55 src/ArnSapi.cpp File Reference

```
#include "ArnInc/ArnSapi.hpp"
#include <QDebug>
```

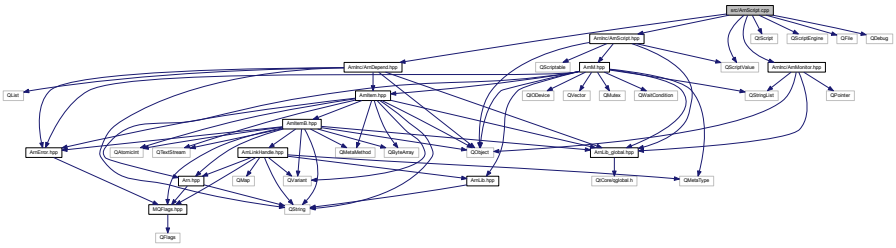
Include dependency graph for ArnSapi.cpp:



15.56 src/ArnScript.cpp File Reference

```
#include "ArnInc/ArnScript.hpp"
#include "ArnInc/ArnDepend.hpp"
#include "ArnInc/ArnMonitor.hpp"
#include <QtScript>
#include <QScriptValue>
#include <QScriptEngine>
#include <QFile>
#include <QDebug>
```

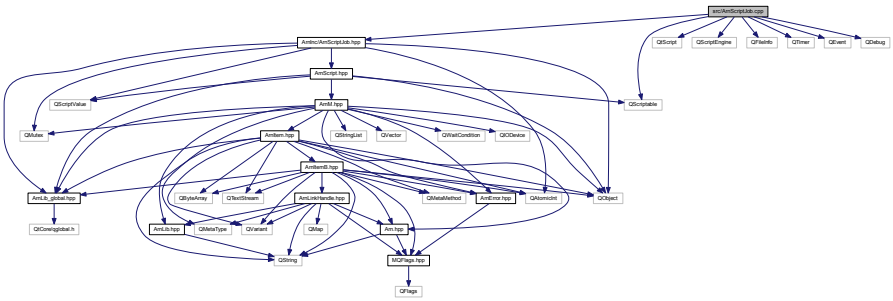
Include dependency graph for ArnScript.cpp:



15.57 src/ArnScriptJob.cpp File Reference

```
#include "ArnInc/ArnScriptJob.hpp"
#include <QScriptable>
#include <QtScript>
#include <QScriptEngine>
#include <QFileInfo>
#include <QTimer>
#include <QEvent>
#include <QDebug>
```

Include dependency graph for ArnScriptJob.cpp:



Variables

- const QEvent::Type EventQuit = QEvent::Type(QEvent::User + 0)

15.57.1 Variable Documentation

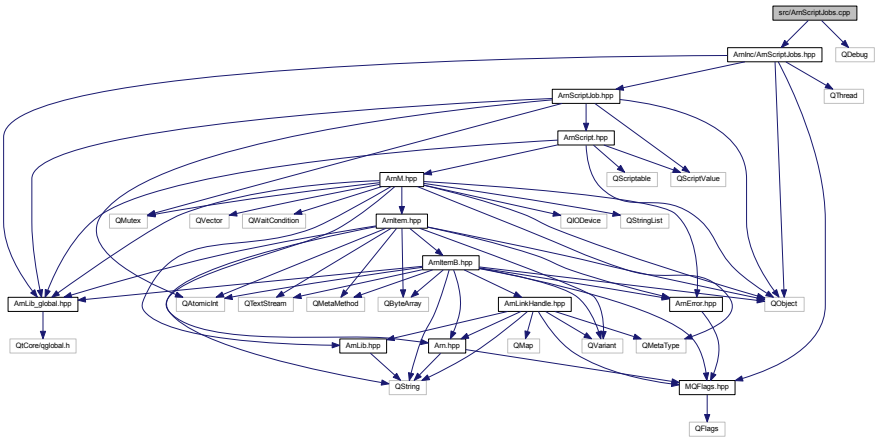
15.57.1.1 const QEvent::Type EventQuit = QEvent::Type(QEvent::User + 0)

Definition at line 42 of file ArnScriptJob.cpp.

15.58 src/ArnScriptJobs.cpp File Reference

```
#include "ArnInc/ArnScriptJobs.hpp"
#include <QDebug>
```

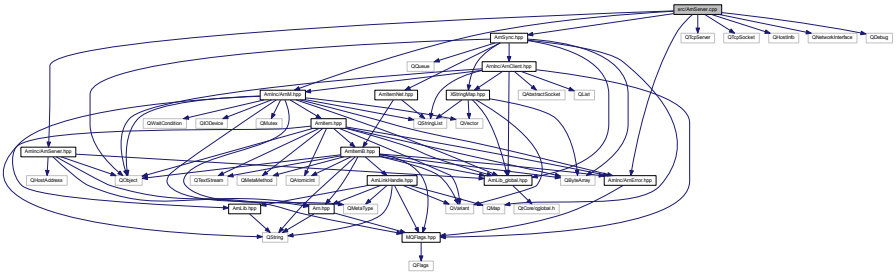
Include dependency graph for ArnScriptJobs.cpp:



15.59 src/ArnServer.cpp File Reference

```
#include "ArnInc/ArnServer.hpp"
#include "ArnInc/ArnError.hpp"
#include "ArnInc/ArnM.hpp"
#include "ArnSync.hpp"
#include <QTcpServer>
#include <QTcpSocket>
#include <QHostInfo>
#include <QNetworkInterface>
#include <QDebug>
```

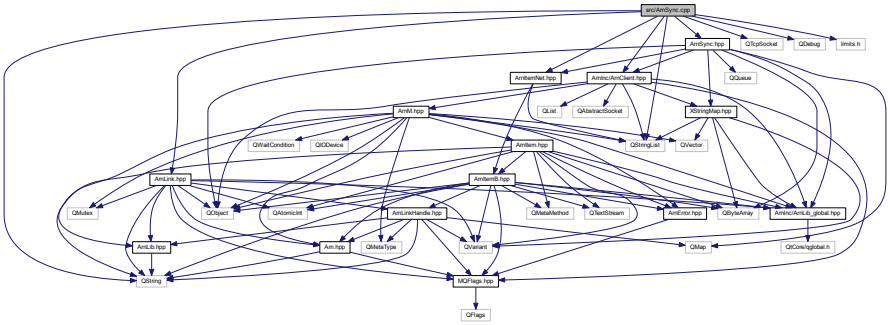
Include dependency graph for ArnServer.cpp:



15.60 src/ArnSync.cpp File Reference

```
#include "ArnSync.hpp"
#include "ArnItemNet.hpp"
#include "ArnLink.hpp"
#include "ArnInc/ArnClient.hpp"
#include <QTcpSocket>
#include <QString>
#include <QStringList>
#include <QDebug>
#include <limits.h>
```

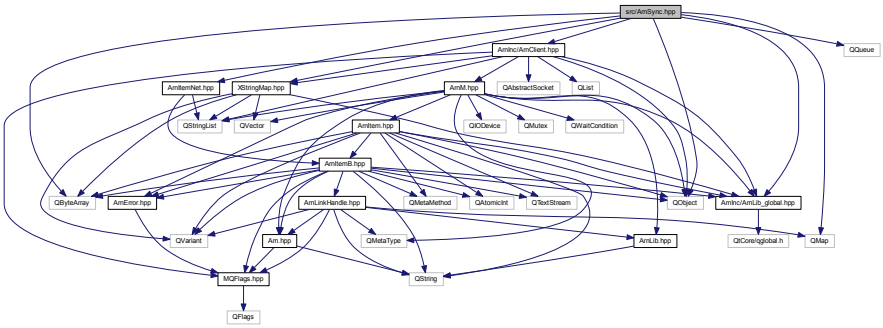
Include dependency graph for ArnSync.cpp:



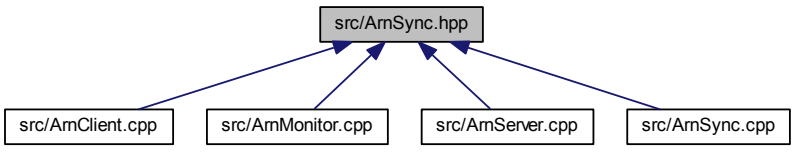
15.61 src/ArnSync.hpp File Reference

```
#include "ArnInc/ArnLib_global.hpp"
#include "ArnInc/ArnClient.hpp"
#include "ArnInc/XStringMap.hpp"
#include "ArnItemNet.hpp"
#include <QObject>
#include <QByteArray>
#include <QMap>
#include <QQueue>
```

Include dependency graph for ArnSync.hpp:



This graph shows which files directly or indirectly include this file:



Macros

- #define ARNRECNAME ""

15.61.1 Macro Definition Documentation

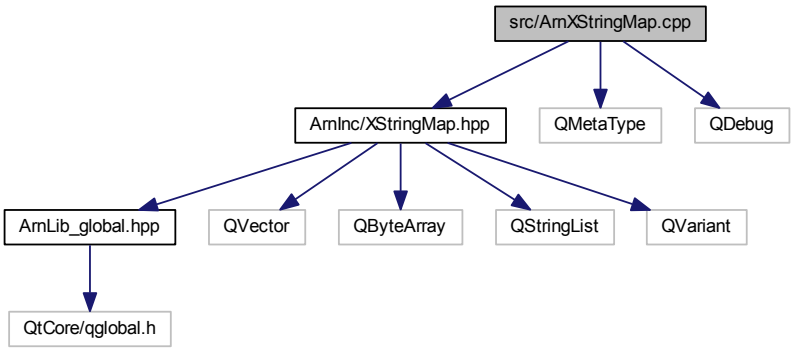
15.61.1.1 #define ARNRECNAME ""

Definition at line 44 of file ArnSync.hpp.

15.62 src/ArnXStringMap.cpp File Reference

```
#include "ArnInc/XStringMap.hpp"
#include <QMetaType>
#include <QDebug>
```

Include dependency graph for ArnXStringMap.cpp:



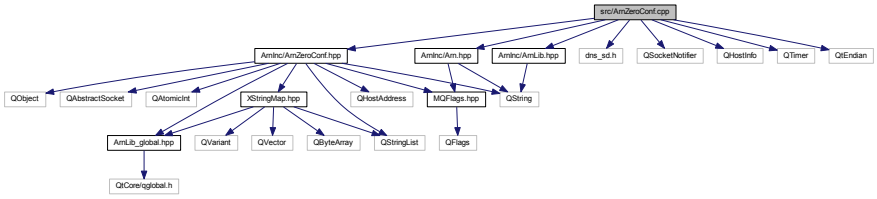
Namespaces

- namespace Arn

15.63 src/ArnZeroConf.cpp File Reference

```
#include "ArnInc/ArnZeroConf.hpp"
#include "ArnInc/Arn.hpp"
#include "ArnInc/ArnLib.hpp"
#include <dns_sd.h>
#include <QSocketNotifier>
#include <QHostInfo>
#include <QTimer>
#include <QtEndian>
```

Include dependency graph for ArnZeroConf.cpp:



Chapter 16

Example Documentation

16.1 ArnDemoChat/main.cpp

Demo Chat Client

```
#include "MainWindow.hpp"
#include <QApplication>

int main(int argc, char *argv[])
{
    QApplication a(argc, argv);
    MainWindow w;
    w.show();

    return a.exec();
}
```

16.2 ArnDemoChat/MainWindow.cpp

Demo Chat Client

```
// Copyright (C) 2010-2014 Michael Wiklund.
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// Contact: arnlib@wiklunden.se
//
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// licenses. ArnDemoChat is independent of these licenses; however, use of
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// DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
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// THE USE OR OTHER DEALINGS IN THE SOFTWARE.
//
#include "MainWindow.hpp"
#include "tmp/ui_MainWindow.h"
#include <ArnInc/ArnDiscoverRemote.hpp>
```

```
MainWindow::MainWindow( QWidget* parent) :
    QMainWindow( parent),
    _ui( new Ui::MainWindow)
{
    _ui->setupUi( this);
    _ui->userEdit->setFocus();
    connect( _ui->lineEdit, SIGNAL(returnPressed()), this, SLOT(doSendLine()));

    _arnClient.addMountPoint("//");
    _arnClient.setAutoConnect(true);

    ArnDiscoverConnector*  connector = new
      ArnDiscoverConnector( _arnClient, "DemoChat");
    connector->setResolver( new ArnDiscoverResolver
      ());
    connector->setService("Demo Chat Server");
    connector->start();

    _arnTime.open("//Chat/Time/value");
    connect( &_arnTime, SIGNAL(changed(QString)), this, SLOT(doTimeUpdate(
      QString)));

    _commonSapi.open("//Chat/Pipes/pipeCommon");
    _commonSapi.batchConnectTo( this, "sapi");

    _soleSapi.open("//Chat/Pipes/pipe", ArnSapi::Mode::UuidAutoDestroy
      );
    _soleSapi.batchConnectTo( this, "sapi");

    _soleSapi.pv_infoQ();
    _soleSapi.pv_list();
}


MainWindow::~MainWindow()
{
    delete _ui;
}


void  MainWindow::doTimeUpdate( QString timeStr)
{
    _ui->timeEdit->setTime( QTime::fromString( timeStr));
}


void  MainWindow::doSendLine()
{
    QString  myName = _ui->userEdit->text();
    QString  line   = _ui->lineEdit->text();
    _ui->lineEdit->clear();

    _soleSapi.pv_newMsg( myName, line);
}


void  MainWindow::sapiUpdateMsg( int seq, QString name, QString msg)
{
    if (seq >= _chatNameList.size()) {
        _chatNameList.resize( seq + 1);
        _chatMsgList.resize(  seq + 1);
    }
    _chatNameList[ seq] = name;
    _chatMsgList[  seq] = msg;

    QString  text;
    for (int i = 0; i < _chatNameList.size(); ++i) {
        text += _chatNameList.at(i) + ":  " + _chatMsgList.at(i) + "\n";
    }
    _ui->textEdit->setText( text);
}


void  MainWindow::sapiInfo( QString name, QString ver)
{
    _ui->appNameLabel->setText( name);
    _ui->verLabel->setText( ver);
}
```

16.3 ArnDemoChat/MainWindow.hpp

Demo Chat Client

```
// Copyright (C) 2010-2014 Michael Wiklund.
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// Contact: arnlib@wiklunden.se
//
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// Parts of ArnDemoChat depend on Qt 4 and/or other libraries that have their
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// DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
// OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR
// THE USE OR OTHER DEALINGS IN THE SOFTWARE.
//
#ifndef MAINWINDOW_HPP
#define MAINWINDOW_HPP

#include "../ArnDemoChatServer/ChatSapi.hpp"
#include <ArnInc/ArnClient.hpp>
#include <ArnInc/ArnItem.hpp>
#include <QMainWindow>
#include <QVector>

namespace Ui {
class MainWindow;
}


class MainWindow : public QMainWindow
{
    Q_OBJECT

public:
    explicit MainWindow( QWidget *parent = 0);
    ~MainWindow();

private slots:
    void  doSendLine();
    void  doTimeUpdate( QString timeStr);

    void  sapiUpdateMsg( int seq, QString name, QString msg);
    void  sapiInfo( QString name, QString ver);

private:
    Ui::MainWindow *_ui;
    QVector<QString>  _chatNameList;
    QVector<QString>  _chatMsgList;

    ArnClient  _arnClient;
    ChatSapi  _commonSapi;
    ChatSapi  _soleSapi;
    ArnItem  _arnTime;
};

#endif // MAINWINDOW_HPP
```

16.4 ArnDemoChatServer/ChatSapi.hpp

Demo Chat Server

```
// Copyright (C) 2010-2014 Michael Wiklund.
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// Contact: arnlib@wiklunden.se
//
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// DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
// OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR
// THE USE OR OTHER DEALINGS IN THE SOFTWARE.
//
#ifndef CHATSAPI_HPP
#define CHATSAPI_HPP

#include <ArnInc/ArnSapi.hpp>


class ChatSapi : public ArnSapi
{
    Q_OBJECT
public:
    explicit ChatSapi( QObject* parent = 0) : ArnSapi( parent)  {}

signals:
MQ_PUBLIC_ACCESS
    no_queue void  pv_list();
    void  pv_newMsg( QString name, QString msg);
    void  pv_infoQ();

    void  rq_updateMsg( int seq, QString name, QString msg);
    void  rq_info( QString name, QString ver);
};

#endif // CHATSAPI_HPP
```

16.5 ArnDemoChatServer/main.cpp

Demo Chat Server

```
#include "MainWindow.hpp"
#include <QApplication>
#include <QDebug>


int main(int argc, char *argv[])
{
    QApplication a(argc, argv);
    MainWindow w;
    w.show();

    return a.exec();
}
```

16.6 ArnDemoChatServer/MainWindow.cpp

Demo Chat Server

```
// Copyright (C) 2010-2014 Michael Wiklund.
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// Contact: arnlib@wiklunden.se
//
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// THE USE OR OTHER DEALINGS IN THE SOFTWARE.
//
#include "MainWindow.hpp"
#include "tmp/ui_MainWindow.h"
#include <ArnInc/ArnItem.hpp>
#include <ArnInc/ArnDiscoverRemote.hpp>
#include <QTime>
#include <QDebug>


MainWindow::MainWindow( QWidget *parent) :
    QMainWindow( parent, Qt::CustomizeWindowHint | Qt::WindowMinimizeButtonHint
      ),
    _ui( new Ui::MainWindow)
{
    _ui->setupUi( this);
    _connectCount = 0;
    doUpdateView();

    _timer1s.start(1000);
    connect( &_timer1s, SIGNAL(timeout()), this, SLOT(doTimeUpdate()));

    _server = new ArnServer( ArnServer::Type::NetSync
      , this);
    _server->start(0);  // Start server on dynamic port

    _discoverRemote = new ArnDiscoverRemote( this);
    _discoverRemote->setService("Demo Chat Server");
    _discoverRemote->addGroup("arndemo/chat");
    _discoverRemote->addCustomProperty("ChatProtoVer", "1.0");
    _discoverRemote->startUseServer( _server);

    _arnTime.open("//Chat/Time/value");

    typedef ArnSapi::Mode  SMode;
    _commonSapi = new ChatSapi( this);
    _commonSapi->open("//Chat/Pipes/pipeCommon", SMode::Provider |
      SMode::UseDefaultCall);
    _commonSapi->batchConnectTo( this, "sapi");

    ArnItem*  arnPipes = new ArnItem("//Chat/Pipes/", this);
    connect( arnPipes, SIGNAL(arnItemCreated(QString)), this, SLOT(doNewSession
      (QString)));
}


MainWindow::~MainWindow()
{
    delete _ui;
}


void  MainWindow::doNewSession( QString path)
{
    if (!Arn::isProviderPath( path))  return;  // Only
       provider pipe is used

    typedef ArnSapi::Mode  SMode;
    ChatSapi*  soleSapi = new ChatSapi( this);
```

```
    soleSapi->open( path, SMode::Provider | SMode::UseDefaultCall);
    soleSapi->batchConnectTo( this, "sapi");
    connect( soleSapi, SIGNAL(pipeClosed()), soleSapi, SLOT(deleteLater()));

    connect( soleSapi, SIGNAL(pipeClosed()), this, SLOT(doSessionClosed()));

    ++_connectCount;
    doUpdateView();
}


void MainWindow::doSessionClosed()
{
    --_connectCount;
    doUpdateView();
}


void  MainWindow::doUpdateView()
{
    _ui->connectCount->setText( QString::number( _connectCount));
}


void  MainWindow::on_shutDownButton_clicked()
{
    qWarning() << "About to shut down.";
    delete _discoverRemote;  // Must be deleted while still in the main
       eventloop
    _discoverRemote = 0;
    QApplication::quit();
}


void  MainWindow::doTimeUpdate()
{
    _arnTime = QTime::currentTime().toString();
}


void  MainWindow::sapiList()
{
    ChatSapi*  sapi = qobject_cast<ChatSapi*>( sender());
    Q_ASSERT(sapi);
    for (int i = 0; i < _chatNameList.size(); ++i) {
        sapi->rq_updateMsg( i, _chatNameList.at(i), _chatMsgList.at(i));
    }
}


void  MainWindow::sapiNewMsg( QString name, QString msg)
{
    _chatNameList += name;
    _chatMsgList  += msg;
    int  seq = _chatNameList.size() - 1;

    _commonSapi->rq_updateMsg( seq, name, msg);
}


void  MainWindow::sapiInfoQ()
{
    ChatSapi*  sapi = qobject_cast<ChatSapi*>( sender());
    Q_ASSERT(sapi);
    sapi->rq_info("Arn Chat Demo", "1.2");
}


void  MainWindow::sapiDefault( const QByteArray& data)
{
    ChatSapi*  sapi = qobject_cast<ChatSapi*>( sender());
    Q_ASSERT(sapi);
    qDebug() << "chatDefault:" << data;
    sapi->sendText("Chat Sapi: Can't find method, use $help.");
}
```

16.7 ArnDemoChatServer/MainWindow.hpp

Demo Chat Server

```
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```

```
// Contact: arnlib@wiklunden.se
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// THE USE OR OTHER DEALINGS IN THE SOFTWARE.
//
#ifndef MAINWINDOW_HPP
#define MAINWINDOW_HPP

#include "ChatSapi.hpp"
#include <ArnInc/ArnItem.hpp>
#include <ArnInc/ArnServer.hpp>
#include <QTimer>
#include <QStringList>
#include <QMainWindow>

namespace Ui {
class MainWindow;
}

class ArnDiscoverRemote;


class MainWindow : public QMainWindow
{
    Q_OBJECT
public:
    explicit MainWindow( QWidget *parent = 0);
    ~MainWindow();

private slots:
    void  doNewSession( QString path);
    void  doSessionClosed();
    void  doUpdateView();
    void  on_shutDownButton_clicked();
    void  doTimeUpdate();

    void  sapiList();
    void  sapiNewMsg( QString name, QString msg);
    void  sapiInfoQ();
    void  sapiDefault( const QByteArray& data);

private:
    Ui::MainWindow *_ui;
    QStringList  _chatNameList;
    QStringList  _chatMsgList;
    QTimer  _timer1s;
    int  _connectCount;

    ArnItem  _arnTime;
    ArnServer*  _server;
    ChatSapi*  _commonSapi;
    ArnDiscoverRemote*  _discoverRemote;
};

#endif // MAINWINDOW_HPP
```

Index