

dunetpc - Feature #15162

Enable access to DUNE services from Root command line

01/17/2017 11:09 AM - David Adams

Status:	Closed	Start date:	01/17/2017
Priority:	Normal	Due date:	
Assignee:	David Adams	% Done:	0%
Category:		Estimated time:	0.00 hour
Target version:			
Description			
The ability to access DUNE services from the Root command is gone. Presumably due to the switch to Root 6 or (more likely) changes in art. It is still possible to use ArtServiceHelper to load services but they cannot be accessed because the ServiceHandle header cannot be parsed.			
I would like to make it possible for services to be accessed from the Root command line.			

History

#1 - 01/17/2017 11:15 AM - David Adams

- Status changed from New to Assigned
- Assignee set to David Adams

I have added ArtServicePointer<T> which returns the pointer to the service of (typically interface) type T. It uses ServiceHandle.

I have also created DuneServiceAccess which provides template specializations of ArtServicePointer for the service types we wish to make accessible from root. The implementations for these are put in a library that is loaded in Root. See the header

```
dunetpc/dune/DuneServiceAccess/DuneServiceAccess.h
```

for instructions on how to use these to access services in Root.

#2 - 01/17/2017 11:30 AM - David Adams

The service headers are modified to hide the service macro header and declaration from Root. E.g.

```
#ifndef __CLING__  
#include "art/Framework/Services/Registry/ServiceMacros.h"  
DECLARE_ART_SERVICE_INTERFACE(AdcDeconvolutionService, LEGACY)  
#endif
```

#3 - 01/17/2017 11:33 AM - David Adams

The following service interfaces are now accessible in Root:

```
AdcChannelNoiseRemovalService  
AdcDeconvolutionService  
AdcNoiseRemovalService  
AdcSuppressService  
ChannelGroupService  
PedestalEvaluationService
```

I think the first is a duplicate of the third and should be removed.

#4 - 01/17/2017 11:35 AM - David Adams

The preceding are now pushed to dunetpc in tag 1bee1889a576eb052fd5dc069793ce43c3467267.

#5 - 01/17/2017 11:44 AM - David Adams

I see that AdcChannelNoiseRemovalService removes noise from one channel while AdcNoiseRemovalService removes noise from multiple channels. I retain both. At present only the latter is used in reco.

#6 - 01/17/2017 12:28 PM - David Adams

I have modified ArtServiceHelper so it can be instantiated and loaded from a file in a single command, e.g.

```
ArtServiceHelper& ash = ArtServiceHelper::instance("standard_reco_dune35tdata.fcl");
```

Committed to dunetpc tag 29c3587fd78f0b514664b682d76ada359446559f.

#7 - 01/17/2017 12:56 PM - David Adams

Add two more services:

```
AdcChannelDataCopyService  
AdcCompressService
```

Modify ArtServicePointer to make direct use of ServiceManager instead of ServiceHandle so it can return null instead of throwing an exception when a requested service has not been loaded.

Committed to dunetpc tag 3e3931c92b2dbfa604eb1ee1e04eee1f02356bf7.

#8 - 01/17/2017 01:48 PM - David Adams

I add more services and modify ArtServicePointer to return nullptr and issue message instead of throwing an exception if the service manage is not present.

Committed to dunetpc tag 61ab34308caf0dfd5ab41cf488559067f61e258c.

#9 - 01/18/2017 09:21 AM - David Adams

I was getting crashes on Root exit from services that use TFileService. This is an old problem: <https://cdcvns.fnal.gov/redmine/issues/10618> that can be resolved by calling

```
ArtServiceHelper::close();
```

before exiting root.

I tried adding an automatic call to close (see ArtServiceHelperCloser in ArtServiceHelper.cxx) but it is called too late. So the following should be included in rootlogoff.C to avoid the crash:

```
ArtServiceHelper::close();
```

#10 - 01/18/2017 09:47 AM - David Adams

I have added specializations for all services in DuneInterface to DuneServiceAccess.

I have renamed the method for loading all services for a file. New syntax is:

```
ArtServiceHelper::load("standard_reco_dune35tdata.fcl");
```

The service helper reference may be obtained from this call or from a call to ArtServiceHelper::instance().

#11 - 01/18/2017 09:52 AM - David Adams

- Status changed from Assigned to Closed

I have committed the preceding to dunetpc ee0b18e1a9ca416f171cb4cbfdad7d2cb1f4a667.

All dunetpc tests pass.

I close this report.