



Status and future work for the LLRF server

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Installations

IlrfCtrlSrf

FLASH (5), AMTF (4), PITZ,
TESTSTAND

IlrfCtrlNrf

FLASH RF GUN, XFEL RF GUN, KLYTO

LLRF Control Server

IlrfCtrlRegae

REGAE, REGAE-SC

IlrfCtrlCmtb

IlrfCtrlCMTB, IlrfCtrlCMTB-CW

Server Changes – Functionality

- Support for PIEZO
 - Different configuration from station to station
- Support for DOOCS package system
 - Available via standard apt-get command
- DAQ and Timing information available via ZeroMQ

Server Changes – Functionality

- Adjustments of server functionality to follow hardware modifications
- Map file and firmware compatibility checking

```
llrfCtrl_Server eq_hwDevice::init() 13:26.58 10.04.2014 -> =====
llrfCtrl_Server eq_hwDevice::init() 13:26.58 10.04.2014 -> = INFO MESSAGE =
llrfCtrl_Server eq_hwDevice::init() 13:26.58 10.04.2014 -> = =
llrfCtrl_Server eq_hwDevice::init() 13:26.58 10.04.2014 -> = Information about map file version not available =
llrfCtrl_Server eq_hwDevice::init() 13:26.58 10.04.2014 -> = =
llrfCtrl_Server eq_hwDevice::init() 13:26.58 10.04.2014 -> =====
```

```
llrfCtrl_Server eq_hwDevice::init() 09:11.06 9.05.2014 -> =====
llrfCtrl_Server eq_hwDevice::init() 09:11.06 9.05.2014 -> = INFO MESSAGE =
llrfCtrl_Server eq_hwDevice::init() 09:11.06 9.05.2014 -> = =
llrfCtrl_Server eq_hwDevice::init() 09:11.06 9.05.2014 -> = Incompatible map file and firmware version. =
llrfCtrl_Server eq_hwDevice::init() 09:11.06 9.05.2014 -> = Firmware: 491. Map file: 563. =
llrfCtrl_Server eq_hwDevice::init() 09:11.06 9.05.2014 -> = =
llrfCtrl_Server eq_hwDevice::init() 09:11.06 9.05.2014 -> =====
```

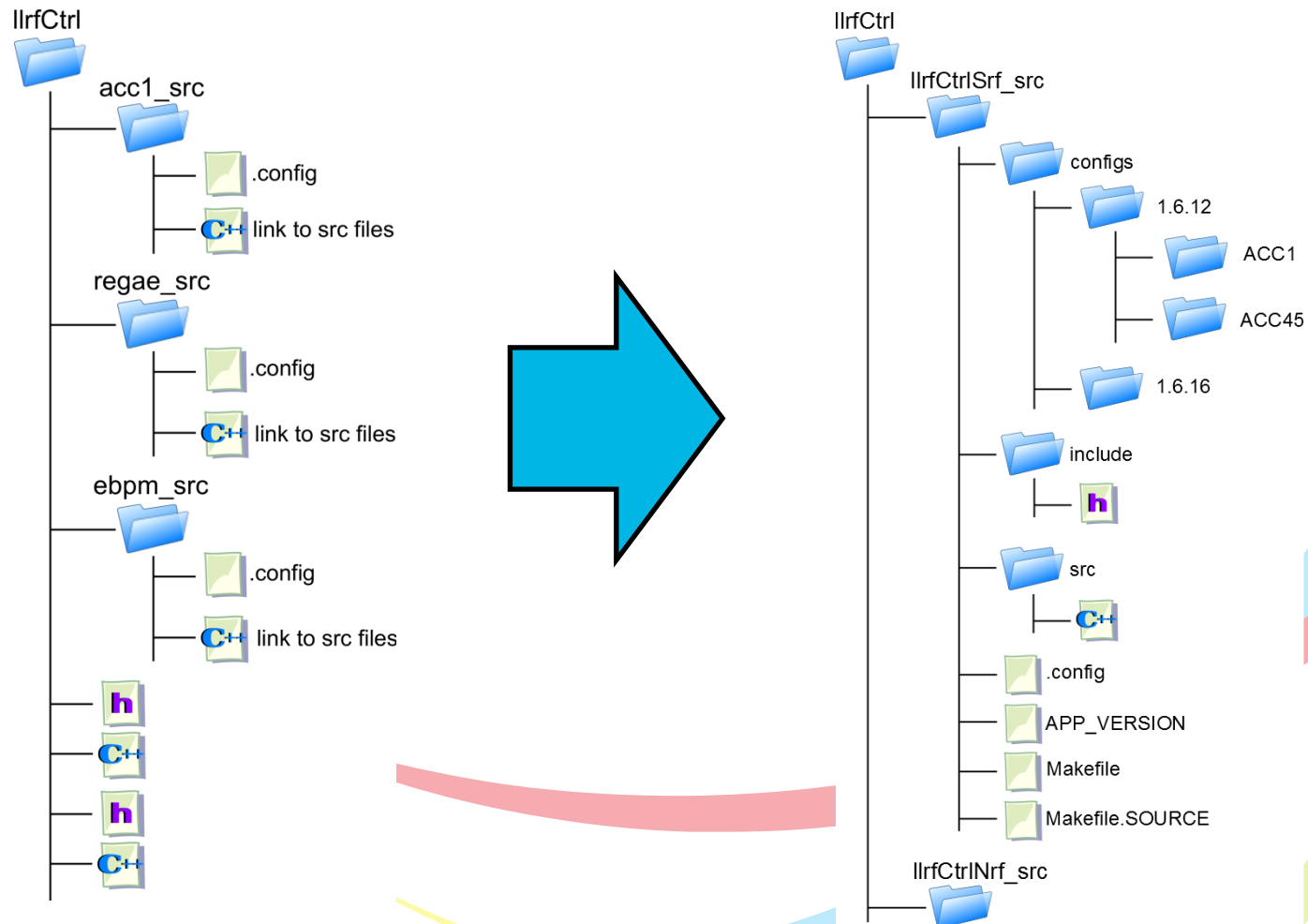
Server Changes - Versioning

- Versioning system (based on Semantic Versioning 2.0.0 <http://semver.org>)
 - Three position version number
 - Data and time of server compilation
 - Metadata

```
llrfCtrl_Server eq_init_prolog 13:26.18 10.04.2014 -> =====  
llrfCtrl_Server eq_init_prolog 13:26.18 10.04.2014 -> = INFO MESSAGE =  
llrfCtrl_Server eq_init_prolog 13:26.18 10.04.2014 -> =  
llrfCtrl_Server eq_init_prolog 13:26.18 10.04.2014 -> = ver.1.6.16 [Apr 3 2014 21:36:57] =  
llrfCtrl_Server eq_init_prolog 13:26.18 10.04.2014 -> =  
llrfCtrl_Server eq_init_prolog 13:26.18 10.04.2014 -> =====
```

- Available in RF_INFO location

Server Changes – Source Code Structure



Server Changes

- Source code moved to SVN
 - Tags for each installed version
- For FLASH, AMTF the same binary file for all stations in one system
 - Different boards number and board locations (ex. ACC139)
 - Different PIEZO configuration
- Configuration available via conf (properties with _ at the beginning), lmap, dmap and map files

Redmine Projects/Issues

The screenshot displays the Redmine web interface for a project named 'High Level Software'. The browser address bar shows the URL: `https://mskllrredminesrv/projects/hls/issues/C%5B%D=tracker&C%5B%D=status&C%5B%D=priority&C%5B%D=subject&C%5B%D=assigned_to&C%5B%D=updated_on&C%5B%D=project&C%5B%D=`. The interface includes a top navigation bar with links for Home, My page, Projects, People, and Help. A search bar is located in the top right corner. The main content area is titled 'Issues' and features a sidebar with filters (Status, Assignee) and a table of issues. The table columns are: #, Tracker, Status, Priority, Subject, Assignee, Updated, Project, and Category. The issues listed include various tasks and bugs related to the 'High Level Software' project, such as 'Setting Phase readouts to Zero when Amplitude reading is below a certain threshold' and 'Initialization of PROBE.AMPL.SAMPLE_X and PROBE.PHASE.SAMPLE_X'.

High Level Software

Issues

Filters

- Status
- Assignee

Options

Apply Clear Save

#	Tracker	Status	Priority	Subject	Assignee	Updated	Project	Category
519	Improvement	New	Normal	Setting Phase readouts to Zero when Amplitude reading is below a certain threshold	Adam Piotrowski	05/07/2014 03:52 PM	LLRF CTRL Server	
516	Improvement	New	Normal	ORC: hard coded value?	Adam Piotrowski	05/07/2014 10:16 AM	High Level Software	
468	Bug	Resolved	Normal	Initialization of PROBE.AMPL.SAMPLE_X and PROBE.PHASE.SAMPLE_X	Adam Piotrowski	05/07/2014 11:46 AM	llrfCtrlSrf_server	
463	Implementation	New	Normal	FLASH1/2: timing parameters	Adam Piotrowski	05/07/2014 11:47 AM	llrfCtrlSrf_server	
461	Task	New	Normal	Postgre access documentation	Adam Piotrowski	04/15/2014 10:10 AM	LLRF CTRL Server	
460	Implementation	New	Normal	Design of GUI to browse PostgreSQL database	Adam Piotrowski	04/15/2014 10:07 AM	LLRF CTRL Server	
458	Support	New	Normal	Adapt llrfCtrl_server for AMTF39	Adam Piotrowski	04/15/2014 10:00 AM	LLRF CTRL Server	
421	Implementation	New	Normal	RTM slowADC readout	Adam Piotrowski	03/28/2014 07:58 PM	llrfCtrlNrf_server	
350	Bug	New	Normal	Sciling of the output limiter	Adam Piotrowski	03/03/2014 04:24 PM	LLRF CTRL Server	
298	Implementation In Progress		Normal	ADC raw data readout	Adam Piotrowski	04/23/2014 05:12 PM	llrfCtrlNrf_server	
254	Bug	Resolved	Normal	Server reinitialization	Adam Piotrowski	03/03/2014 04:13 PM	LLRF CTRL Server	
240	Bug	New	Normal	Piezo relay protection	Adam Piotrowski	02/13/2014 11:40 AM	LLRF CTRL Server	
232	Improvement	In Progress	Normal	Results from first review	Adam Piotrowski	11/22/2013 11:06 AM	llrfCtrlNrf_server	
200	Implementation	Tested	Normal	Additional DO data to be send with 16k buffers -> no	Adam	02/13/2014 11:38 AM	DAQ Sender	

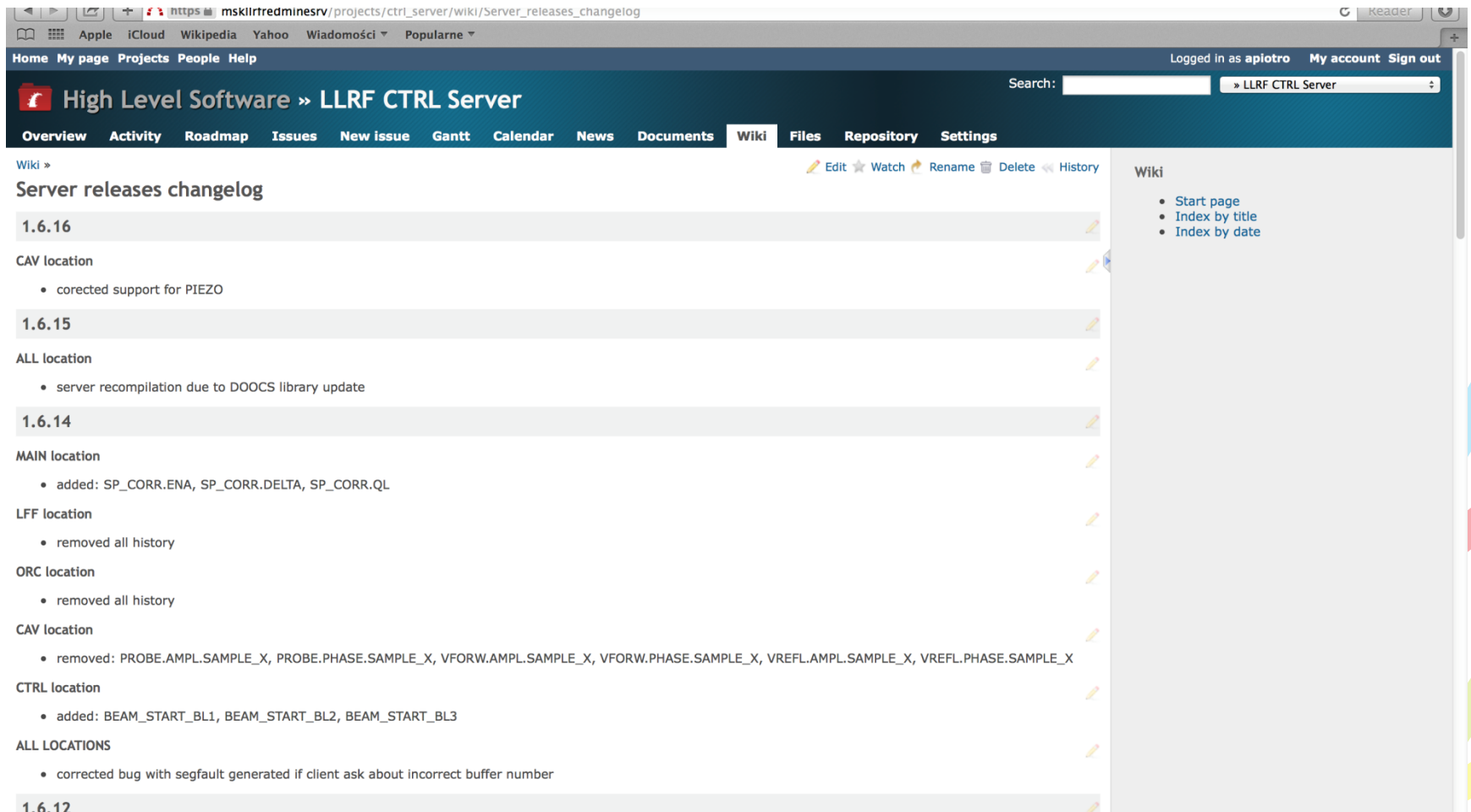
Issues

- View all issues
- Summary
- Calendar
- Gantt

My custom queries

- base_view

Server changelog



The screenshot shows a web browser displaying the LLRF CTRL Server Wiki page. The page title is "Server releases changelog". The browser's address bar shows the URL: https://msklrtrdminesrv/projects/ctrl_server/wiki/Server_releases_changelog. The page has a dark blue header with navigation links: Home, My page, Projects, People, Help. Below the header, there's a search bar and a dropdown menu showing "LLRF CTRL Server". The main content area is divided into two columns. The left column contains the changelog entries, and the right column contains a sidebar with a "Wiki" section and links: Start page, Index by title, Index by date. The changelog entries are listed in reverse chronological order, starting with 1.6.16 and ending with 1.6.12. Each entry includes a version number, a location (e.g., CAV location, ALL location, MAIN location, LFF location, ORC location, CAV location, CTRL location, ALL LOCATIONS), and a list of changes.

Wiki »

Server releases changelog

1.6.16

CAV location

- corected support for PIEZO

1.6.15

ALL location

- server recompilation due to DOOCS library update

1.6.14

MAIN location

- added: SP_CORR.ENA, SP_CORR.DELTA, SP_CORR.QL

LFF location

- removed all history

ORC location

- removed all history

CAV location

- removed: PROBE.AMPL.SAMPLE_X, PROBE.PHASE.SAMPLE_X, VFORW.AMPL.SAMPLE_X, VFORW.PHASE.SAMPLE_X, VREFL.AMPL.SAMPLE_X, VREFL.PHASE.SAMPLE_X

CTRL location

- added: BEAM_START_BL1, BEAM_START_BL2, BEAM_START_BL3

ALL LOCATIONS

- corrected bug with segfault generated if client ask about incorrect buffer number

1.6.12

Wiki

- Start page
- Index by title
- Index by date

MSK collaboration workshop for the
European XFEL 12-13 May 2014, DESY
Hamburg

Problems

- Different hardware configuration
- Problems with DOOCS

Future work

- Minor modifications
 - Properties names unification
 - Properties cleanup
 - Properties description, values limitation
- Updates of server according to new, control system independent architecture
- Updates of server due to bug fixing
- Updates of server due to user requirements

Future work

- Updates of server due to hardware modifications
- Updates of server due to DOOCS updates for example D_spectrum update
- Updated of server due to new Timing system functionality

Automatic update of all systems

- Different cases
 - Software bug fixing, DOOCS update – new binary file but configuration change not required
 - Hardware updates – update of configuration files required
 - Implementation of new server functionality – update of configuration files required

Thank You

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