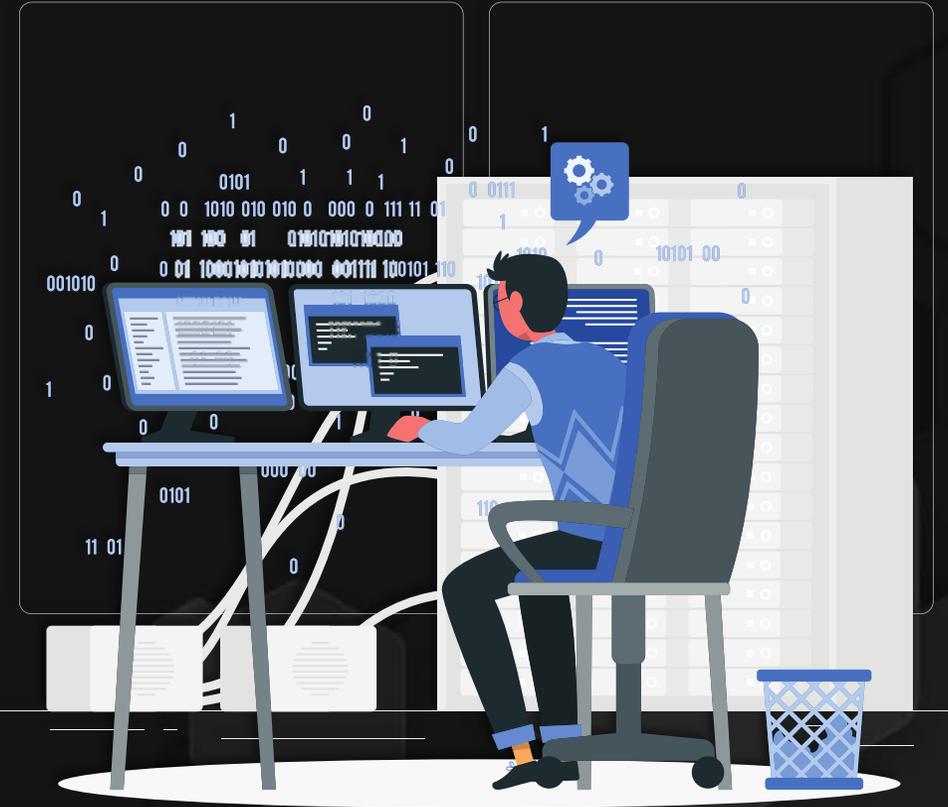




14-19 May 2023

10th Collaboration Meeting of the
BM@N Experiment at the NICA Facility

Auxiliary Services for BM@N Information Systems



Alexander Chebotov
Konstantin Gertsenberger
JINR, LHEP

OUTLINE



BM@N Web Site

The BM@N site offers info on the project, objectives, participants, experiments, results, and related news/events.



File Inspector

The tool is designed to check the integrity of files stored in various repositories and using different types of checks.



Condition Database

The information system of the condition database is designed for storing, managing, and utilizing parameters and operation modes of detectors for processing experimental and simulated data.



Cluster Inspector

A tool for monitoring and analyzing the status of cluster nodes.



Electronic Logbook

This system provides collaboration tools for convenient viewing, managing, and searching the necessary information in the logbook.



Authorization Systems

Switching from FreeIPA to Keycloak to meet our authentication requirements.



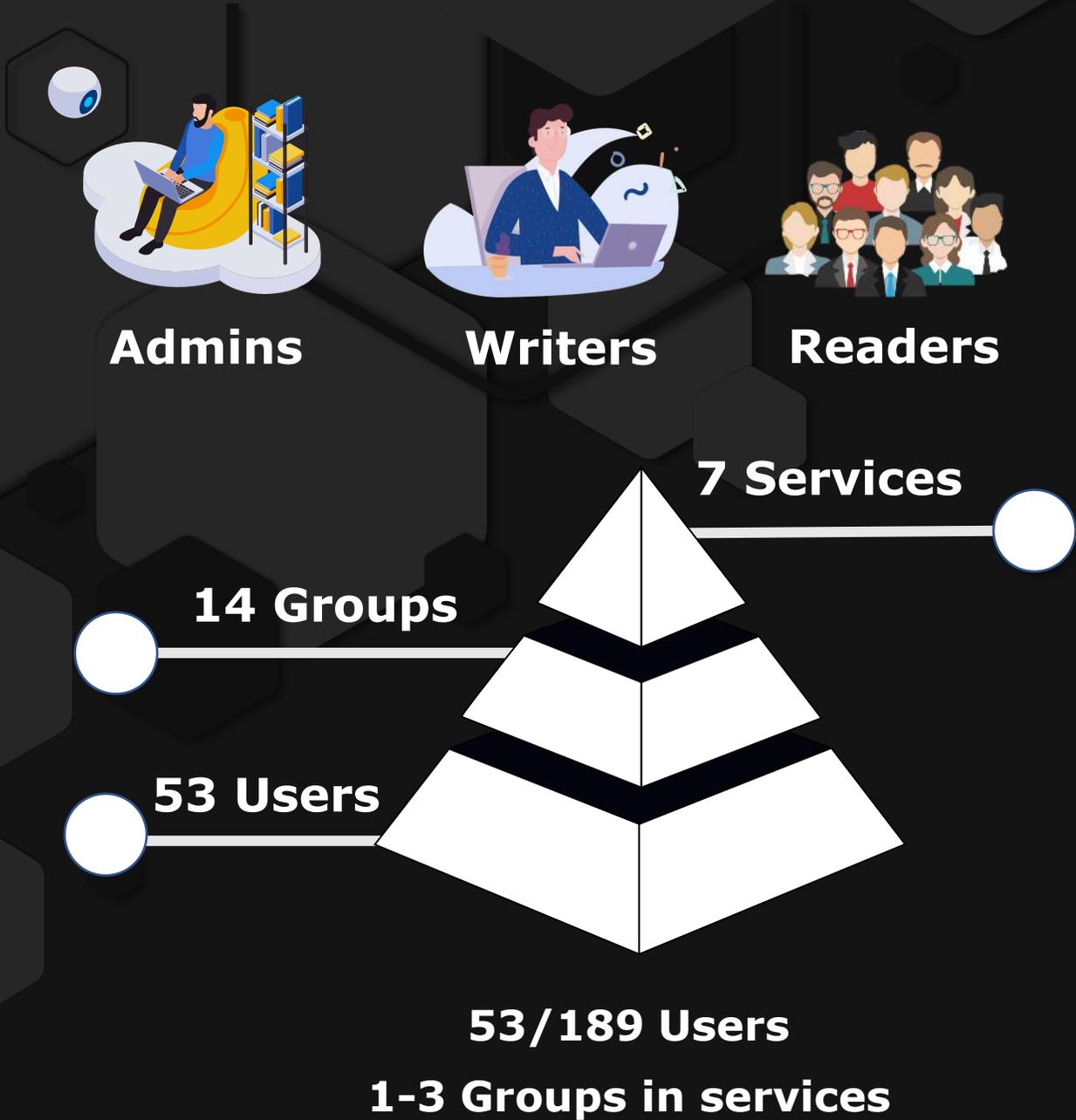
FreeIPA is a comprehensive solution for identity management, policy, and audit in a Linux/UNIX environment. It provides centralized management of user accounts, groups, hosts, and other objects in your network.



Keycloak is an open-source identity and access management software developed by Red Hat. This solution is designed for modern web and mobile applications.



JINR Single Sign-On



Sign In

Login

Password

Sign In

Forgot your password?

Registration

Need account or additional permissions?

KEYCLOAK

FreeIPA cabinet

Sign in to your account

Username or email

Password

Sign In

BM@N NEWS

COLLABORATION NEWS

10th BM@N Collaboration Meeting (14–19 May, 2023)

The Joint Institute for Nuclear Research (JINR), Dubna, together with St Petersburg University (SPbU), St Petersburg, organize the 10th Collaboration Meeting of the BM@N experiment at the NICA facility from 14 to 19 May 2023 in St Petersburg, Russia (day of arrival – 14 May, day of departure – 19 May). The meeting will be on the reconstruction and identification of strange particles, analysis of event topologies of Xe+Cs interactions collected during the run of the BM@N experiment. The physics analysis of previously collected argon-nucleus interactions will also be considered. The physics analysis of experimental...

[Read More](#)

9th BM@N Collaboration Meeting (13–16 September, 2022)

Official BM@N collaboration web-site

BM@N

COLLABORATION ▾ PHYSICS ▾ DETECTOR ▾ SOFTWARE ▾

Documents ▾
Structure ▾
Meetings ▾
Mailing Lists
Contacts

BM@N Management
Institutional Board
Executive Council
Detector Council
Working Groups
Institutions
Member List

1st experiment
of the NICA project

Official BM@N collaboration web-site

<https://bmn.jinr.ru>

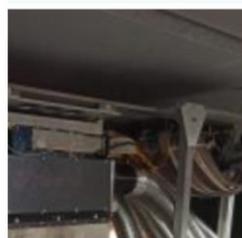
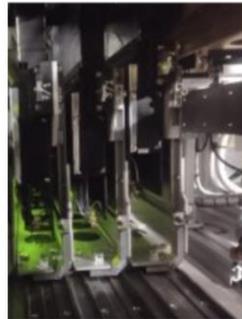
BM@N GALLERY

COLLABORATION ▾ PHYSICS ▾ DETECTOR ▾ SOFTWARE ▾ COMPUTING ▾ WIKI FORUM **GALLERY ▾**

Photo

Figures

Forward Si Forward Si @ GEM GEM Beam Pipe Big CSC CSC 1x1 DAQ
DCH SI Beam Tracker Small GEM T0 Target ToF400 Setup People
Profilometer SCwall Magnets



Cluster Inspector

Save the last successful hostlist to or

Cluster name	Check date	Complete date	Nodes	Errors
NCX	2023-05-07 03:00	2023-05-08 03:00	98	16
NCX	2023-05-01 03:00	2023-05-02 03:00	98	16
NCX	2023-04-21 17:27	2023-04-22 13:22	98	16
NCX	2023-04-14 03:00	2023-04-15 03:00	98	16

Items per page: 1 - 4 of 29

Error Node	Error name	Error Details
ncx227.jinr.ru	node not available	
ncx222.jinr.ru	job not started	
ncx221.jinr.ru	job not started	
ncx218.jinr.ru	node not available	
ncx216.jinr.ru	node not available	
ncx211.jinr.ru	job not started	
ncx204.jinr.ru	node not available	
ncx201.jinr.ru	node not available	



- ❖ Checking node availability via ping;
- ❖ Verifying access to the data storage on nodes;

-----24 HOURS-----

- ❖ Checking the successful launch of tasks.
- ❖ Analyzing the results of checks stored in the database and log files, and identifying problematic nodes;
- ❖ Updating the database with the analysis results and completion of the monitoring process. 6

https://bmn.jinr.ru/cluster_inspector



File Inspector

Report Selector

Type name	Storage name	Check date	Complete date	File count	Errors
sim. data	NCX	2023-05-05 00:00	2023-05-05 05:37	27575	506
exp. data	NCX	2023-05-01 00:00	2023-05-05 04:23	19097	15432
sim. data	NCX	2023-04-25 00:00	2023-04-25 05:05	27575	503
exp. data	NCX	2023-04-21 14:08		19096	7661

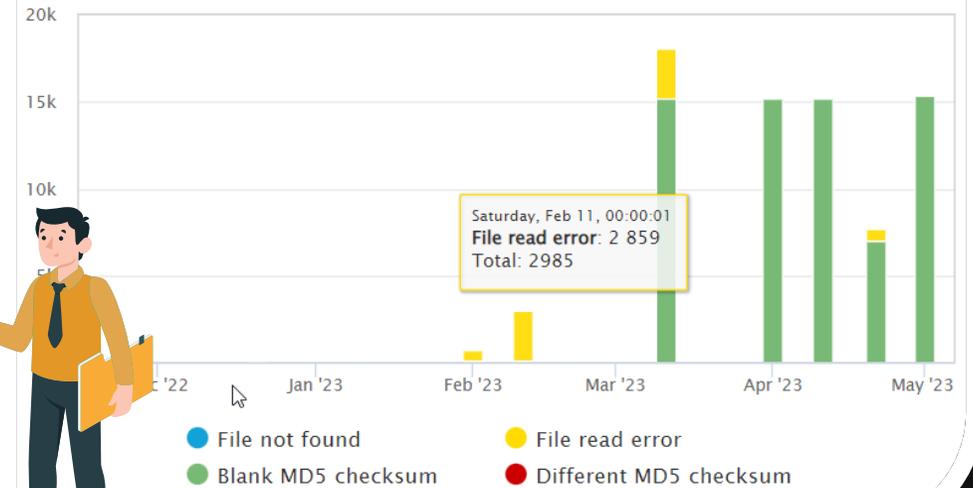
Items per page: 4 1 - 4 of 89

Error name	File Path	Error Details
file read error	/eos/nica/bmn/sim/gen/DCMQGSM/ArAl_3.2AGeV_mb/ArAl_3.2AGeV_mb_156.r12	[Errno 5] Input/output error
file read error	/eos/nica/bmn/sim/gen/DCMQGSM/CCu_3.5AGeV_mb/CCu_3.5AGeV_mb_168.r12	[Errno 13] Permission denied
file read error	/eos/nica/bmn/sim/gen/DCMQGSM/CCu_3.5AGeV_mb/CCu_3.5AGeV_mb_190.r12	[Errno 13] Permission denied
file read error	/eos/nica/bmn/sim/gen/DCMQGSM/CCu_4.5AGeV_mb/CCu_4.5AGeV_mb_99.r12	[Errno 5] Input/output error
file read error	/eos/nica/bmn/sim/gen/DCMQGSM/DCMQGSM_XeCsL_3.9AGeV_mb_10k/DCMQGSM_XeCsL_3.9AGeV_mb_10k_1.r12	[Errno 13] Permission denied

<https://bmn-unidb.jinr.ru/monitoring>

Error Statistics

Experimental Simulated NCX MICC



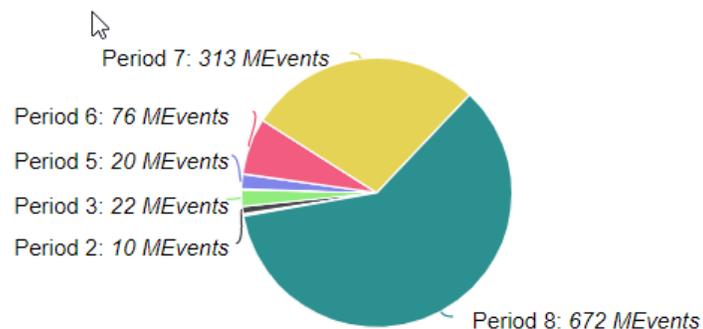
- ❖ Loads settings on which storage and what types of files (experimental or simulated) are to be checked;
- ❖ Retrieves the list of files from the database;
- ❖ Checks the files on the list for four types of issues;
- ❖ Records the results in the database;
- ❖ Sends an email with the check results.

Condition Database

Period number
Period 8

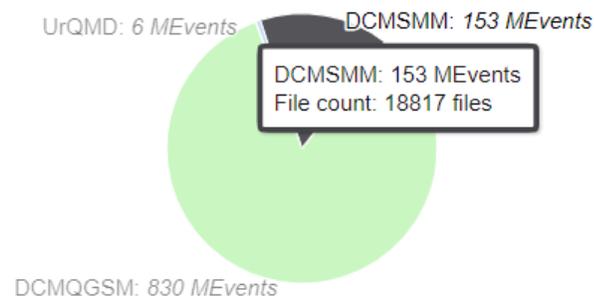
Experimental Data

Distribution of events by run periods and time intervals of periods.



Simulation Data

Distribution of events by generators



Beam Xe (E = 3.8 GeV/n)
Total: 592.66 MEvents

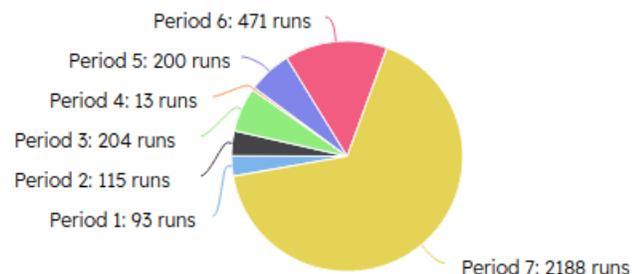


Beam Xe (E = 3 GeV/n)
Total: 59.86 MEvents



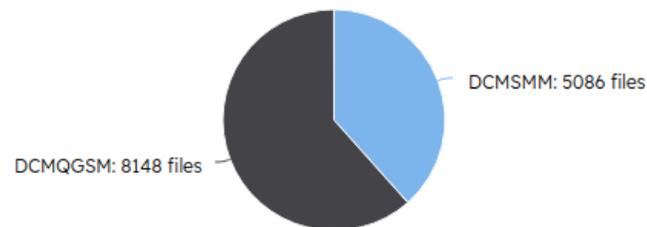
Experimental Data

Distribution of runs by run periods and time intervals of periods.

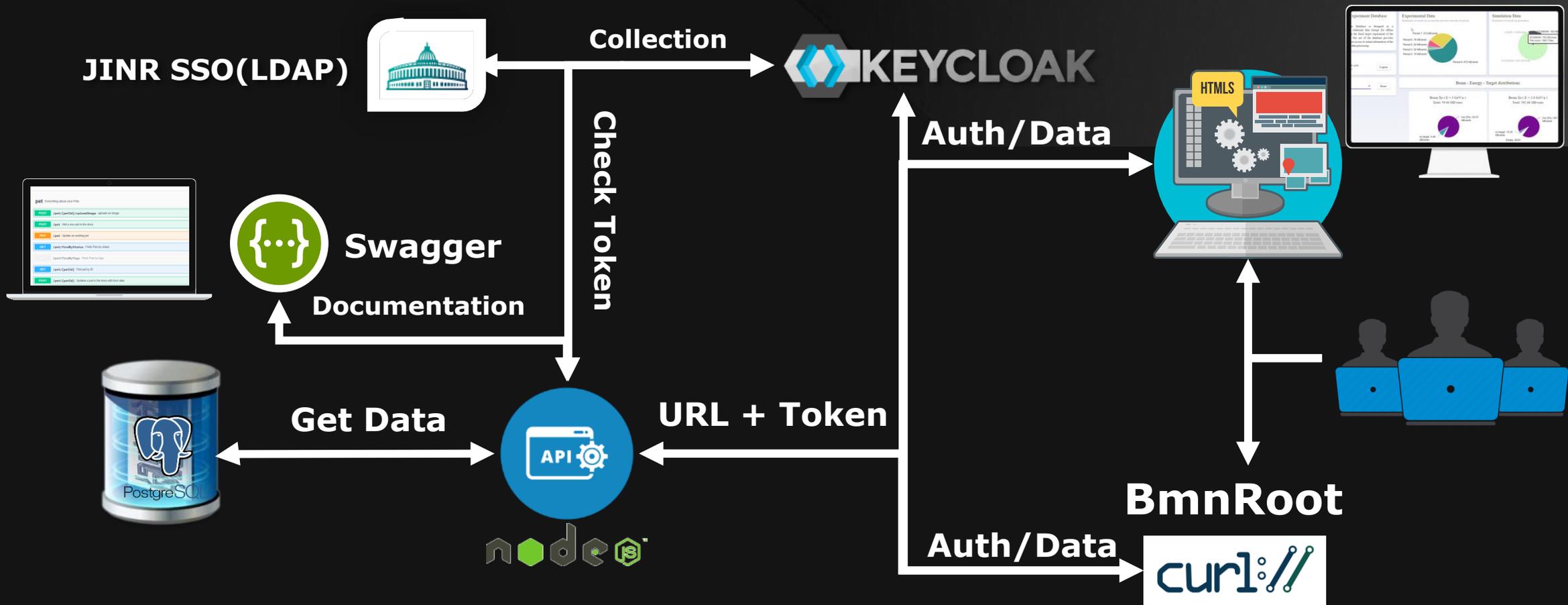


Simulation Data

Distribution of simulation files by generators



- ❖ In cases where a run does not have a target, designated as "No target", assign a color to this element on the diagrams corresponding to the used beam;
- ❖ Due to the increase in Run duration, we adjusted the exp data and sim data diagrams from the number of runs to the number of events within a given period.

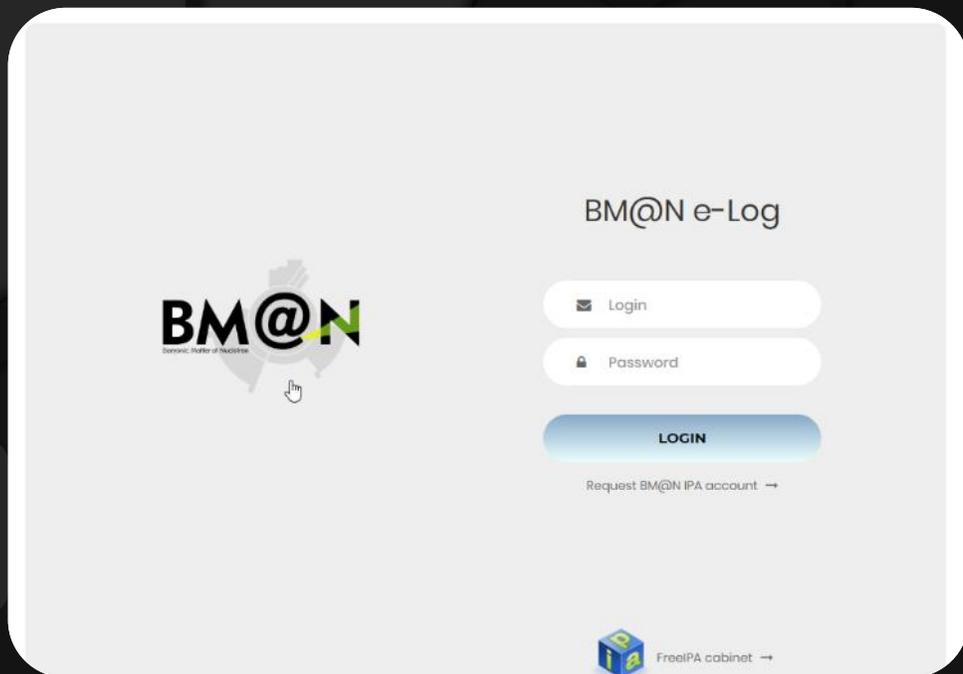


- GET
- PUT
- POST
- DELETE

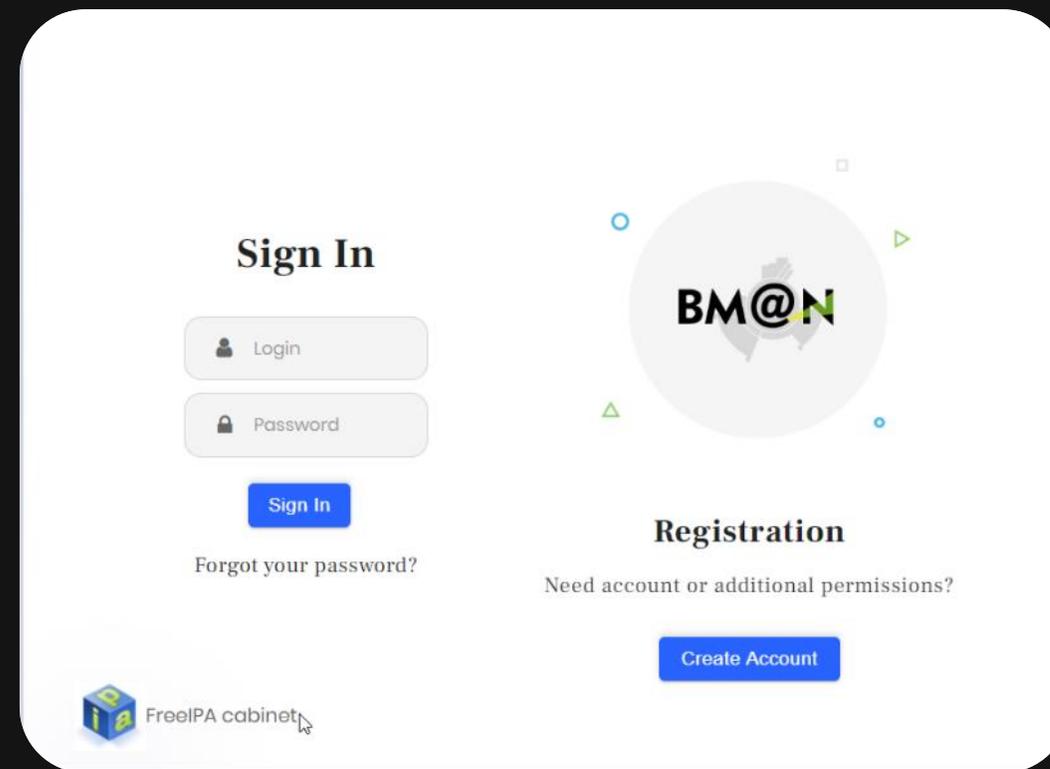
https://bmn-uniconda.jinr.ru/uniconda_api/v1/run?.....

HOSTNAME / SERVICE / VERSION / ENTITY?parameter_set

Electronic Logbook



- ❖ Modernized authorization page (temporary solution).
- ❖ Unified design elements across all pages (menus, blocks, etc.).
- ❖ Implemented comprehensive verification checks.



- ❖ Refactored the project structure.
- ❖ Integrated a CoDeS.
- ❖ Reduced the overall size of the project.
- ❖ Introduced strict structuring for creating new entries.

BM@N Electronic Logbook

Home New Find Last day Account Reference Book

Shift Leader	Alexander Chebotov	
Type	Shift Summary	<input type="button" value="Add New >>"/>
Period	<input type="text" value="8"/>	
№ Run	<input type="text" value="8428"/>	
Trigger		<input type="button" value="Add New >>"/>
DAQ Status	<input type="text"/>	
SP-41, A	<input type="text"/>	
SP-57, A	<input type="text"/>	
VKM2, A	<input type="text"/>	
Beam		<input type="button" value="Add New >>"/>
Energy, GeV	<input type="text"/>	
Target		<input type="button" value="Add New >>"/>
Target Width, mm	<input type="text"/>	
Comment	<input type="text"/>	



11 April 2023



11,8 Mb



201 Files and 39 Folders

The size decreased by 54.63%.

New Find Last day Account Reference Book

Shift Leader	Alexander Chebotov	
Type	Shift Summary	<input type="button" value="Add New >>"/>
Period	<input type="text" value="8"/>	
Run	<input type="text" value="8428"/>	
Trigger		<input type="button" value="Add New >>"/>
DAQ Status	<input type="text"/>	
Beam		<input type="button" value="Add New >>"/>
Energy, GeV	<input type="text"/>	
Target		<input type="button" value="Add New >>"/>
Target Width, mm	<input type="text"/>	
SP-57, A	<input type="text"/>	
VKM2, A	<input type="text"/>	
SP-41, A	<input type="text"/>	
Comment	<input type="text"/>	

Attachments:

№	
---	--

Choose file(s) to upload

- 1.If an informational event type is selected, all fields except "run number", "period", and "comment" will be unavailable. Otherwise, all fields are accessible for filling in.
- 2.The creation of an event will not be possible without filling in the "Run", "Period", and "Beam" fields.
- 3.Implemented extended input validation to allow only numeric values to be entered in fields that require integer values.
- 4.We've also set restrictions on uploaded files (images, screenshots, text files). Thus, the maximum file size should not exceed 500 MB, and the file format should match one of the formats we support.



11 May 2022

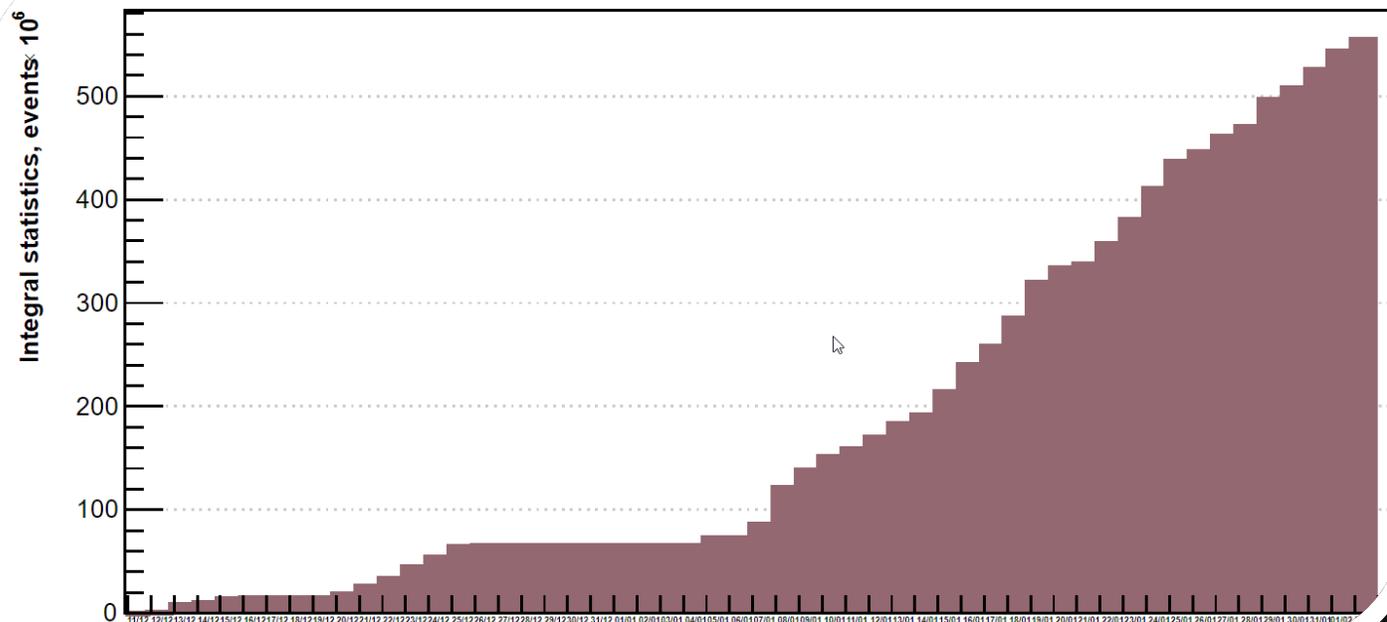
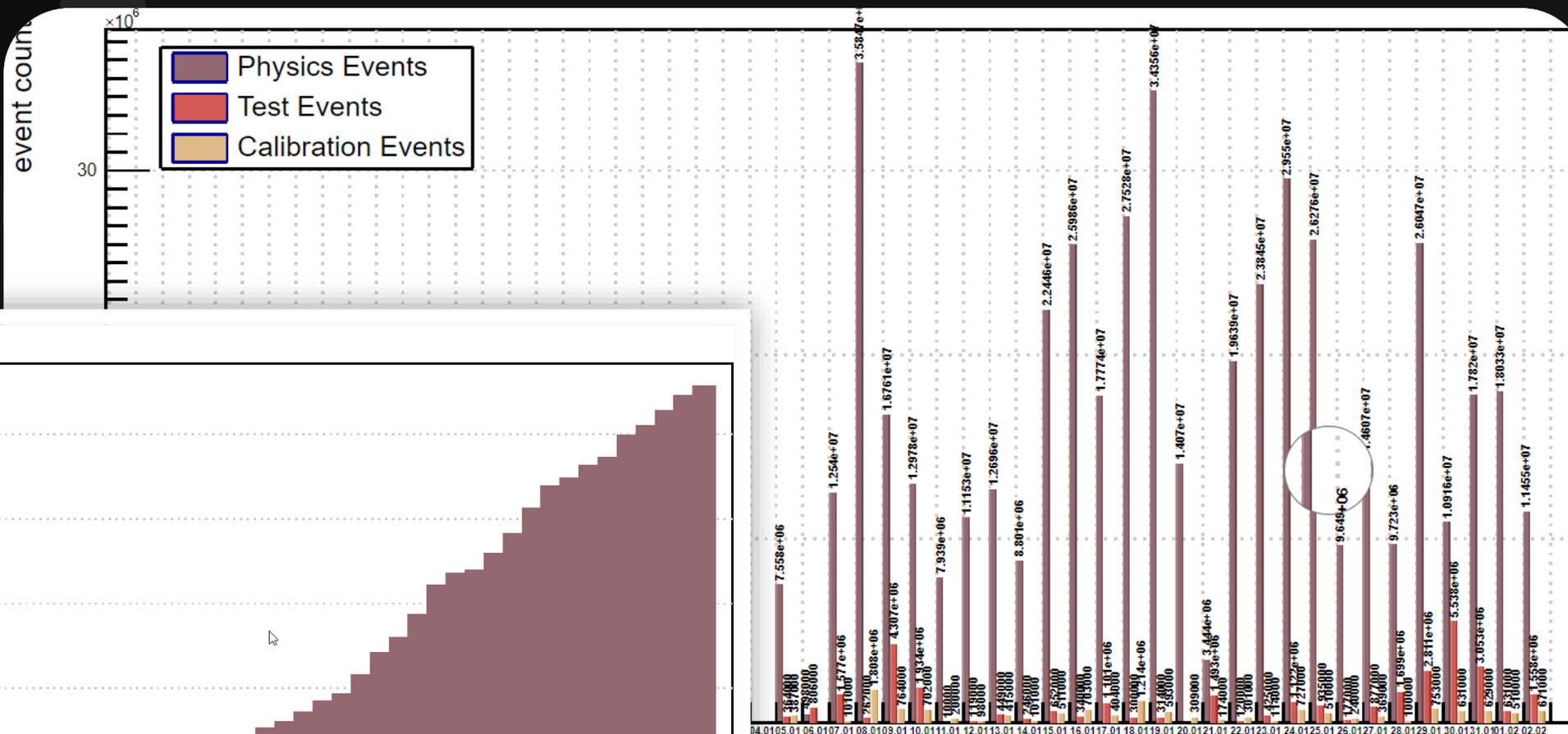


684 Files and 73 Folders



22,1 Mb

New plugin system for the e-Log platform



e-Log event statistics (Run 8)



Common deployment system for e-Log platform

Accounts for IPA authorization

```
"administrator" : {  
  "group": "elogadmin"  
},  
"writer" : {  
  "group": "elogwriter"  
},  
"reader" : {  
  "group": "elogreader"  
}
```

Accounts for database authorization

```
"administrator" : {  
  "login": "admin_user",  
  "password": "admin_pass"  
},  
"writer" : {  
  "login": "writer_user",  
  "password": "writer_pass"  
},  
"reader" : {  
  "login": "reader_user",  
  "password": "reader_pass"  
}
```

Configuration file for deployment

```
"dbName" : "bmn_elog",  
"dbPort" : 5432,  
"dbBackup" : "~/elog/dumps/",  
  
"webPort" : 80,  
  
"extAuth" : false,  
"authHost" : "*",  
  
"addColumnns" : [  
  {"column" : "sp_41;int null;SP-41, A"},  
  {"column" : "sp_57;int null;SP-57, A"},  
  {"column" : "vkm2;int null;VKM2, A"},  
],  
  
"expName" : "BM@N",  
"expType" : 0,  
"expLogo" : "bmn.png",  
"expUrl" : "https://bmn.jinr.ru",  
  
"notifySend" : true,  
"notifyServer" : "mail.jinr.ru",  
"notifyLogin" : "my_mail@jinr.ru",  
"notifyPass" : "my_pass",  
  
"contactEmail" : "contact_person@jinr.ru",  
  
"useConditionDb" : false,  
"conditionDbHost" : "unidb_db_host.jinr.ru",  
"conditionDbPort" : 5432,
```

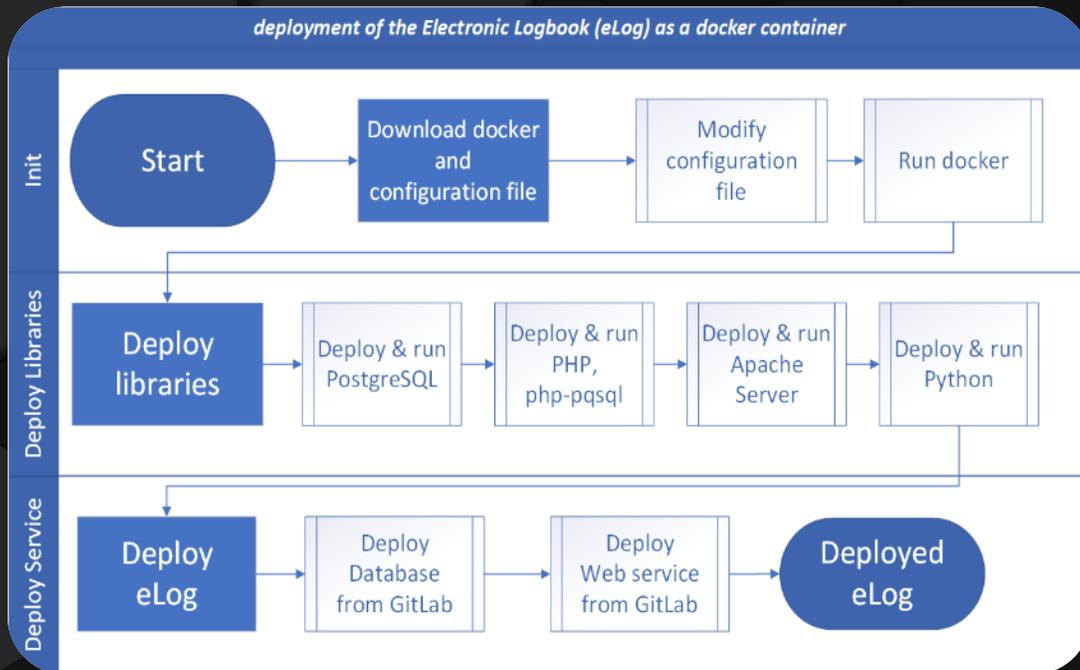
```
// host user for deployment of the Logbook database (remote or locally)  
// name of the Logbook Database  
// connection port of the Logbook Database  
// regular e-Log database backup, if needed (several storages are separated by semicolon)  
// port on which the service will be available  
// authentication type: false - as database roles; true - IPA/LDAP authentication  
  
// custom (additional, specific to an experiment) columns defined in SQL-similar format,  
e.g. {"column" : "sp_41;int null;SP-41, A"}  
  
// experiment type: 0 - fixed target experiment, 1 - collider experiment  
  
// whether activate notification system for various types of events (adding new run,  
editing run data, dictionary changes)  
  
// transfer run information to the Condition Database of the NICA experiments
```

```
"addColumnns" : [  
  {"column" : "sp_41;int null;SP-41, A"},  
  {"column" : "sp_57;int null;SP-57, A"},  
  {"column" : "vkm2;int null;VKM2, A"}  
],
```

Custom column for BM@N



Common Deployment System



eLog platform terminal output:

```

eLog_platform]# docker ps -a
IMAGE          COMMAND          CREATED        STATUS        PORTS
nginx         "/docker-entryp...  About an hour ago  Up About an hour  0.0.0.0:
web_php      "/entry-eLog-php.sh ...  About an hour ago  Up About an hour  9000/tcp
  
```

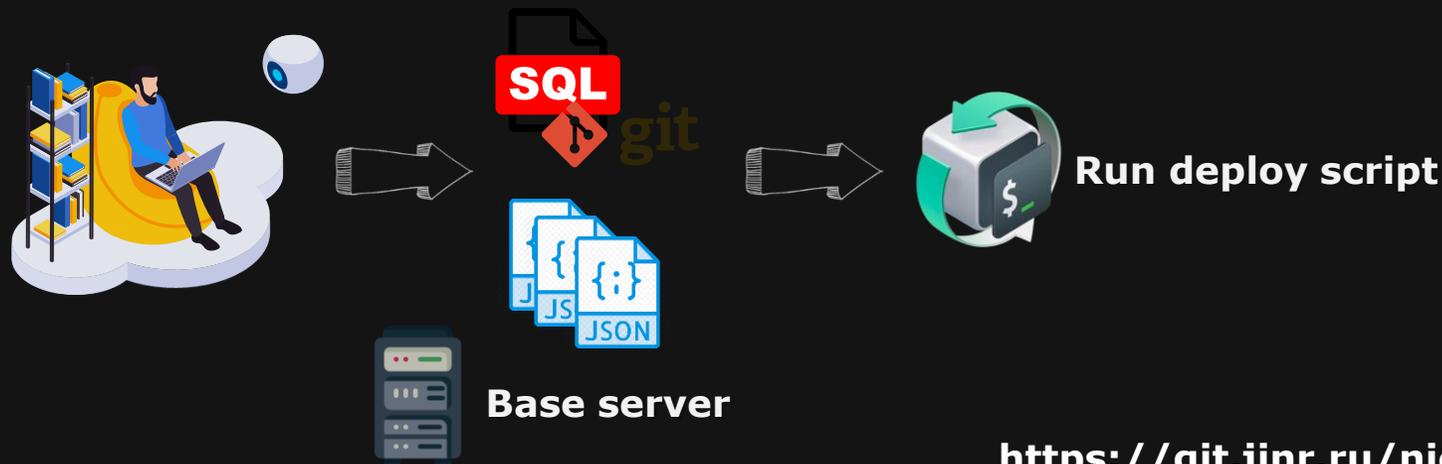
Base server 

Server for Database terminal output:

```

~]# docker ps -a
IMAGE          COMMAND          CREATED        STATUS        PORTS
postgres:12.4 "docker-entrypoin...  2 hours ago    Up 2 hours    0.0.0.0:5432->5432
  
```

Server for Database 



Conclusions

- ❖ Active work is underway to configure and maintain the Keycloak system. This is a complex but important task that requires constant attention and effort.
- ❖ The official website of the BM@N experiment continues to be actively updated and supported, allowing participants of the experiment and all interested parties to stay abreast of the latest news and results.
- ❖ We have successfully developed and maintained services such as File Inspector and Cluster Inspector, which have already become integral tools in our toolkit.
- ❖ The interfaces of the Condition Database are regularly adjusted and updated, and new updates are also being integrated. This allows us to continuously improve the system and make it more convenient for users.
- ❖ Part of the Electronic Logbook interface has been updated, and system support has been provided, making it even more effective to work with.
- ❖ At the current stage, we have successfully integrated 2 services with the deployment system, and we plan to continue working in this direction.

**Thank you
for your
attention!**

