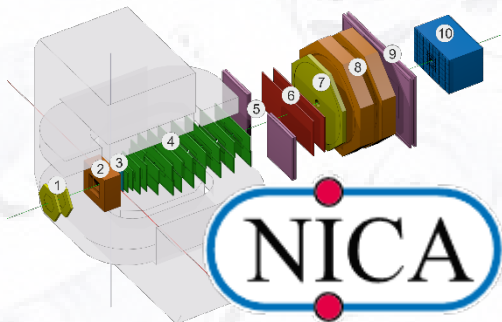


Production of the Configuration Information system for the BM@N experiment

*E. Alexandrov¹, I. Alexandrov¹, A. Chebotov¹,
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¹JINR, Dubna



12th Collaboration Meeting of the
BM@N Experiment at the NICA Facility,
Almaty, 12-18 May, 2024

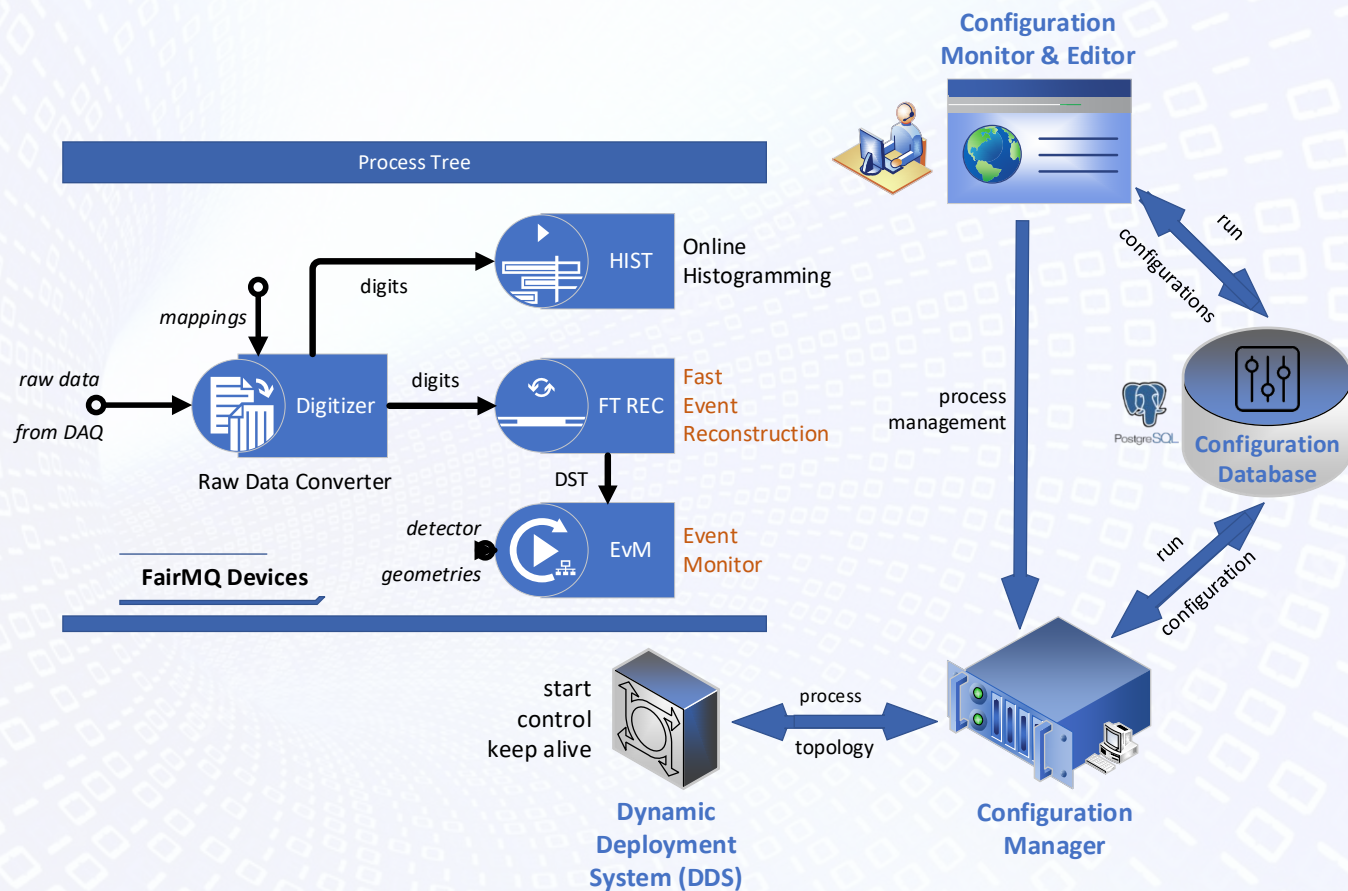


Joint Institute for Nuclear Research

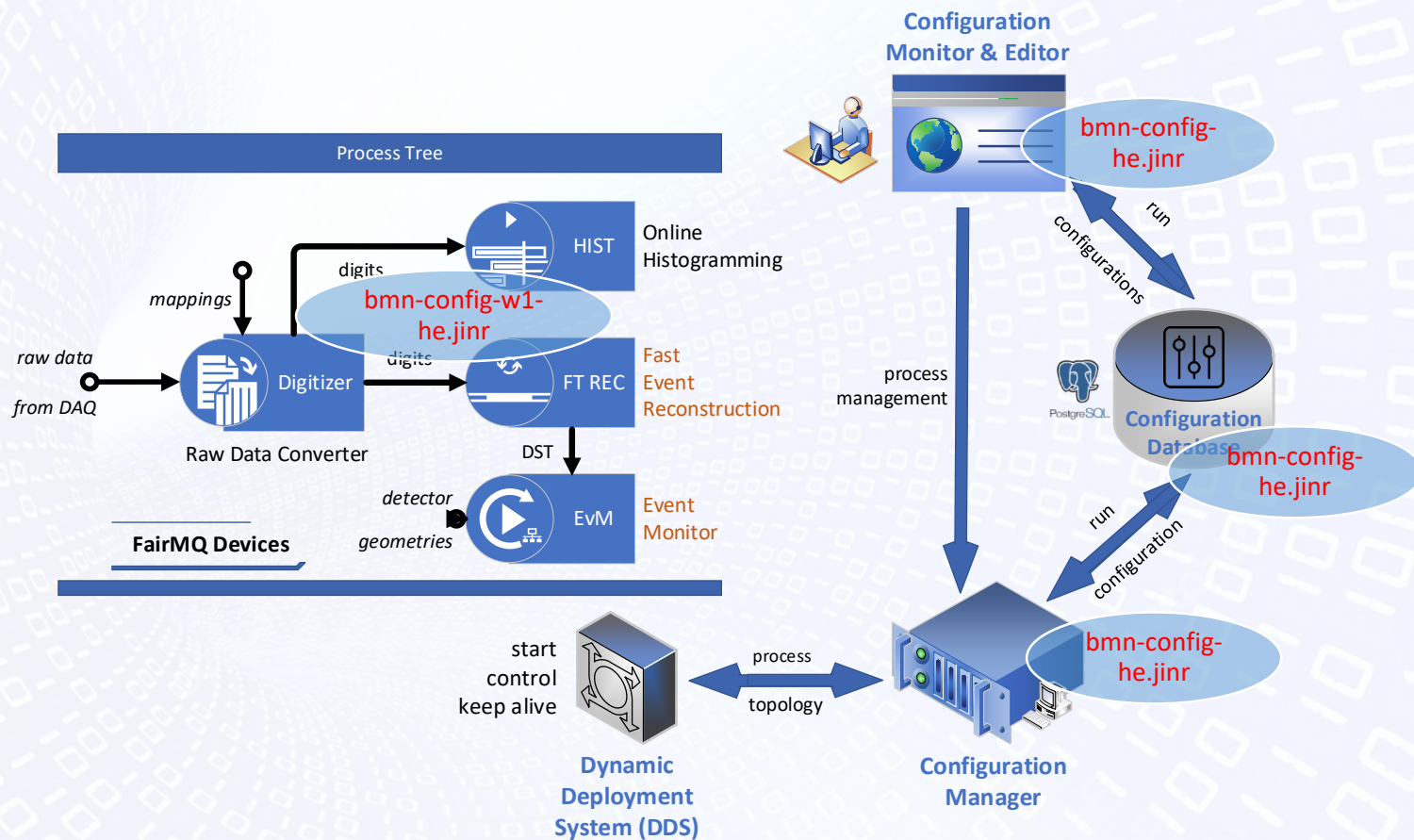
Possibilities

- keeps in databases all setup data
- can start, stop and monitor setup tasks during experiment runs
- can use web interface to supports data bases and operations with setup tasks

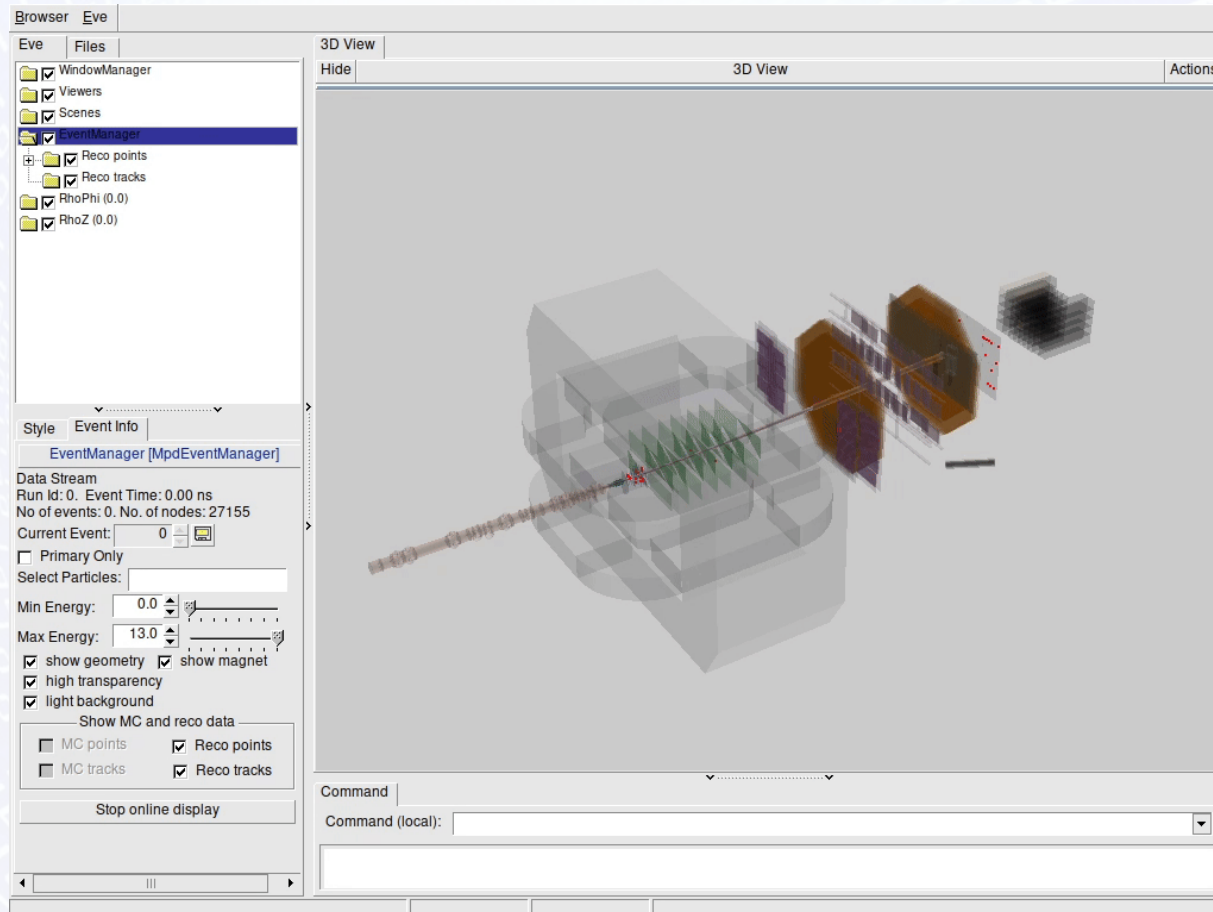
BM@N Information System and online processes diagram



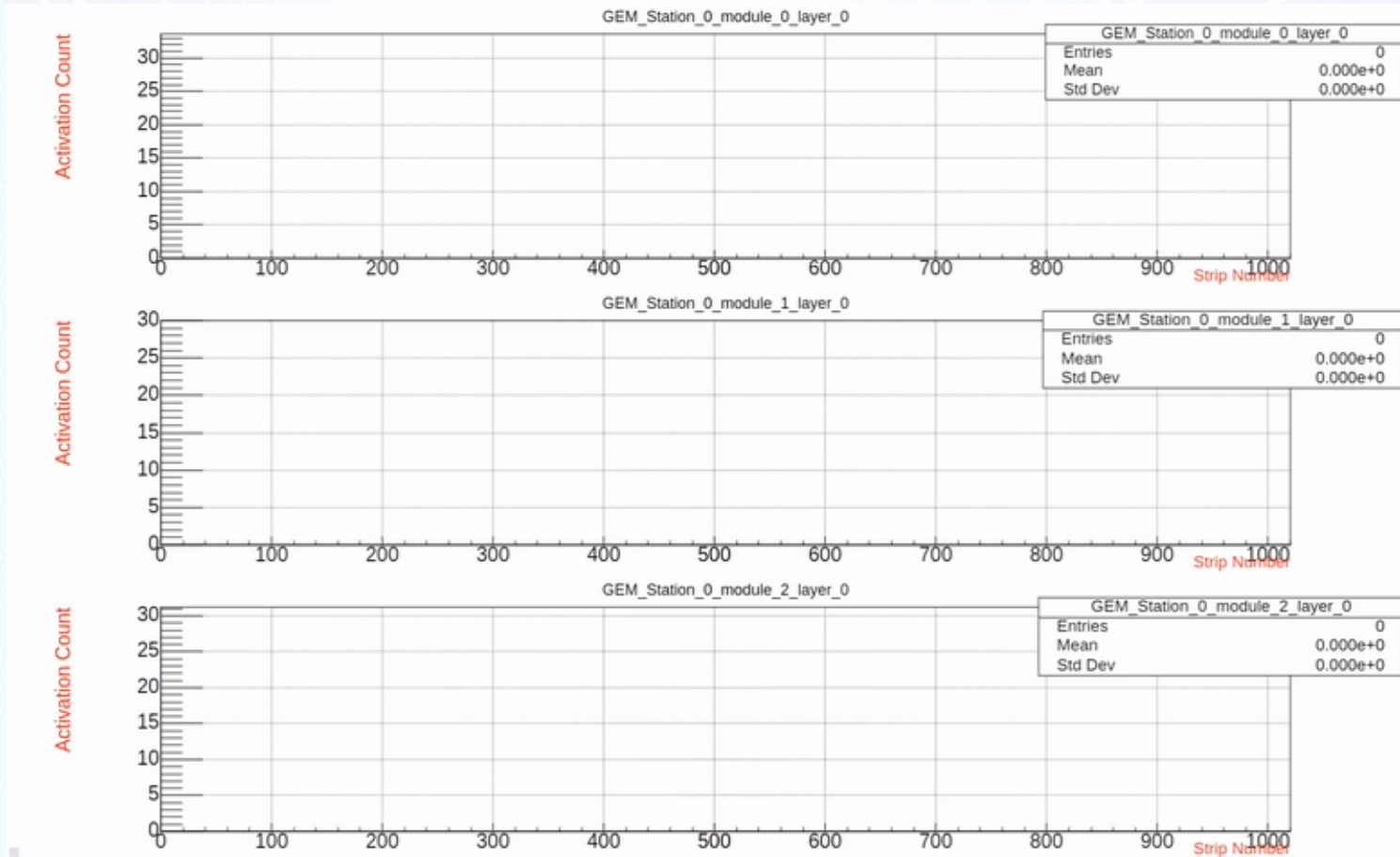
BM@N Configuration Information System and online processes diagram



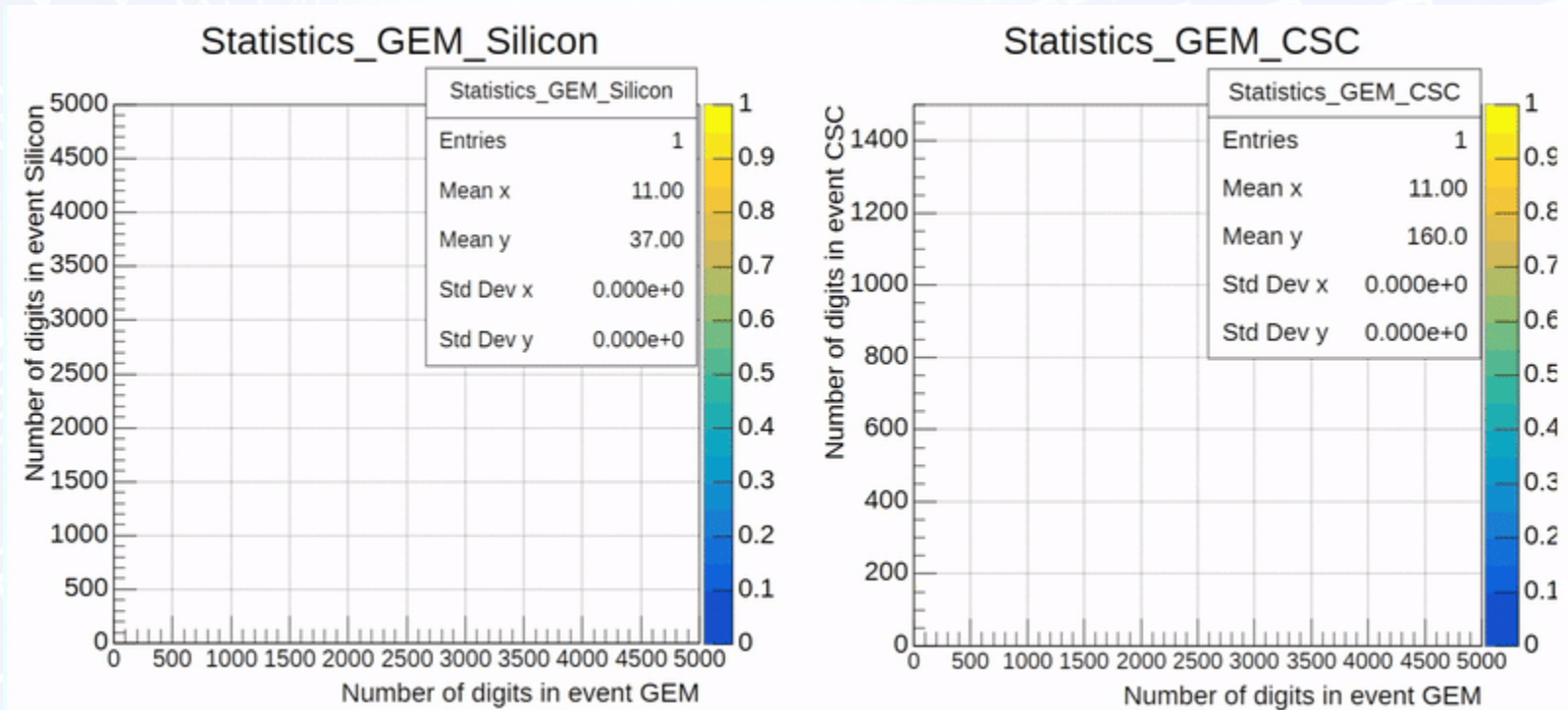
Online Event Display




Online histogramming



Online GEM Silicon statistics



WEB: BM@N Configuration Manager panel.

**Baryonic Matter
at Nuclotron**

Menu


TASK MONITOR

CONFIGURATION MANAGER

SESSION LOGS

DICTIONARY SET

Get in touch

 [Konstantin Gertsenberger](#)

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BM@N Configuration System

User: alexand [LOGOUT](#)

Configuration Manager

Select Setup Run:



BM@N Run 8

Control panel

START

STOP










[ADD SETUP MODULE](#)

Module Name	Parent Name	Actions
OnlineDataProcessing		 

@Module Tasks


Module Properties

[ADD MODULE TASK](#)

Task Name	Host	Actions
bm-n-online-digitizer	bm-n-config-w1.he.jinr.ru	  
bm-n-online-processor	bm-n-config-w1.he.jinr.ru	  
monStreamDecoder	bm-n-config-w1.he.jinr.ru	  

Online processes to be controlled by Configuration manager


Example of task view

**Baryonic Matter
at Nuclotron**

Menu

- TASK MONITOR
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- SESSION LOGS
- DICTIONARY SET

Get in touch










 [Konstantin Gertsenberger](mailto:Konstantin.Gertsenberger@jinr.ru)

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©Module Tasks

Module Properties

ADD MODULE TASK

Task Name	Host	Actions		
bm-n-online-digitizer	bm-n-config-w1.he.jinr.ru			
bm-n-online-processor	bm-n-config-w1.he.jinr.ru			
monStreamDecoder	bm-n-config-w1.he.jinr.ru			

View Task for **OnlineDataProcessing** Module

CANCEL

Task Name	bm-n-online-processor
Host	bm-n-config-w1.he.jinr.ru
Task Type	2
Environment	/home/ocs/bmnroot/build/config.sh
Path	bm-n-online-processor
Parameters	--id BmnOnlineProcessor1 --channel-config name=bm-n-processor-in,type=pull,method=connect,address=tcp://bm-n-config-w1.he.jinr.ru:5556,rateLogging=0 name=bm-n-processor-out,type=push,method=bind,address=tcp://bm-n-config-w1.he.jinr.ru:5557,rateLogging=0 - -verbosity veryhigh --control static
Version	1
Instance	1
OS	AlmaLinux 9
Restart	Yes
Boot	Yes
Properties	No properties

Example of task view (zoomed)


Task Name	Host	Actions		
<i>bmn-online-digitizer</i>	<i>bmn-config-w1.he.jinr.ru</i>			
<i>bmn-online-processor</i>	<i>bmn-config-w1.he.jinr.ru</i>			
<i>monStreamDecoder</i>	<i>bmn-config-w1.he.jinr.ru</i>			

View Task for **OnlineDataProcessing** Module

CANCEL

Task Name	bmn-online-processor
Host	bmn-config-w1.he.jinr.ru
Task Type	2
Environment	/home/ocs/bmnroot/build/config.sh
Path	bmn-online-processor
Parameters	--id BmnOnlineProcessor1 --channel-config name=bmn-processor-in,type=pull,method=connect,address=tcp://bmn-config-w1.he.jinr.ru:5556,rateLogging=0 name=bmn-processor-out,type=push,method=bind,address=tcp://bmn-config-w1.he.jinr.ru:5557,rateLogging=0 --verbosity veryhigh --control static
Version	1
Instance	1
OS	AlmaLinux 9
Restart	Yes

Web-interface. Configuration Manager and Task Monitor panels

 **Baryonic Matter
at Nuclotron**

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Get in touch

 [Konstantin Gertsenberger](#)

BM@N Configuration System



User: alexand [LOGOUT](#)

Configuration Manager

Select Setup Run: BMN Run 7 

Control panel UPDATE STOP

[ADD SETUP MODULE](#)

Module Name	Parent Name	Actions
OnlineControl		 

Task Monitor

Select task

Select setup





Select module

Started

Select host

[FILTER](#)

[RESET](#)

Task Name	Setup:Run	Module	Status	Log	Start Time	End Time	Host
bmn_event_display_imit	BMN:7	OnlineControl	Started		2023-05-05 18:39:16		vps104.jinr.ru
bmn_fast_event_reco_imit	BMN:7	OnlineControl	Started		2023-05-05 18:39:16		vm221-85.jinr.ru
bmn_online_histo_imit	BMN:7	OnlineControl	Started		2023-05-05 18:39:16		vps104.jinr.ru
bmn_root_digi_imit	BMN:7	OnlineControl	Started		2023-05-05 18:39:16		vps104.jinr.ru

Upgrades of the Configuration Information System

- **Configuration manager**
 - conversion from DB data to DDS topology fixes
 - error handling improvements
 - significant log service improvements
- **DB upgrades (2 new tables in use)**
- **Web Configuration manager**
 - added Configuration manager panel (not in production, to be finished)

Configuration manager log states

er a part of object name here

config_db - 10.220.16.194:5432

Databases

- config_db
 - Schemas
 - public
 - Tables
 - activated_task
 - Columns
 - Constraints
 - Foreign Keys
 - Indexes
 - Dependencies
 - References
 - Partitions
 - Triggers
 - Rules
 - Policies
 - computer
 - config
 - log
 - log_manager
 - log_status_name
 - module
 - module_name

Properties Data ER Diagram

log_status_name Enter a SQL expression

	id	value
1	5	SEVERE_ERROR
2	4	ERROR
3	3	WARNING
4	2	INFO
5	1	DEBUG

Configuration manager log in DB


The screenshot displays a database management tool interface. On the left, a tree view shows the database structure: 'config_db' > 'Schemas' > 'public' > 'Tables' > 'log_manager'. The main area shows a table with columns: 'id', 'data', 'created', 'status', 'session_id', and 'manager_id'. The table contains multiple rows of log entries, including session management, topology discovery, and task execution logs.

id	data	created	status	session_id	manager_id
6125	LogSupport:getRemoteFileSize 2: command itself in quotes="stat -c %s /home/ocs/4a	2024-04-26 10:16:07.161	5	4ac5d1e4-21e9-48fe	124
6126	LogSupport:getRemoteFileSize 3: command with SSH: ssh ocs@10-220-18-54.jinr.ru	2024-04-26 10:16:07.211	5	4ac5d1e4-21e9-48fe	124
6127	LogSupport:getRemoteFileSize 5: command=scp ocs@10-220-18-54.jinr.ru/home/ox	2024-04-26 10:16:07.609	5	4ac5d1e4-21e9-48fe	124
6128	LogSupport:readNumberFrFile line=8368 size=8368f	2024-04-26 10:16:08.027	5	4ac5d1e4-21e9-48fe	124
6129	LogSupport:getSessionRemoteLogSize remote file size=8368f	2024-04-26 10:16:08.101	5	4ac5d1e4-21e9-48fe	124
6130	ResponseCallback: updateTaskAsStarted and updateSessionFromLog done for task dd	2024-04-26 10:16:08.261	5	4ac5d1e4-21e9-48fe	124
6131	Starting setup... requestSlotInfo called.	2024-04-26 10:16:08.370	4	4ac5d1e4-21e9-48fe	124
6132	***** ConfigurationSupport:getDDSTopology started	2024-04-26 10:16:08.452	5	4ac5d1e4-21e9-48fe	124
6133	***** ConfigurationSupport:getDDSTopology found	2024-04-26 10:16:08.594	5	4ac5d1e4-21e9-48fe	124
6134	***** ConfigurationSupport:getDDSDid: DDSTopology FOUND!!!	2024-04-26 10:16:08.752	5	4ac5d1e4-21e9-48fe	124
6135	Session:updateActiveTasksByLog. Loop number=1 Agent.host=10-220-18-54.jinr.ru	2024-04-26 10:16:08.894	5	4ac5d1e4-21e9-48fe	124
6136	Session:getAgentByHostName for host=10-220-18-54.jinr.ru STARTED!	2024-04-26 10:16:09.011	5	4ac5d1e4-21e9-48fe	124
6137	>>>Session:getAgentByHostName<<< Agent for host=10-220-18-54.jinr.ru FOUND	2024-04-26 10:16:09.161	5	4ac5d1e4-21e9-48fe	124
6138	LogSupport:getSessionRemoteLogSize: host=10-220-18-54.jinr.ru user=ocs workDir	2024-04-26 10:16:09.253	5	4ac5d1e4-21e9-48fe	124
6139	LogSupport:getRemoteFileSize 1: remotePath=/home/ocs/4ac5d1e4-21e9-48fe-a35f	2024-04-26 10:16:09.319	5	4ac5d1e4-21e9-48fe	124
6140	LogSupport:getRemoteFileSize 2: command itself in quotes="stat -c %s /home/ocs/4a	2024-04-26 10:16:09.578	5	4ac5d1e4-21e9-48fe	124
6141	LogSupport:getRemoteFileSize 3: command with SSH: ssh ocs@10-220-18-54.jinr.ru	2024-04-26 10:16:09.678	5	4ac5d1e4-21e9-48fe	124
6142	LogSupport:getRemoteFileSize 5: command=scp ocs@10-220-18-54.jinr.ru/home/ox	2024-04-26 10:16:10.116	5	4ac5d1e4-21e9-48fe	124
6143	LogSupport:readNumberFrFile line=8368 size=8368f	2024-04-26 10:16:10.542	5	4ac5d1e4-21e9-48fe	124
6144	LogSupport:getSessionRemoteLogSize remote file size=8368f	2024-04-26 10:16:10.697	5	4ac5d1e4-21e9-48fe	124
6145	***** ConfigurationSupport:getDDSTopology started	2024-04-26 10:16:10.811	5	4ac5d1e4-21e9-48fe	124
6146	***** ConfigurationSupport:getDDSDid: DDSTopology found	2024-04-26 10:16:10.902	5	4ac5d1e4-21e9-48fe	124
6147	***** ConfigurationSupport:getDDSDid: DDSTopology FOUND!!!	2024-04-26 10:16:10.952	5	4ac5d1e4-21e9-48fe	124
6148	ConfigurationSupport:getNumRunningTsk for setup id=4 corresponding ddsid=4ac5c	2024-04-26 10:16:10.994	5	4ac5d1e4-21e9-48fe	124
6149	getNumRunningTsk=21	2024-04-26 10:16:11.097	4	4ac5d1e4-21e9-48fe	124
6150	START setup will be FINISHED after line: slotThr = new std::thread(&SlotInfoRequestT	2024-04-26 10:16:11.164	5	4ac5d1e4-21e9-48fe	124
6151	***** ConfigurationSupport:getDDSTopology started	2024-04-26 10:16:11.197	5	4ac5d1e4-21e9-48fe	124
6152	RestService:requestSlotInfoActive() started	2024-04-26 10:16:11.231	5	4ac5d1e4-21e9-48fe	124
6153	***** ConfigurationSupport:getDDSTopology found	2024-04-26 10:16:11.264	5	4ac5d1e4-21e9-48fe	124
6154	***** ConfigurationSupport:getDDSDid: DDSTopology FOUND!!!	2024-04-26 10:16:11.297	5	4ac5d1e4-21e9-48fe	124
6155	ConfigurationSupport:getNumRunningTsk for setup id=4 corresponding ddsid=4ac5c	2024-04-26 10:16:11.331	5	4ac5d1e4-21e9-48fe	124
6156	getNumRunningTsk=21	2024-04-26 10:16:11.381	4	4ac5d1e4-21e9-48fe	124
6157	***** ConfigurationSupport:getDDSTopology started	2024-04-26 10:16:11.429	5	4ac5d1e4-21e9-48fe	124
6158	***** ConfigurationSupport:getDDSTopology found	2024-04-26 10:16:11.456	5	4ac5d1e4-21e9-48fe	124
6159	***** ConfigurationSupport:getDDSDid: DDSTopology FOUND!!!	2024-04-26 10:16:11.489	5	4ac5d1e4-21e9-48fe	124
6160	ConfigurationSupport:getNumRunningTsk for setup id=4 corresponding ddsid=4ac5c	2024-04-26 10:16:11.522	5	4ac5d1e4-21e9-48fe	124
6161	getNumRunningTsk=21	2024-04-26 10:16:11.556	4	4ac5d1e4-21e9-48fe	124
6162	START setup finished. The number of running tasks is 2	2024-04-26 10:16:11.589	4	4ac5d1e4-21e9-48fe	124
6163	RestService:performRequest for command="start" FINISHED!!!	2024-04-26 10:16:11.622	4	4ac5d1e4-21e9-48fe	124
6164	ConfigurationSupport:initComputers: addComputer id=1 fullName=ocs@10.220.18.54	2024-04-26 10:16:11.767	5	4ac5d1e4-21e9-48fe	125

Configuration manager log view

```
| DEBUG | ##### ConfigurationSupport::requestSlotInfo for setupid=4 and the corresponf ddsID=36202cc0-2344-476a-8053-6594904a0b81
| DEBUG | ##### DDSCommunicator::ddsStartAttachSession for ddsSesId on input =36202cc0-2344-476a-8053-6594904a0b81
| INFO | ##### DDSCommunicator::ddsStartAttachSession:: session attached for id=36202cc0-2344-476a-8053-6594904a0b81
| INFO | !!!!!!!!!!!!! DDSCommunicator::requestSlotInfo(Session_session): started
| DEBUG | Slot 0: agentID (4114021393541468340), slotID (3699528277112806928), taskID (3629843431963531952), state (2), host (10-220-18-54.jinr.ru), wrkDir ("/home/ocs/36202cc0-2344-476a-8053-6594904a0b81/wn1/")
0-2344-476a-8053-6594904a0b81
| DEBUG | ***** ConfigurationSupport::getDDSTopology started
| DEBUG | ***** ConfigurationSupport::getDDSTopology found
| DEBUG | Info ResponseCallback: runPath="main/Online_Test_4/bmn_online_histo_test_0"
runName="bmnn_online_histo_test"
| INFO | act== NULL --> new active task (_info.m_taskID != 0, but no slotID in DB
)
| DEBUG | requestSlotInfo: runPath=main/Online_Test_4/bmn_online_histo_test_0
| DEBUG | >>>Session::getActiveTaskByParentTaskId<<< activated task for parentTskId=7 FOUND in Session map
| DEBUG | Session:updateAgentList START
| DEBUG | Session:updateAgentList new Agent host=10-220-18-54.jinr.ru atsk->getComputerId()=1 atsk->getWorkDir()=/home/ocs/36202cc0-2344-476a-8053-6594904a0b81/wn1/ atsk->getLoginUser()=ocs
| DEBUG | ConfigurationSupport::updateTaskInDb request:
update activated_task set update_time = CURRENT_TIMESTAMP, status =3, dds_id='3629843431963531952', task_id=7, computer_id=1, working_dir='/home/ocs/36202cc0-2344-476a-8053-6594904a0b81/wn1/', host='10-220-18-54.jinr.ru'
| DEBUG | Session::getAgentByHostName for host=10-220-18-54.jinr.ru STARTED
| DEBUG | >>>Session::getAgentByHostName<<< Agent for host=10-220-18-54.jinr.ru FOUND in Session map
| DEBUG | ConfigurationSupport::updateSessionFromLog: found Agent with host=10-220-18-54.jinr.ru working dir='/home/ocs/36202cc0-2344-476a-8053-6594904a0b81/wn1/'
| DEBUG | LogSupport::getSessionRemoteLogSize: host=10-220-18-54.jinr.ru user=ocs workDir=/home/ocs/36202cc0-2344-476a-8053-6594904a0b81/wn1/ remotePath=/home/ocs/36202cc0-2344-476a-8053-6594904a0b81/wn1/dds*.log
| DEBUG | LogSupport::getRemoteFileSize 1: remotePath=/home/ocs/36202cc0-2344-476a-8053-6594904a0b81/wn1/dds*.log host=10-220-18-54.jinr.ru user=ocs tmpPath=d4d0-e554-4225-c785
| DEBUG | LogSupport::getRemoteFileSize 2: command itself in quats="stat -c %s /home/ocs/36202cc0-2344-476a-8053-6594904a0b81/wn1/dds*.log >d4d0-e554-4225-c785"
| DEBUG | LogSupport::getRemoteFileSize 3: command with SSH: ssh ocs@10-220-18-54.jinr.ru "stat -c %s /home/ocs/36202cc0-2344-476a-8053-6594904a0b81/wn1/dds*.log >d4d0-e554-4225-c785" 2>/dev/null
| DEBUG | LogSupport::getRemoteFileSize 5: command=scp ocs@10-220-18-54.jinr.ru:d4d0-e554-4225-c785 d4d0-e554-4225-c785 >/dev/null 2>/dev/null
| DEBUG | LogSupport::readNumberFrFile line=8372 size=8372
| DEBUG | LogSupport::removeRemoteFile: cmd="ssh ocs@10-220-18-54.jinr.ru 'rm d4d0-e554-4225-c785'"
| DEBUG | LogSupport::getSessionRemoteLogSize remote file size=8372
| ERROR | Agent::updateLogFile: size of log file for host "10-220-18-54.jinr.ru" was changed. OLD size=0 curSize=8372
```

WEB: Configuration manager log

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Get in touch

[✉ Konstantin Gertsenberger](#)

BM@N Configuration System

User: test [LOGOUT](#)

Select Setup
Run:

BM@N test 4 Ru... 

Control panel



START

STOP

Manager Logs

Created	Data	Status
2024-04-26 10:16:11	ConfigurationSupport::initComputers: addComputer id=1 fullName=ocs@10.220.18.54 wPath=/home/ocs max_p roc_number=3	DEBUG
2024-04-26 10:16:11	ConfigurationSupport::initComputers: addComputer id=2 fullName=ocs@10.220.18.54 wPath=/home/ocs max_p roc_number=3	DEBUG
2024-04-26 10:16:11	Wrong Computer with id=	ERROR

[ADD SETUP MODULE](#)

Module Name	Parent Name	Actions
Online Test 4		 

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WEB: Configuration manager log

[illegible]

Next steps

- to have in WEB
 - session log that is still running
 - agent log
- **Configuration manager log panel**
 - to be finished
 - add messages status filter
- add Grafana monitoring in order to set alarms in case of problem
- moving to use REST API in all public communications