WP8.5: Deployment of upgraded SDN monitoring system towards RM nodes by HCMR and GRNET

Themis Zamani, GRNET
Kostas Kaggelidis, GRNET
Kostas Koumantaros, GRNET

Angelos Lykiardopoulos, HCMR
Michael Iordanis , HCMR

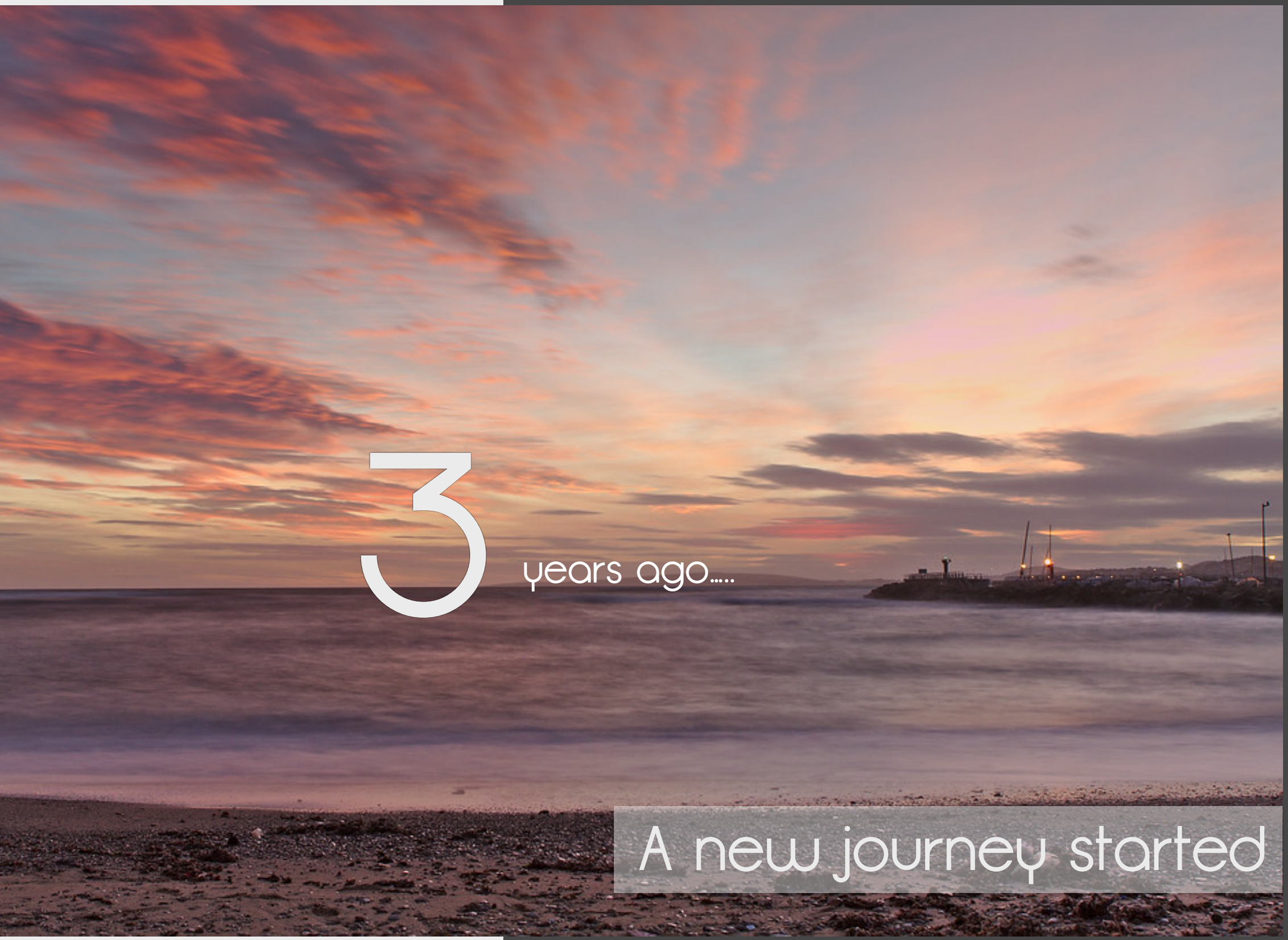
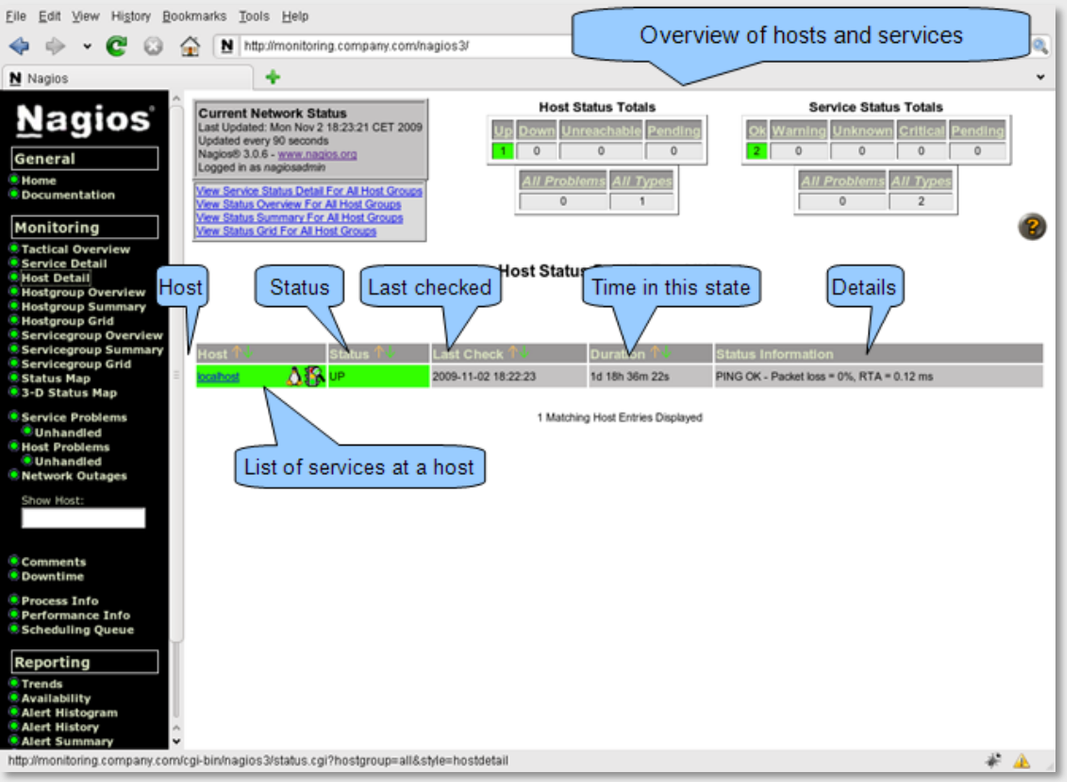


Photo by Charles Troupin

2017 Status

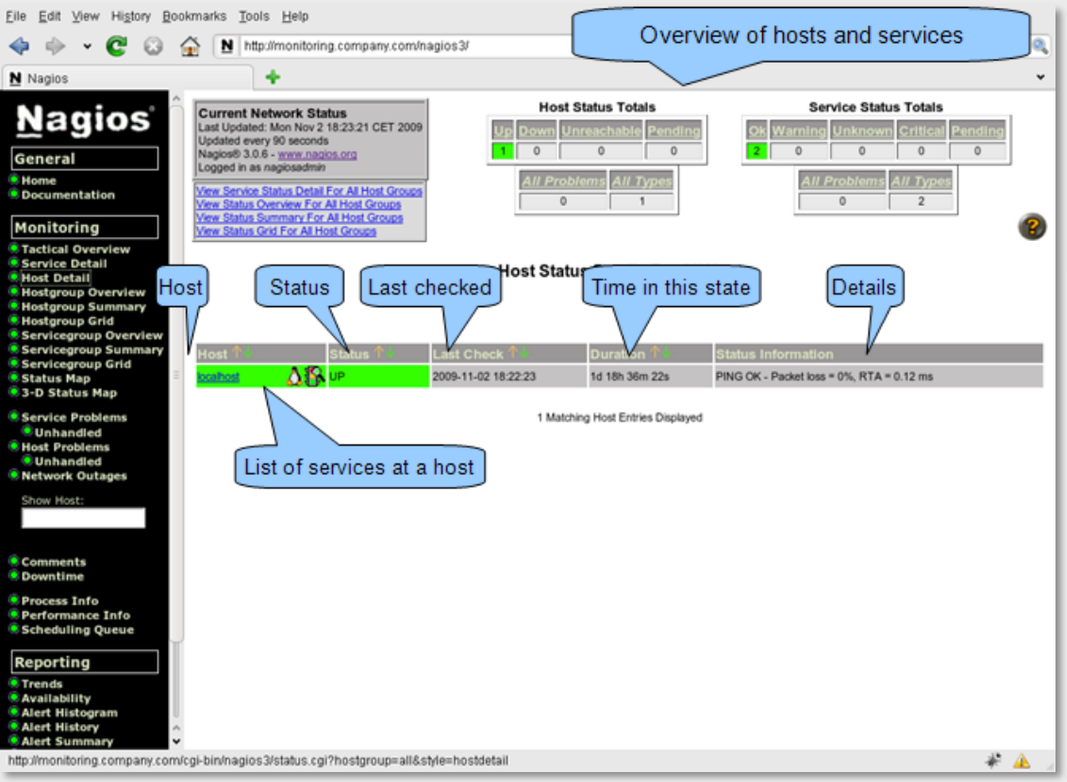
Monitoring in SeadataNet



A well organized nagios monitoring box used mainly for fabric monitoring.

2017 New Goal

Monitoring in SeadataNet



A well organized nagios monitoring box used mainly for fabric monitoring.

To adapt the existing SeaDataNet II monitoring to the new SeaDataCloud components, while updating and optimising it. → ARGO Monitoring

General goals: Information for the users and stakeholders of the system on the overall availability of provided services.

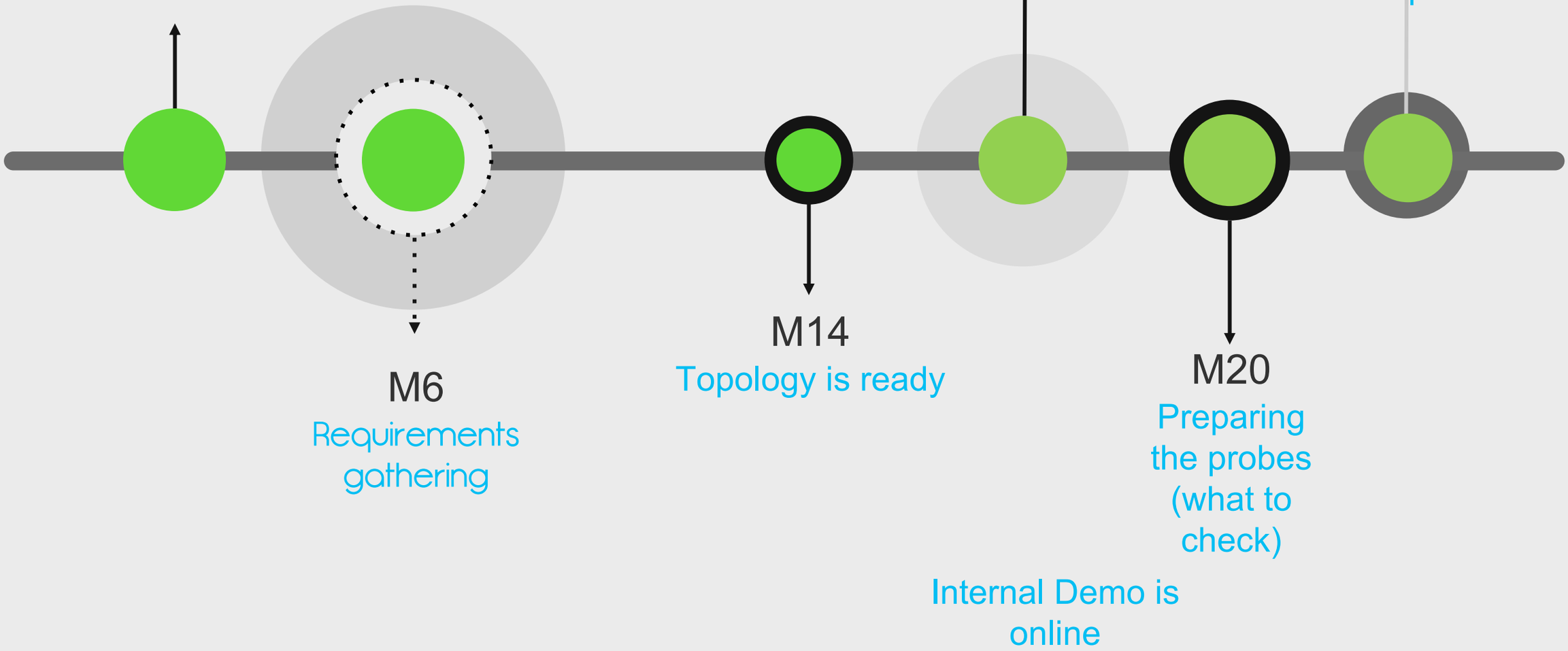
WP8.5 Time Plan

What was our actual time plan

- By M6: Requirements gathering
- By M9: Architecture details defined and development plan in place
- M12 - M18: Further developments and development of initial probes
- M18 - M24: Testing and preparation for production use of the ARGO monitoring service
- M24- SDC ARGO Monitoring in production including initial set of services being monitored
- M34: SDC ARGO Monitoring for the full set of the SDC services and deployment of the new ARGO Portal

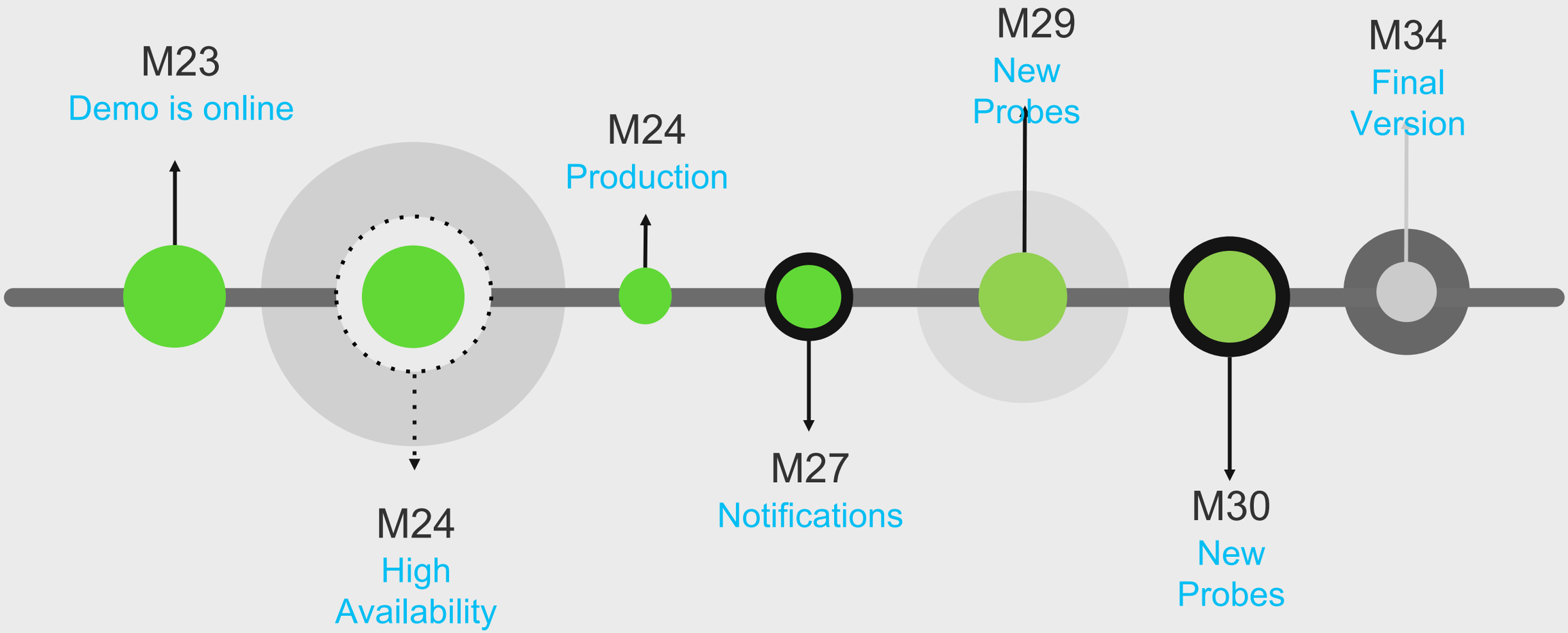
The Journey

Monitoring in SeadataNet



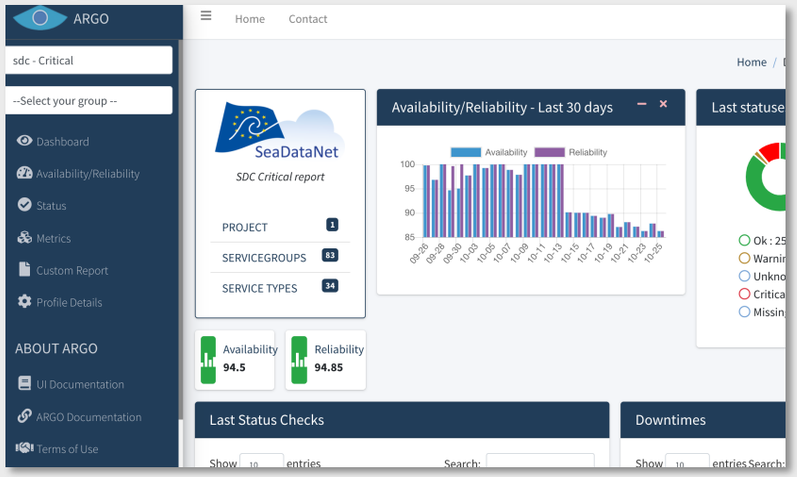
The Journey

Monitoring in SeadataNet



What did we deliver

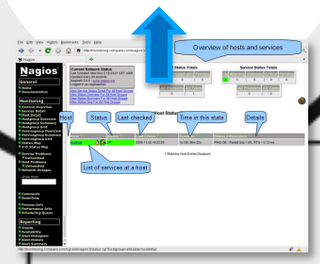
Today we managed to …



Monitored services based on users behaviour

Documentation where needed

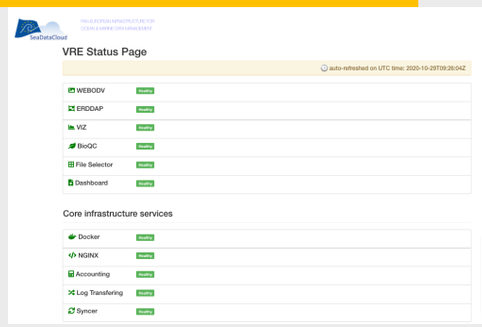
SeaDataCloud



High Availability

Monitored Replication Managers

Status Pages for the users



Topology

infrastructure topology

A central registry to record information about the topology of the SDC e-Infrastructure. This information includes contact addresses (e.g. site contact, site security contact, site support contact) as well as resources and services being provided by each site, and scheduled downtimes.

Name	NGI	Infrastructure
FZ-JUELICH	SDC-ALL	Production
IGME-GR	SDC-ALL	Production
GRNET	SDC-ALL	Production
BODC	SDC-ALL	Production
BSH	SDC-ALL	Production
OGS	SDC-ALL	Production
CNR	SDC-ALL	Production
ENEA	SDC-ALL	Production
ISMAR	SDC-ALL	Production
ISAC	SDC-ALL	Production

diam04.ogs.trieste.it	eu.seadatanet.org.downloadmanager	✔	✔	OGS-RIMA	SDC
dlmgr.vliz.be	eu.seadatanet.org.downloadmanager	✔	✔	VLIZ	SDC
dm.bmdc.be	eu.seadatanet.org.downloadmanager	✔	✔	RBINS-BMDC	SDC
dm.bod-mhi.ru	eu.seadatanet.org.downloadmanager	✔	✔	MHI-MIST	SDC
dm.bod-mhi.ru	eu.seadatanet.org.replicationmanager	✔	✔	MHI-MIST	SDC
dm.dhmo.org.ua	eu.seadatanet.org.downloadmanager	✔	✔	DHMO	SDC
dm.gamta.lt	eu.seadatanet.org.downloadmanager	✔	✔	EPA	SDC
dm.hafro.is	eu.seadatanet.org.downloadmanager	✔	✔	MRI	SDC
dm.hidrografico.pt	eu.seadatanet.org.downloadmanager	✔	✔	IHPT	SDC
dm.meteo.ru	eu.seadatanet.org.downloadmanager	✔	✔	RIHMI	SDC
dm.ocean.ru	eu.seadatanet.org.downloadmanager	✔	✔	IORAS-SIO	SDC
dm.oceanography.ru	eu.seadatanet.org.downloadmanager	✔	✔	SOI	SDC
dm.uhmi.org.ua	eu.seadatanet.org.downloadmanager	✔	✔	MB-UHMI	SDC
dmnodc.ogs.trieste.it	eu.seadatanet.org.downloadmanager	✔	✔	OGS	SDC
dnauk.iopan.gda.pl	eu.seadatanet.org.downloadmanager	✔	✔	IOPAN-IOPAS	SDC
downloadmanager.smhi.se	eu.seadatanet.org.downloadmanager	✔	✔	SMHI	SDC
edmerp.seadatanet.org	eu.seadatanet.org.gui-edmerp	✔	✔	MARIS	SDC
edmo.seadatanet.org	eu.seadatanet.org.gui-edmo	✔	✔	MARIS	SDC
emodnet.ipma.pt	eu.seadatanet.org.downloadmanager	✔	✔	IPMA	SDC

Monitoring SDC

a pan-European infrastructure to ease the access to marine data

facts

> 95 sites participating

> 180 services running

multiple communities

Reports A/R Status Alerts

Our Aim

Help users to select the services available at any point in time

How can we do that

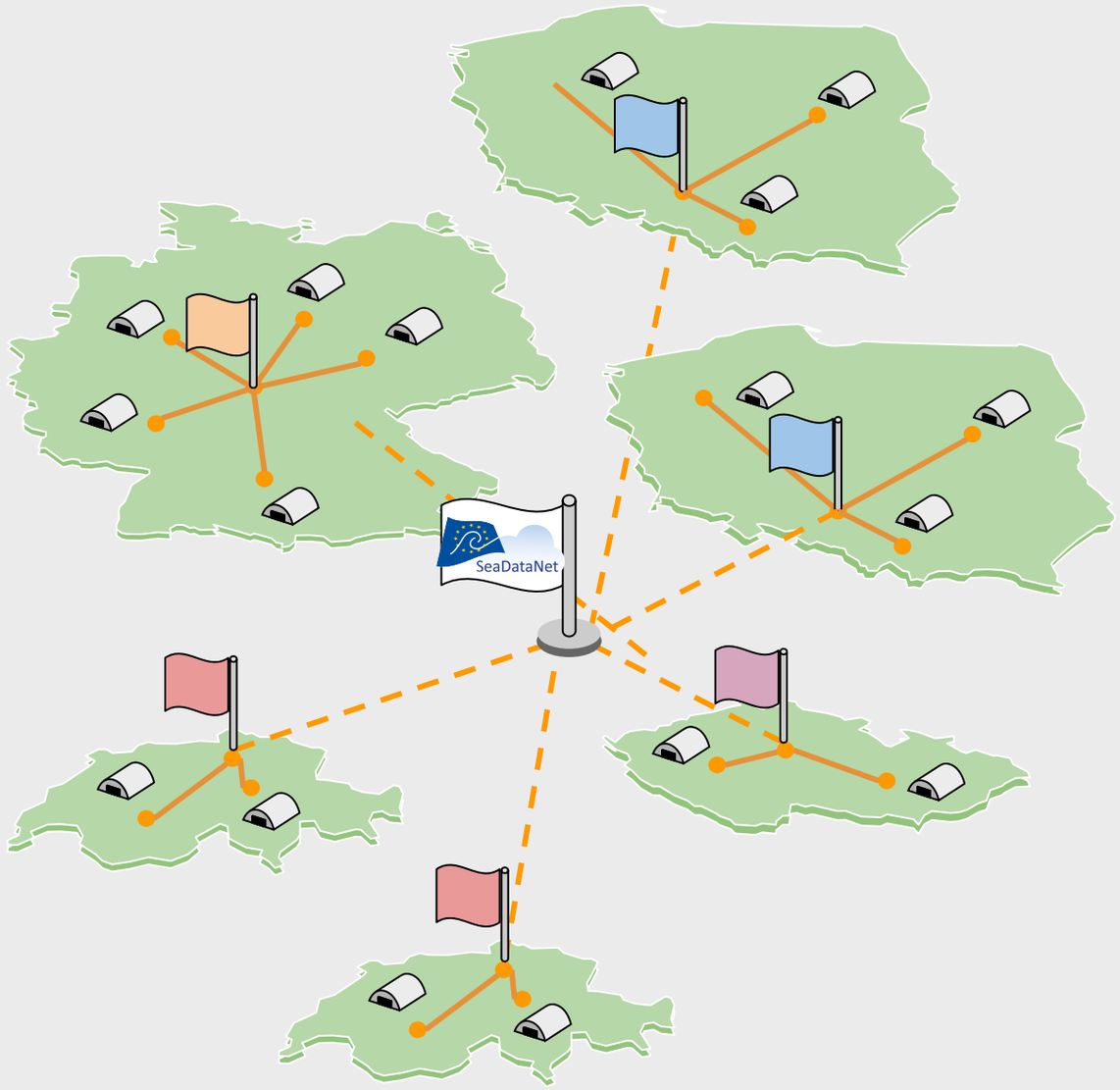
by emulating what the user does

Monitoring SDC

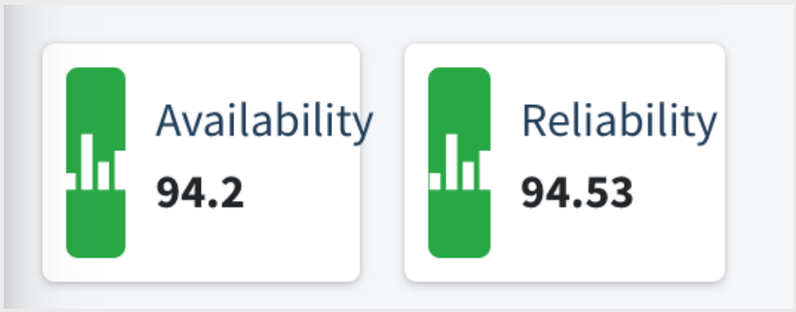
a pan-European infrastructure to ease the access to marine data

Monitoring based on User experience so as to compute

- Status
- Availability
- Reliability



SDC A/R results



Monitoring SDC

a pan-European infrastructure to ease the access to marine data

ARGO Monitoring

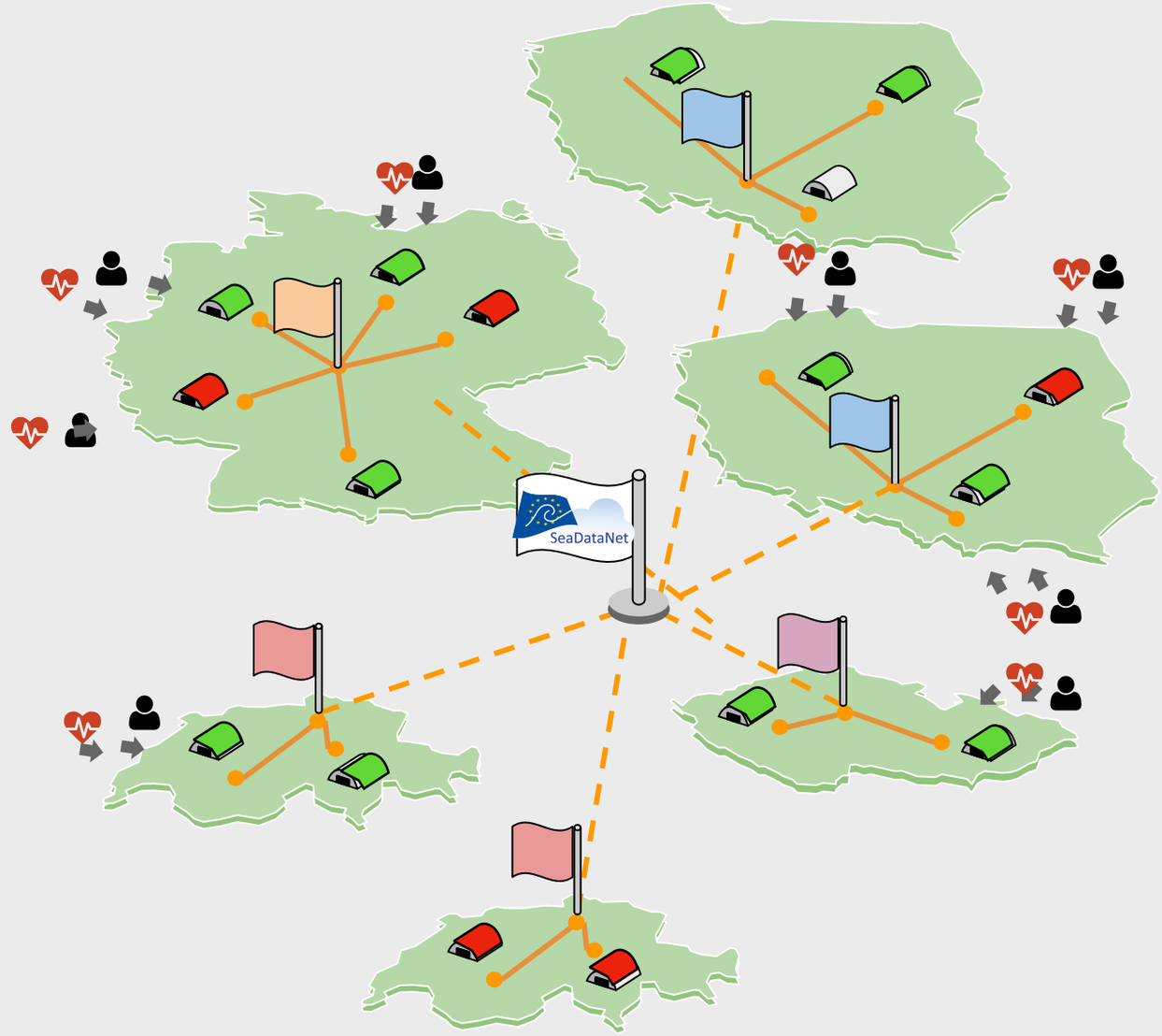
Monitor	Analyse
Alert	Report

- What ARGO is trying to do is to
- emulate the user behaviour and
- constantly monitor the Services to
- provide:

  - Real time status reports

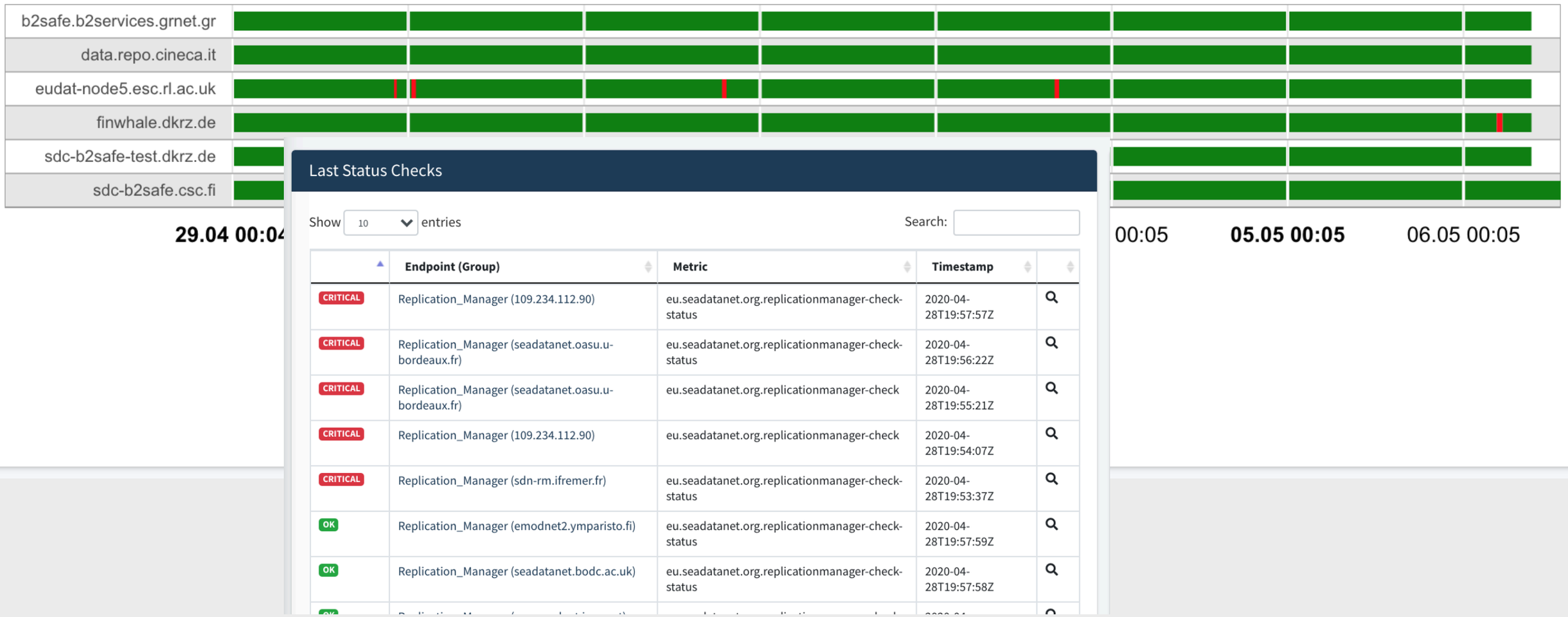
  - Availability and reliability reports

  - Real time alerts



Real Time Status Report

Status for sdc tenant - Critical Report



Last Status Checks

Show 10 entries Search:

	Endpoint (Group)	Metric	Timestamp	
CRITICAL	Replication_Manager (109.234.112.90)	eu.seadatanet.org.replicationmanager-check-status	2020-04-28T19:57:57Z	
CRITICAL	Replication_Manager (seadatanet.oasu.u-bordeaux.fr)	eu.seadatanet.org.replicationmanager-check-status	2020-04-28T19:56:22Z	
CRITICAL	Replication_Manager (seadatanet.oasu.u-bordeaux.fr)	eu.seadatanet.org.replicationmanager-check	2020-04-28T19:55:21Z	
CRITICAL	Replication_Manager (109.234.112.90)	eu.seadatanet.org.replicationmanager-check	2020-04-28T19:54:07Z	
CRITICAL	Replication_Manager (sdn-rm.ifremer.fr)	eu.seadatanet.org.replicationmanager-check-status	2020-04-28T19:53:37Z	
OK	Replication_Manager (emodnet2.ymparisto.fi)	eu.seadatanet.org.replicationmanager-check-status	2020-04-28T19:57:59Z	
OK	Replication_Manager (seadatanet.bodc.ac.uk)	eu.seadatanet.org.replicationmanager-check-status	2020-04-28T19:57:58Z	

A/R Reports

Availability/Reliability Table | Availability/Reliability Charts

Copy | Excel | CSV | PDF

Search: Show 50 entries

Month	2019-06		2019-07		2019-08		2019-09		2019-10	
	Av	Re	Av	Re	Av	Re	Av	Re	Av	Re
B2ACCESS	100	100	100	100	100	100	99.98	99.98	100	100
B2SAFE									100	100
B2STAGE									100	100
B2STAGE_CINECA									100	100
CAS									100	100
CSR_SEARCH									99.57	99.57

Timestamp	Availability	Reliability
2019-10-01	100	100
2019-10-02	100	100
2019-10-03	100	100
2019-10-04	100	100
2019-10-05	100	100
2019-10-06	100	100
2019-10-07	100	100
2019-10-08	100	100

Real Time Alerts

1st version ready

SeaDataNet

● SERVICEGROUP B2SAFE is **Critical**

SERVICEGROUP B2SAFE became Critical **at** 2019-04-26T15:13:59Z

The ENDPOINT affected is

● eudat-node5.esc.rl.ac.uk (b2safe.irods)

due to **METRIC** eu.eudat.b2safe.irods-crud

Summary:

CRITICAL: timed out after 50 seconds

Status of endpoints in B2SAFE:

- ● b2safe.b2services.grnet.gr (b2safe.irods)
- ● sdc-b2safe.csc.fi (b2safe.irods)
- ● eudat-node5.esc.rl.ac.uk (b2safe.irods)
- ● data.repo.cineca.it (b2safe.irods)
- ● finwhale.dkrz.de (b2safe.irods)
- ● sdc-b2safe-test.dkrz.de (b2safe.irods)

Questions? Email SeaDataCloud Monitoring Team

SeaDataNet

The ENDPOINT affected is

● eudat-node5.esc.rl.ac.uk (b2safe.irods)

It became Critical **at** 2019-04-26T15:13:59Z due to **METRIC** eu.eudat.b2safe.irods-crud

Summary:

CRITICAL: timed out after 50 seconds

Questions? Email SeaDataCloud M

the monitoring team

SeaDataNet

The ENDPOINT affected is

● eudat-node5.esc.rl.ac.uk (b2safe.irods)

It became OK **at** 2019-04-26T07:24:31Z due to **METRIC** eu.eudat.b2safe.irods-crud

Summary:

OK: writestatus = 0, liststatus = 0, getstatus = 0, removestatus = 0, removetrashstatus = 0

Questions? Email SeaDataCloud Monitoring Team

the monitoring team

Services Monitored

SDC Monitoring Survey

Scope of the Survey

To collect the basic information about the SDC Services. The information was used:

- to construct custom probes for the new SDC Services
- to upgrade existing probes in order to achieve more efficient monitoring
- to have a better (more detailed) picture of the SDC architecture and service dependencies. This will facilitate a more accurate way to calculate reliability and availability analytics

After completion of the survey, SDC monitoring team will be in contact with the service administrator(s) to fine tune the design and development process of the monitoring probes.

SDC Monitoring Survey

Statistics

facts

20

answers

participants

3 new

services

monitored

all Working

Updated Reports

A/R

Status

Alerts

Services from Survey

Status

1. SPARQL (NVS)
2. REST (NVS)
3. XML(NVS)
4. SEADATANET.org
5. CDI HTTP-API
6. MARINEiD
7. EDMO Search
8. EDMERP Search
9. CDI Import Manager
10. CDI Import Manager Dashboard
11. EDMO Sparql
12. EDIOS GUI
13. CDI GUI
14. EDMO CMS
15. EDMERP CMS
16. product catalog (sextant)
17. product download
18. SOAP-webservices that offer CSRs
19. SDN-DOD
20. Cruise Summary Report Inventory (CSR)

Core Services

Core Services

Marine ID

Homepage

RSM

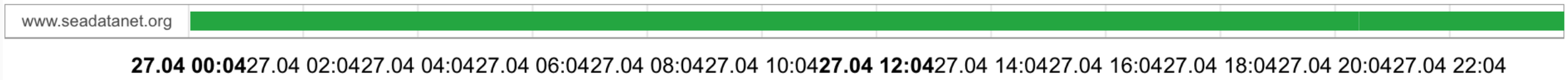
B2SAFE
Replicated Data

B2ACCESS
Authentication

B2STAGE
API Server

SEADATANET.org

Check the Site 1 https://www.seadatanet.org



entries

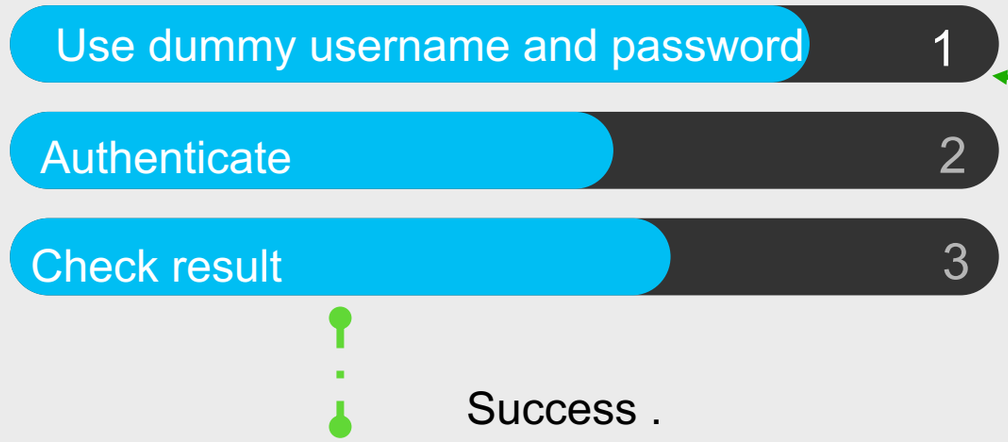
Month	2019-12		2020-01		2020-02		2020-03		2020-04	
	Av	Re	Av	Re	Av	Re	Av	Re	Av	Re
www.seadatanet.org	100	100	100	100	100	100	100	100	100	100
	Av	Re	Av	Re	Av	Re	Av	Re	Av	Re

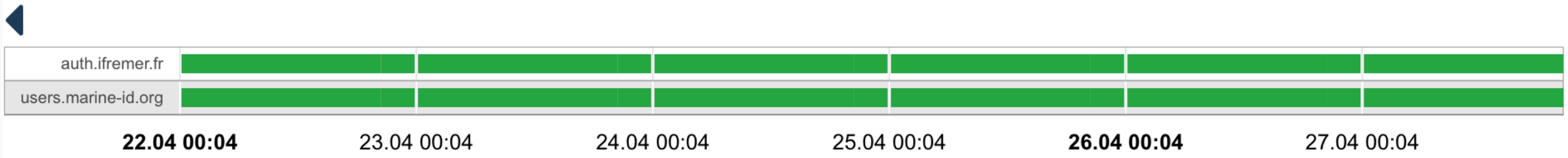
SeaDataCloud

check liveness

Marine ID

User
Credentials





entries

Month	2019-12		2020-01		2020-02		2020-03		2020-04	
	Av	Re	Av	Re	Av	Re	Av	Re	Av	Re
eu.seadatanet.org.login	100	100	100	100	100	100	98.72	98.72	100	100
	Av	Re	Av	Re	Av	Re	Av	Re	Av	Re

Vocabularies

SPARQL [NVS]

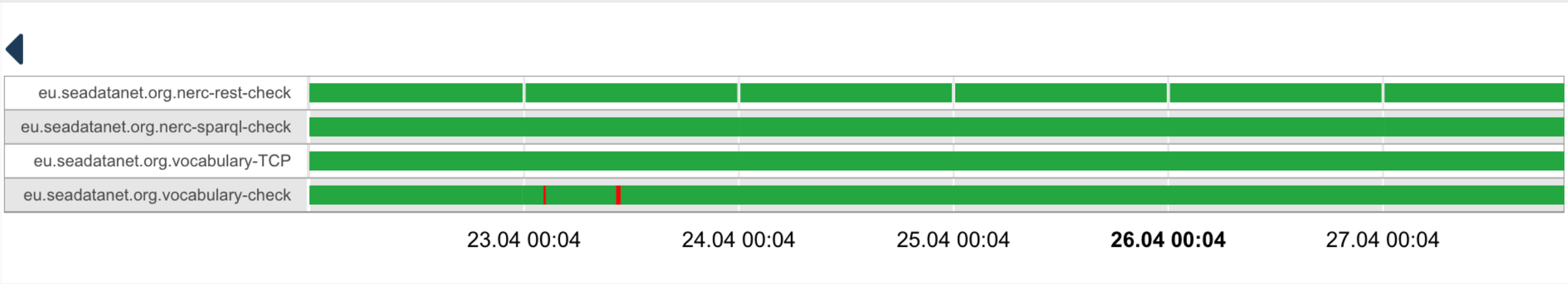
SPARQL query search

SPARQL is standard query language for interrogating knowledge stores such as NVS. The SPARQL endpoint may be found at https://vocab.nerc.ac.uk/sparql from where queries may be entered directly and the return format chosen.

1. Reads a SPARQL query in string format
2. Converts it in URL
3. Performs the query
4. Expects a predefined string to be returned.

Arc minutes

```
prefix
skos:<http://www.w3.org/2004/02/skos
/core#>
 select * where {
<http://vocab.nerc.ac.uk/collection/P06
/current/UAMN/> skos:prefLabel ?b .}
```

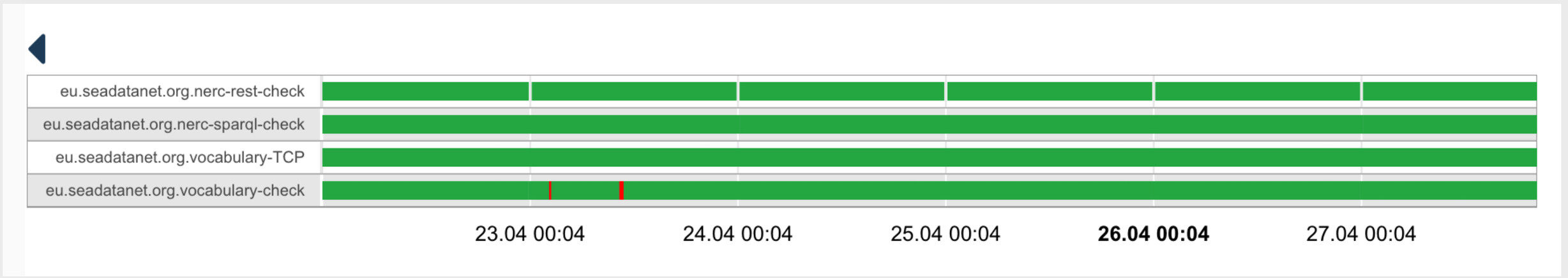


XML (NVS)

1. Reads the parts of final path
2. Converts it in URL
3. Performs the request
4. Validate XML and checks the result

http://vocab.nerc.ac.uk/collection

The XML code is VALID - The string exists



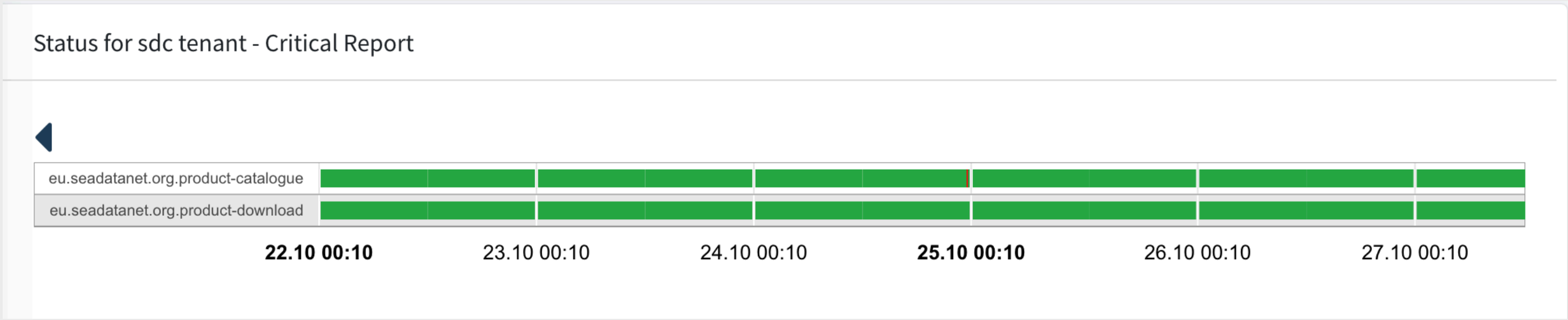
Other Services

SEXTANT

SEXTANT product[s]

Sextant is a marine and coastal Geographic Data Infrastructure (GDI) that aims to document, disseminate and promote a catalogue of data relating to the marine environment.

Access to product catalog (sextant)	1
Check product download	2

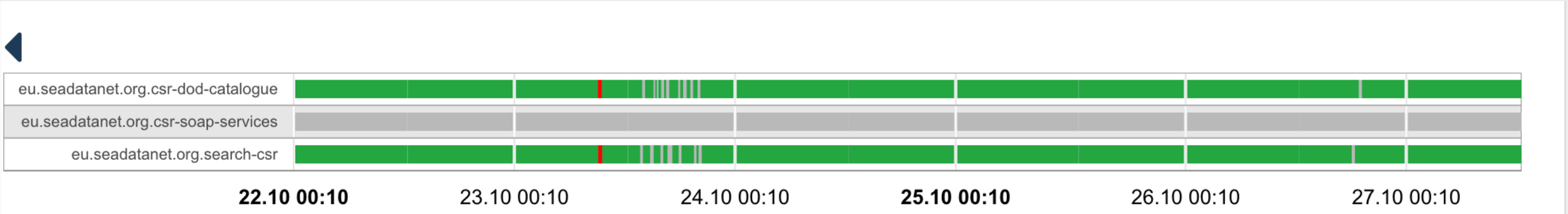


CSR

CSR Related checks

Sextant is a marine and coastal Geographic Data Infrastructure (GDI) that aims to document, disseminate and promote a catalogue of data relating to the marine environment.

- SOAP-webservices that offer CSRs — 1 — is a XML-document
- DOD-Catalogue Service check — 2
- Cruise Summary Report Inventory — 3 — Check if exists



EDMERP

EDMERP GUI and Webservices

Check if search page is online 1

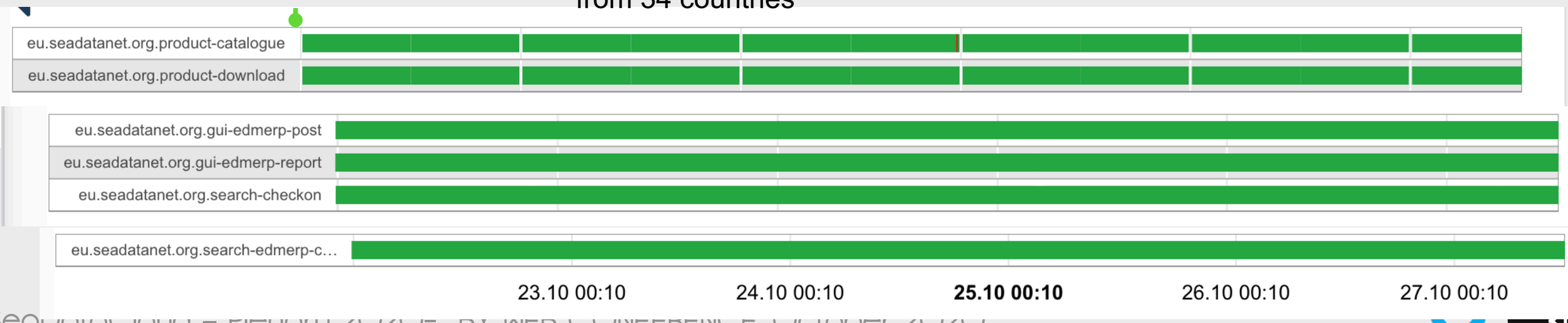
Check if UI page is online 2

Post 10233 and expect string 3

Check report page for content 4

Predefined urls and data

The SeaDataNet pan-European infrastructure has been developed by NODCs and major research institutes from 34 countries'



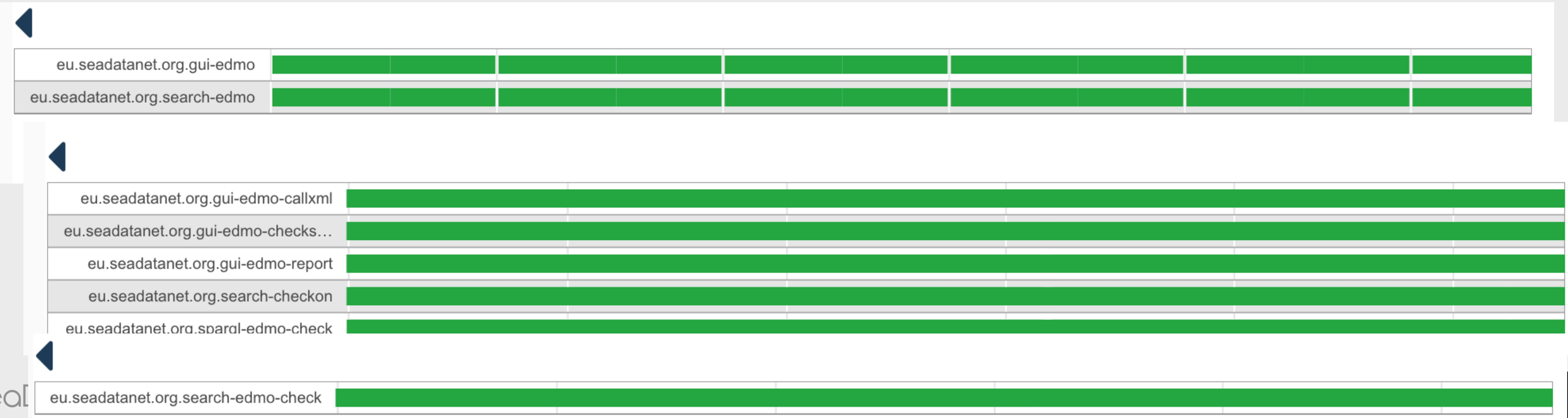
EDMO

EDMO user interface & Search

1. Check if search is online
2. Check if page is online
3. Get 3051 report and check string if contains a call to xml.
4. Check that xml contains predefined string
5. Check report page for content

Predefined urls and data

The Hellenic Centre for Marine Research is the national laboratory of



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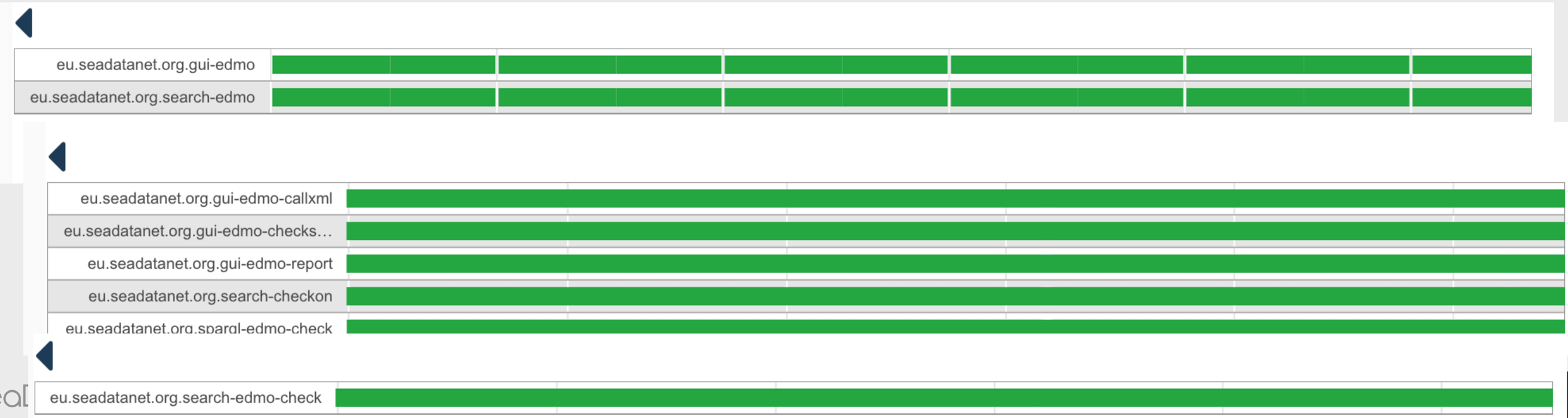
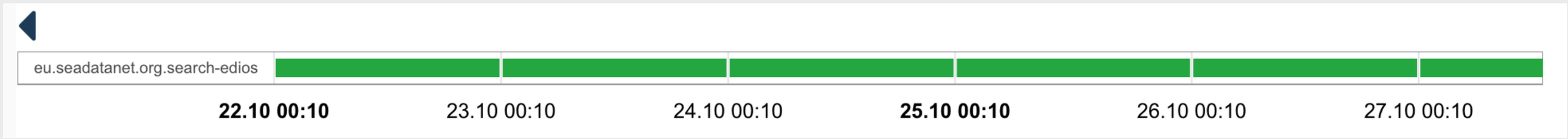


EDIOS

EDIOS Search

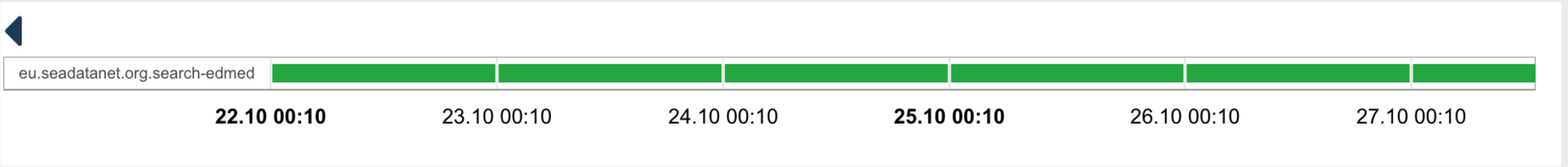
Check if search is online 1

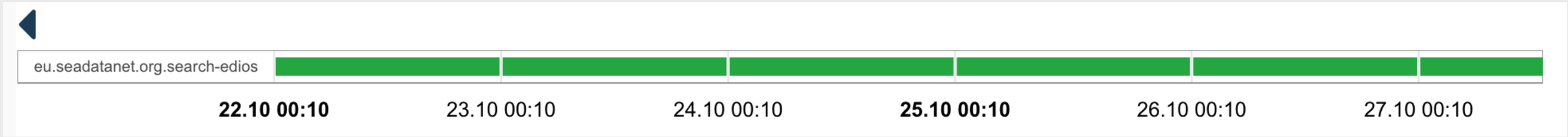


EDMED

EDMED Search

Check if search is online 1

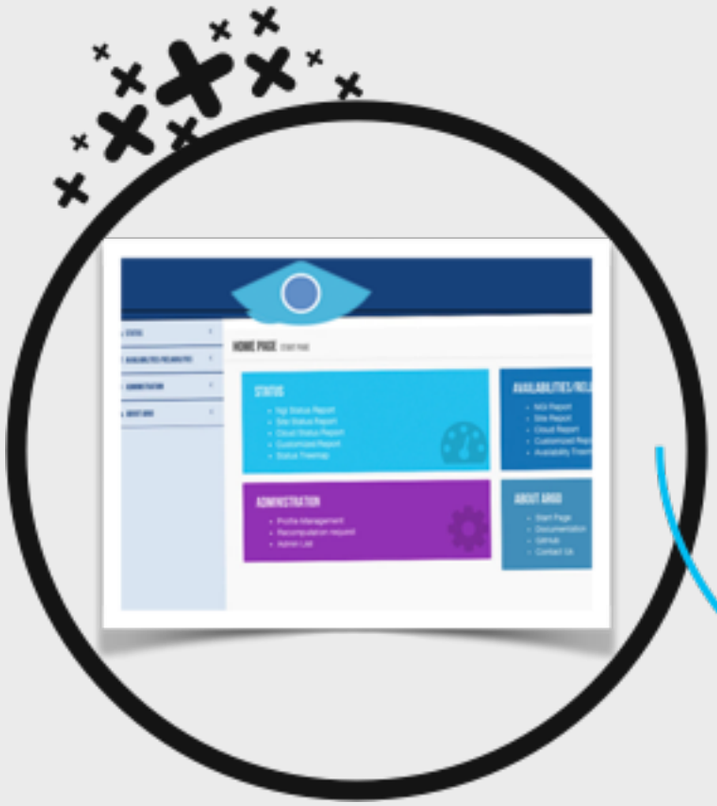




EUDAT

Infrastructure

EUDAT Services



B2ACCESS
Authentication

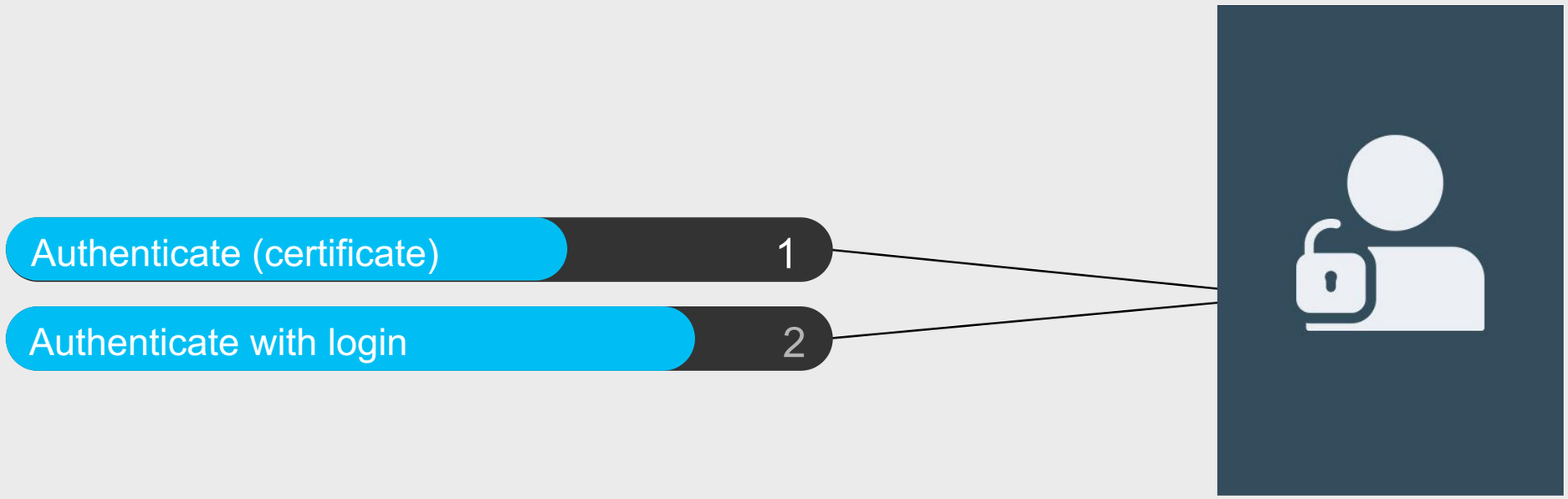
B2STAGE
API Server

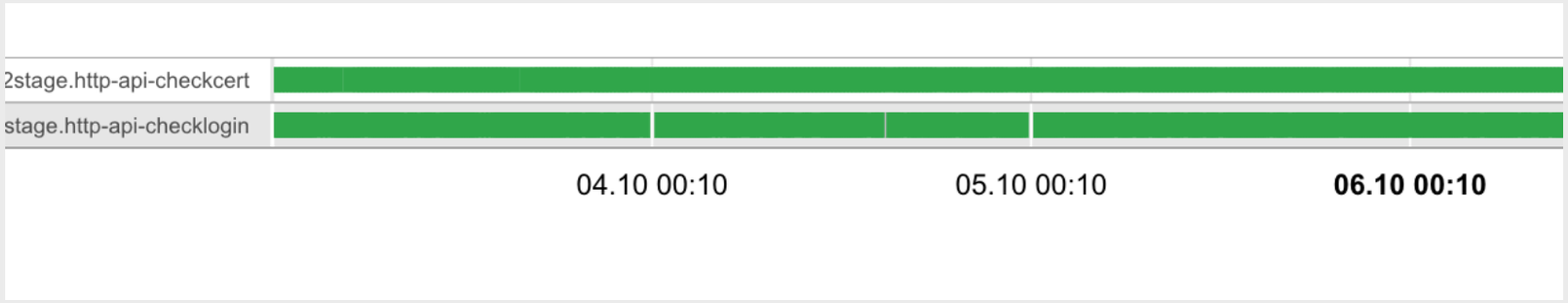
B2SAFE
Replicated Data

B2HANDLE
PID

B2ACCESS

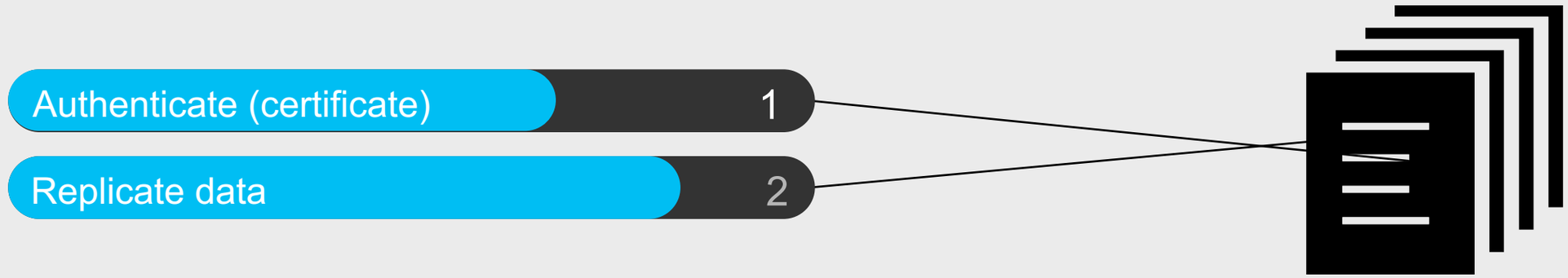
Authenticate





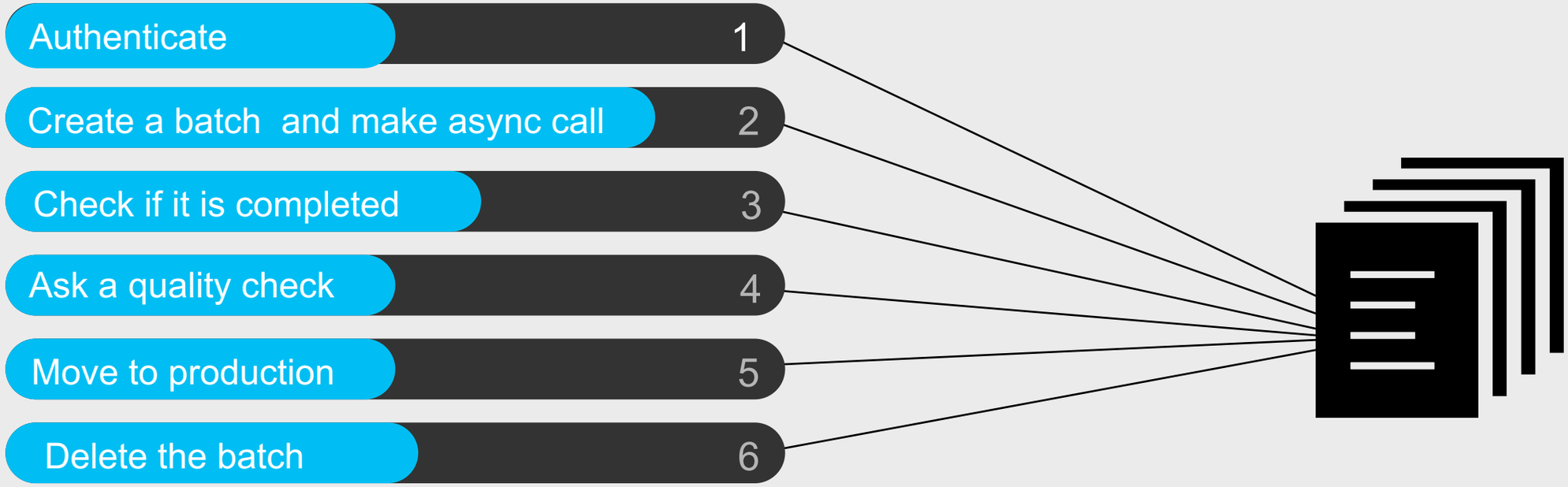
B2SAFE

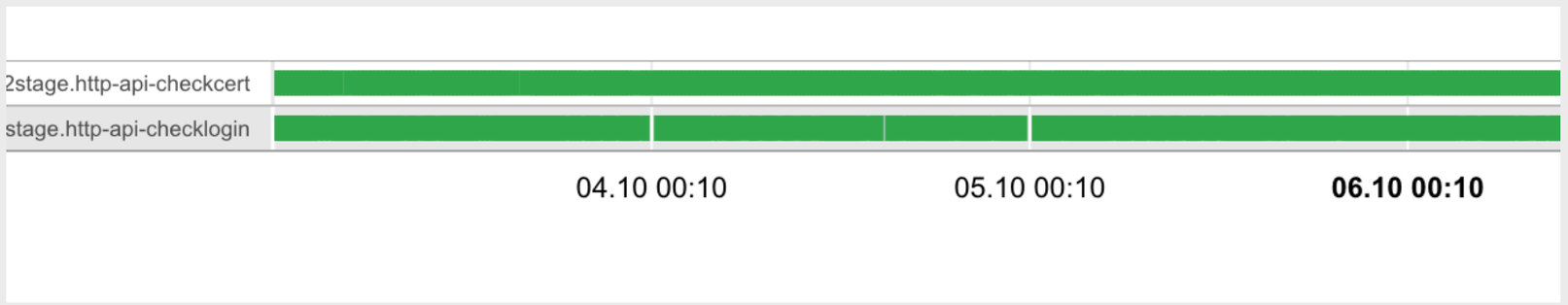
Store and Replicate



CDI HTTP-API

Ingestion workflow





CDI HTTP-API

UNRESTRICTED ORDER WORKFLOW

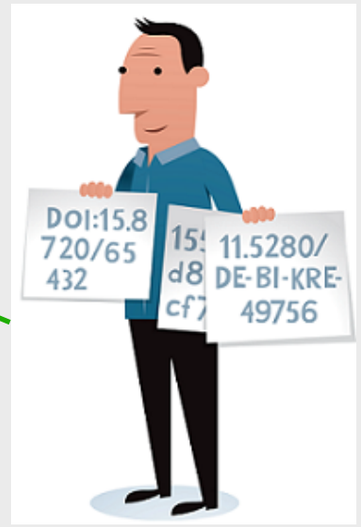
create an order request 1

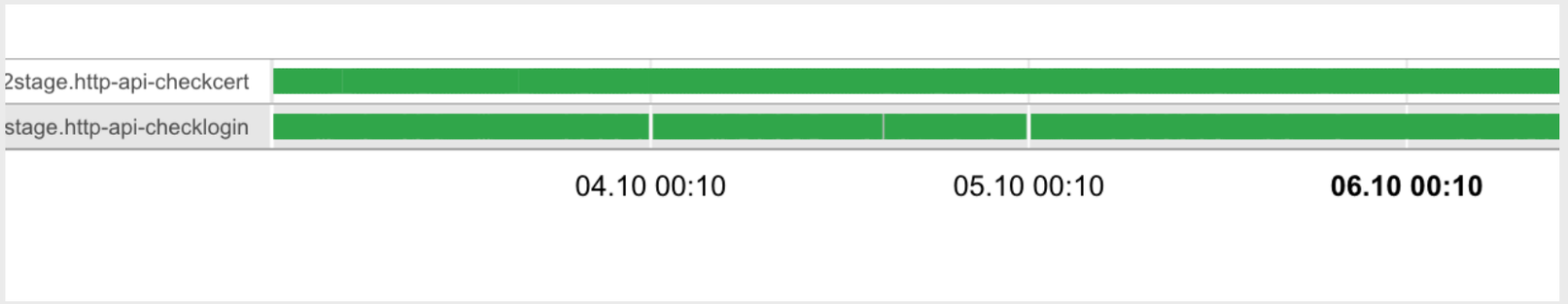
Check if it is completed 2

Download the zip from URL 3

Delete the order 4

List of PIDs





Upstream Services

Upstream Services

SeaDataNet CDI discovery, shopping basket mechanism, and RSM service components

- Replication Managers
- RSM Service
- Import Manager

EUDAT Services

- EUDAT B2SAFE replication software store copies of local SeaDataNet files
- EUDAT PID

Replication manager

Latest Version 1.0.47

65

replication managers monitored

Latest Version 1.0.47

21	1.0.47
5	1.0.46
12	1.0.45
1	1.0.44
7	1.0.43
7	1.0.39

Is part of the new SeaDataCloud ordering system. it communicates with three other components:

- MARIS Import Manager (IM –New component) and
- Request Status Manager (RSM –already existing component)
- EUDAT (cloud)

Replication manager

Latest Version 1.0.47

65

replication managers monitored

Latest Version 1.0.47

+

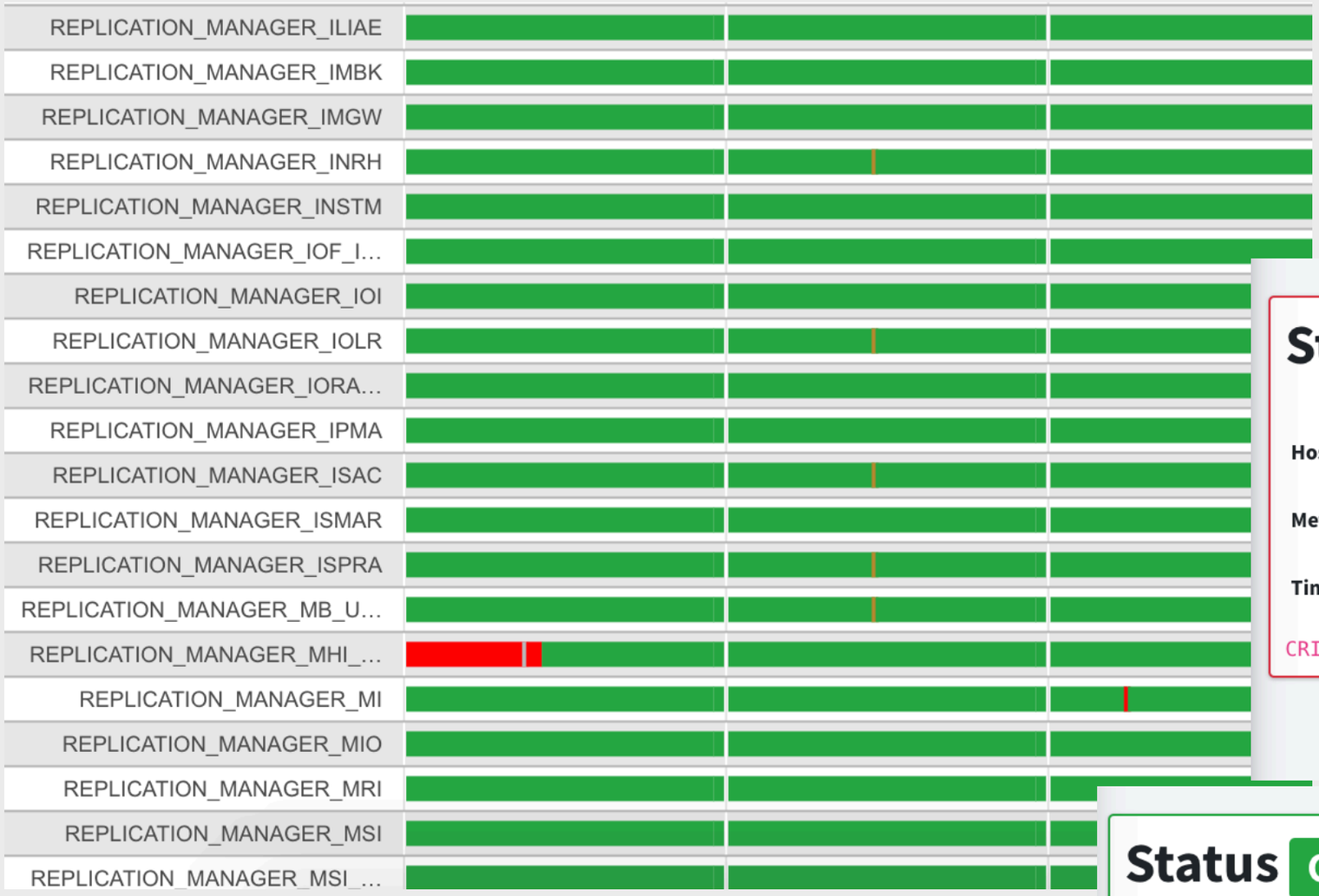
MARIS Import Manager

+

Request Status Manager

- Check is responding 1
- Check the health status 2
- Check the health status 3
- Check the health status 4

RM Status



Status CRITICAL

Host: 109.234.112.90

Metric: eu.seadatanet.org.replicationmanager-check-status

Timestamp: 2020-04-27T23:02:57Z

CRITICAL - Service unreachable

Status OK

Host : seadatanet.bodc.ac.uk

Metric : eu.seadatanet.org.replicationmanager-check

Timestamp : 2020-04-27T19:46:52Z

A HREF=https://seadatanet.bodc.ac.uk:443/ReplicationManager/ target=_blankHTTP OK: HTTP/1

RM Versions

Which version is used?

SeaDataCloud Replication Manager Version status

Name	URL	Edmo Code	Version	Date
Search 65 items...	Search 65 items...	Search 65 items...	Search 65 items...	Search 65 items...
HNODC	http://hnodc-dm.ath.hcmr.gr/	269	1.0.47	2020-10-25T23:00:02Z
IGME-ES	http://rmsdn.igme.es/	310	1.0.45	2020-10-25T23:00:03Z
IMS-METU	http://144.122.146.192/	696	1.0.45	2020-10-25T23:00:03Z
IMBK	http://sdn.oceanography.me/	2432	1.0.47	2020-10-25T23:00:03Z
MSI	https://seadatanet.msi.ttu.ee/	713	1.0.47	2020-10-25T23:00:04Z
NIMRD	http://sdnrm.rmri.ro:8080/	697	1.0.39	2020-10-25T23:00:04Z
OSU-SBR	http://seadatanet.sb-roscoff.fr/	521	1.0.45	2020-10-25T23:00:04Z
OASU	http://seadatanet.oasu.u-bordeaux.fr:8080/	1002	1.0.47	2020-10-25T23:00:05Z
MIO	http://sdcrm.mio.osupytheas.fr/	3078	1.0.45	2020-10-25T23:00:05Z
IMGW	http://seadatacloud.imgw.pl:8080/	193	1.0.47	2020-10-25T23:00:05Z


VRE

Downstream Services

In SeaDataCloud a group of advanced downstream services were deployed for users to take more advantage of all the available data resources and to facilitate users in their analytical processes. This is the Virtual Research Environment (VRE) that facilitates collaborative and individual research concerning using, handling, analysing and processing ocean and marine data into value-added data products which can be integrated, visualised and published using high level visualisation services.






MARINE iD

Virtual Research Environment

SeaDataCloud

The list of services

Legal Notice Privacy Policy

SeaDataCloud

PAN-EUROPEAN INFRASTRUCTURE FOR
OCEAN & MARINE DATA MANAGEMENT

Dashboard Contact Help Bg Themis Zamani

Dashboard

Private workspace

Jupyter Notebook

Survey

webODV

DIVA Jupyter Notebook

DIVA HP Jupyter Notebook

VIZ

ERDDAP

BioQC

Main Components

What is actually monitored ?

In order to use VRE you have to login.

- B2ACCESS
- MarineID

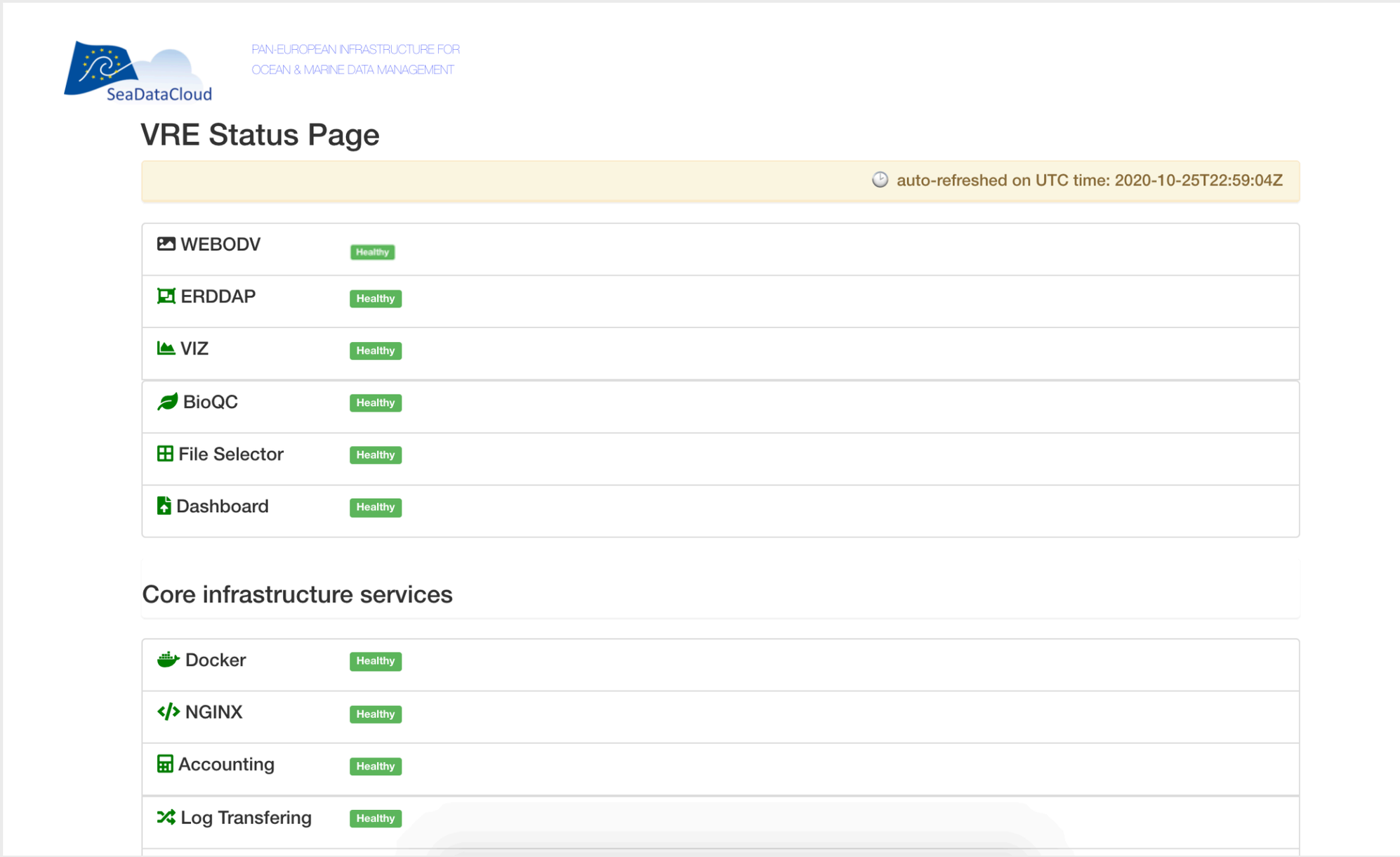
Once you are logged in

a) Dashboard should work
   - Dashboard check
b) Private Workspace should be available
   - Private Workspace check
c) The Services should be available
   1. WebODV (extractor, Explorer)
      - WebODV check
   2. DIVA and DIVA HP
      - DIVA check
   3. erddap
      - ERDDAP check
   4. BIOQC
      - BIOQC check
   5. VIZ
      - VIZ check

Monitoring Status Page

Is the service wokring in VRE ? Can I use it?

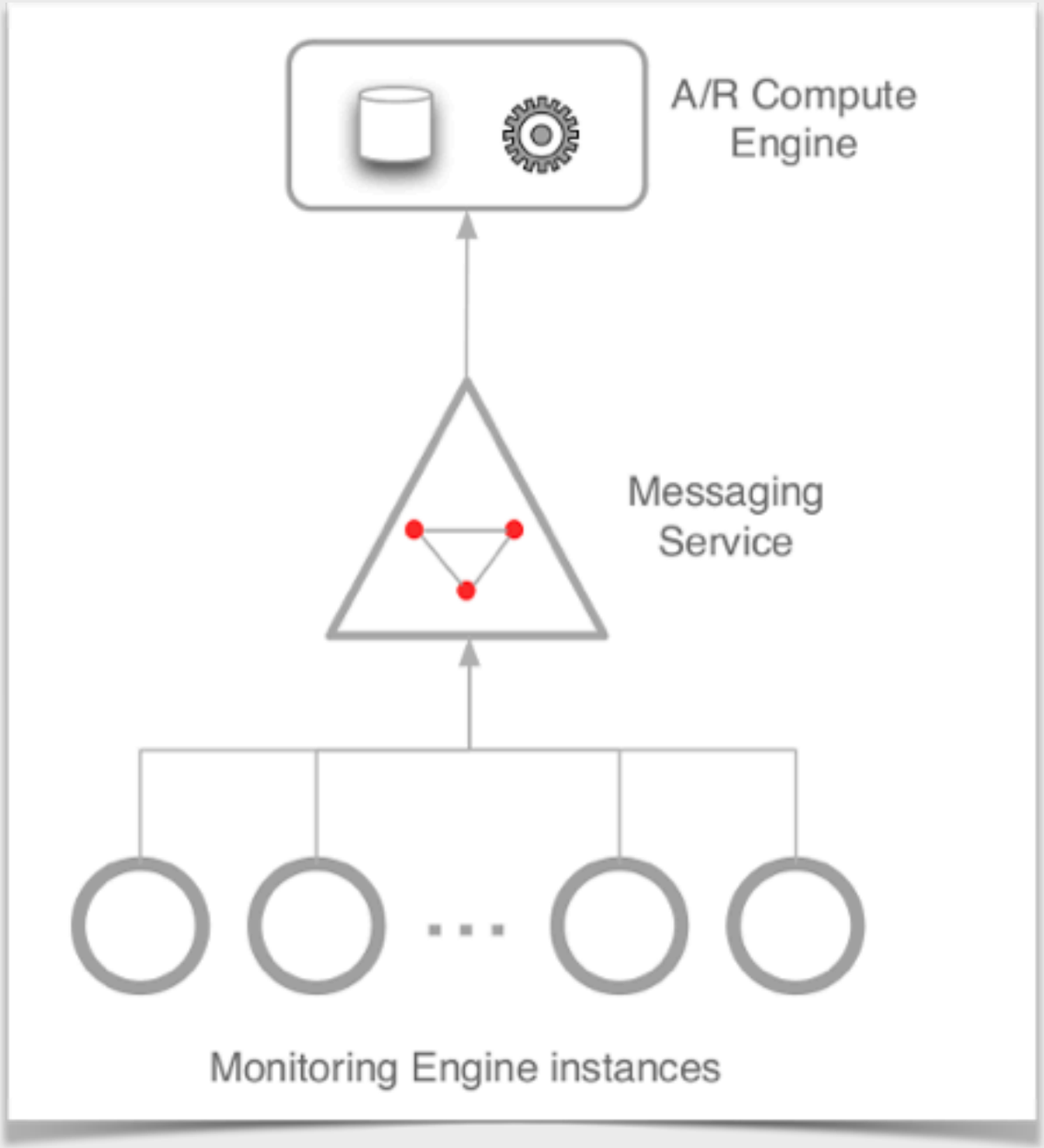
https://vre.seadatanet.org/status/



High Availability

HA

Multiple Instances



A second instance of monitoring engine is deployed in OGS.

Now, we have an monitoring service in High-Availability mode which means no single point of failure.

A fully redundant monitoring system and a service level that guarantee's the best availability.

Documentation

UI Elements

SeaDataNet

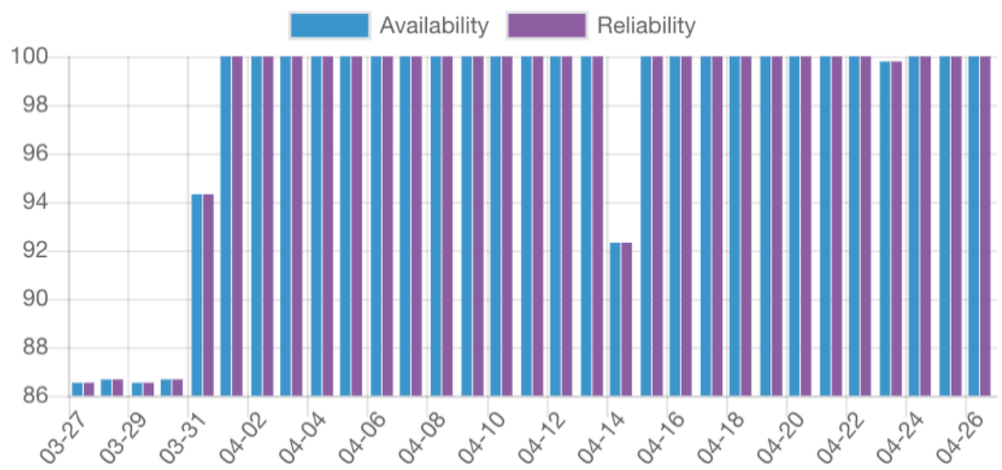
SDC Critical report

PROJECT	1
SERVICEGROUPS	15
SERVICE TYPES	15

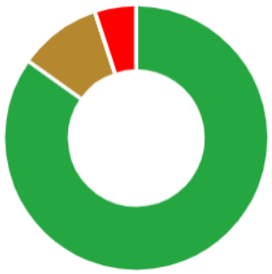
Availability
97.83

Reliability
97.83

Availability/Reliability - Last 30 days



Last statuses



- Ok : 67
- Warning : 8
- Unknown : 0
- Critical : 4
- Missing : 0

Last Status Checks

Show 10 entries Search:

	Endpoint (Group)	Metric	Timestamp	
CRITICAL	Replication_Manager (seadatanet.oasu.u-bordeaux.fr)	eu.seadatanet.org.replicationmanager-check	2020-04-26T15:00:19Z	
CRITICAL	Replication_Manager (194.177.194.192)	eu.seadatanet.org.replicationmanager-check	2020-04-26T14:59:54Z	

Downtimes

Show 10 entries Search:

Site	Type	Start (UTC)	End (UTC)	
BSH	OUTAGE	2020-03-11 14:00	2020-03-11 19:00	
BSH	OUTAGE	2020-02-14 07:00	2020-02-15 00:00	
GRNET	OUTAGE	2019-11-04 13:00	2019-11-04 23:00	

Documentation

Availabilities/Reliabilities | Status | Downtimes | Dashboard

Custom report | Global information

Global information

The SDC monitoring infrastructure div

- The first category includes the C
- The second category includes a

Core Services

The first category 'Core Services' consi

1. The Infrastructure Service Group
2. The Homepage Service Group
3. The Downstream Service Group

The above 3 Service Groups, should a

Availabilities/Reliabilities | Status | Downtimes | Dashboard | Custom report

Availabilities/Reliabilities

Availability/Reliability

Availability: Service Availability is the fraction of time a service was in the UP Period during the known interval in a given period.

Reliability: Service Reliability is the ratio of the time interval a service was UP over the time interval it was supposed (scheduled) to be UP in the given per

From this page you can see the latest values for monthly repoorts for A/R for your infrastructure. A report is actually a configuration file that is used to desc check, the metrics you want to use for each service and the grouping of the services.

The report may contain A/R values based on the group you chose in the Configuration Management Database :

- **Sites** : List of services that participate in the site
- **Project**: A list of services that are used in a project.

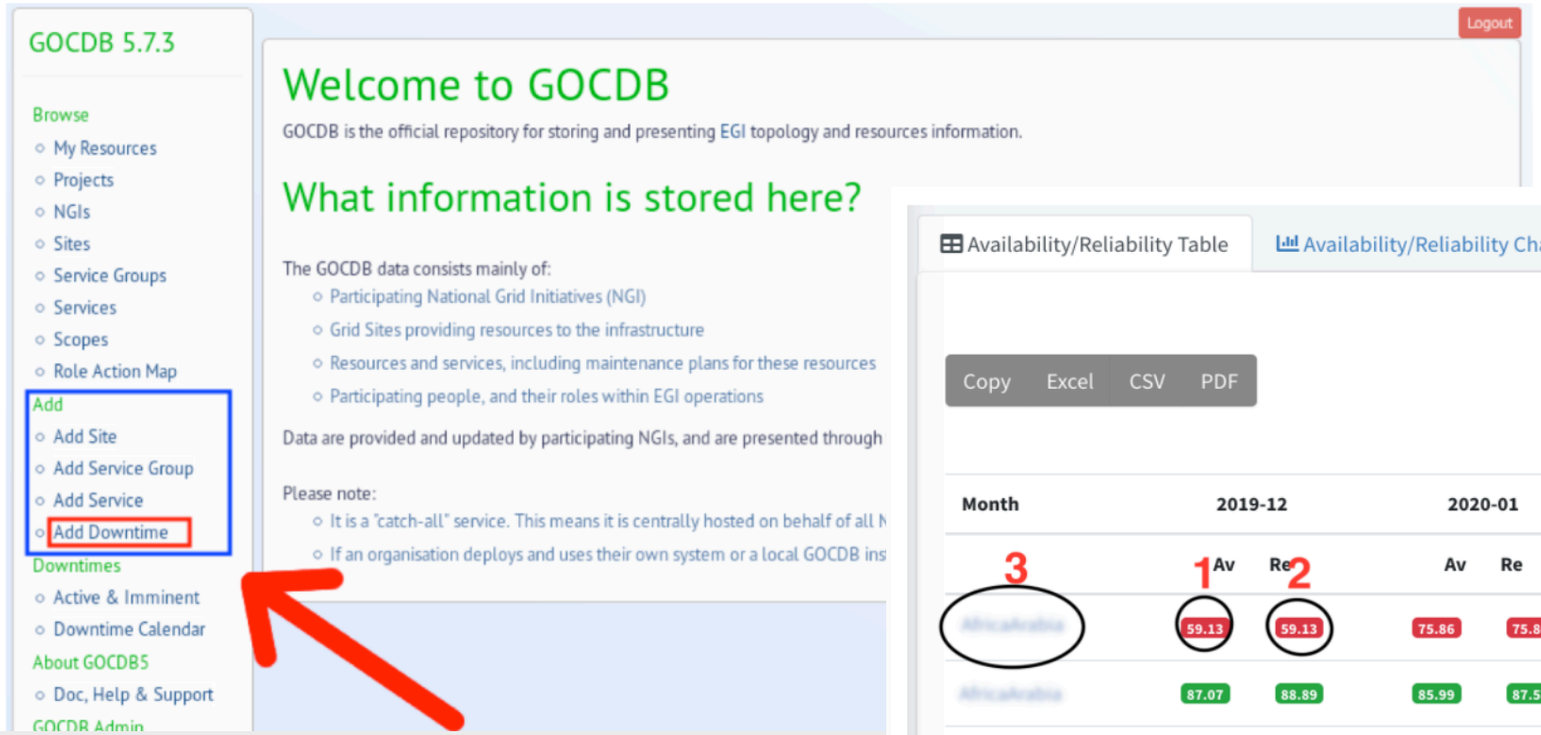
Availability/Reliability Table

Documentation

Information about all items in the UI

- downtime classification (scheduled/unscheduled) is determined automatically

The first thing you have to do is to select the "Add Downtime" on the menu on the left. (see image below)



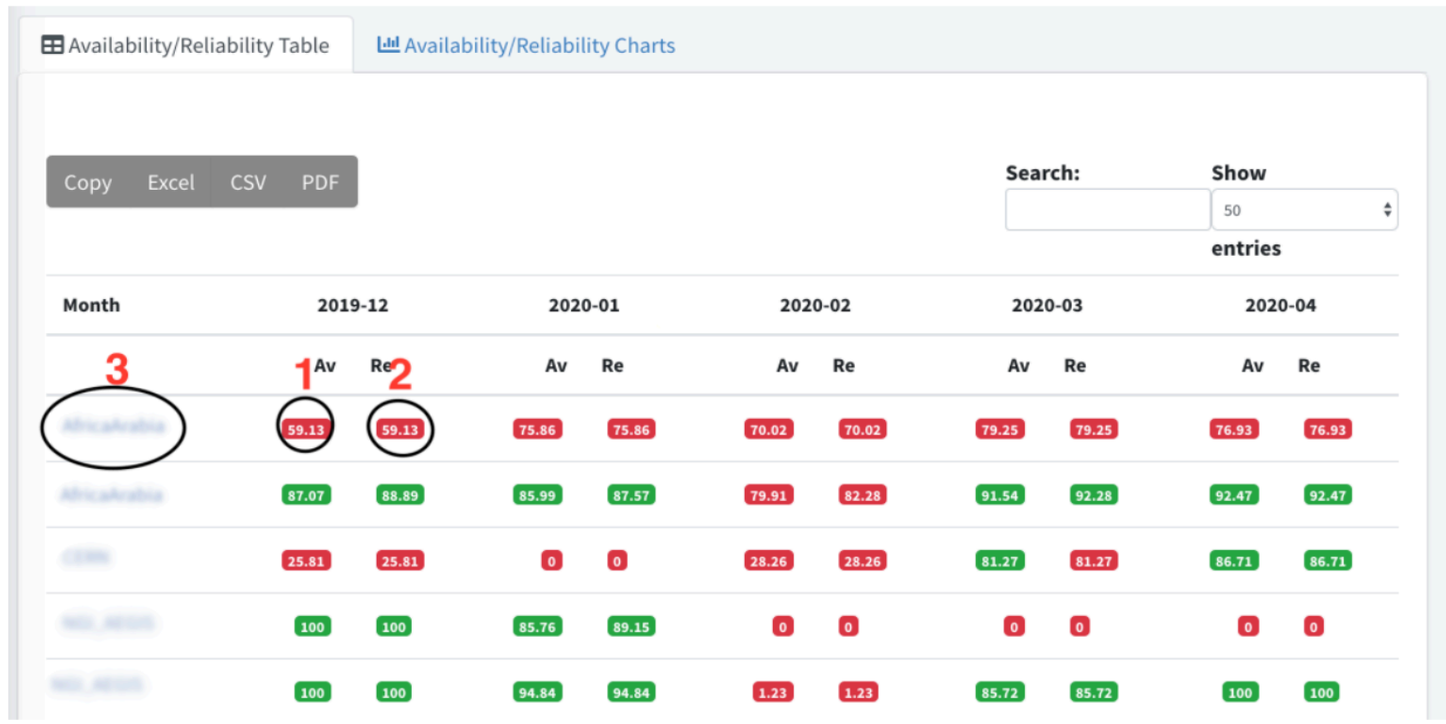


Image 1: Availability/Reliability Table

Other Functionalities

All the pages under this section offer the functionality of searching in

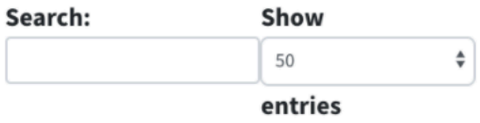


Image 3: Search

Daily Availability/Reliability Table

The Daily Availability/Reliability Table display information about:

- **Availability**
- **Reliability**
- **Unknown**: the period (start_time --> end_time) in which a specific service / service endpoint was in an unknown Status. In t
  day.
- **Downtime**: the period (start_time --> end_time) in which a specific service / service endpoint was in scheduled downtime. I
  downtime during this day.

QuestionTI

Thank you

ME

Title Text