Monitoring in EOSC and NI4OS

On-Boarding : Train the trainers event

Themis Zamani, GRNET

What are we going to talk about

- On-boarding procedure
- Monitoring NI4OS
- Ready for onboarding? What an SP should do
- Monitoring: The Basics
- Monitoring: The Topology
- Monitoring: The Metrics
- Monitoring: The Profiles

On-boarding procedure

- On-boarding of a resource (service or repository) into the EOSC includes all practical activities taken to incorporate a research resource into the EOSC federation.
  - integration with monitoring

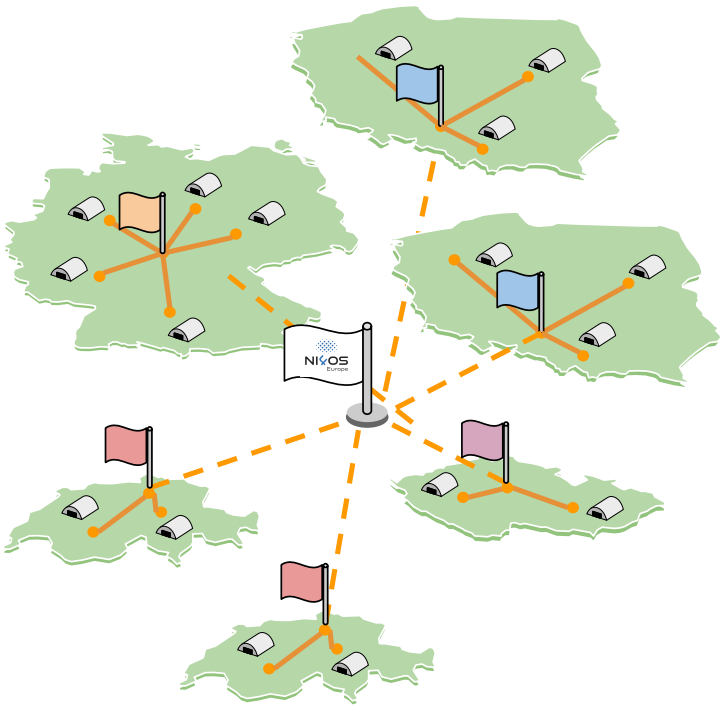
- In NI4OS we use the ARGO Monitoring System to monitor the Services.

Monitoring NI4OS

BUILDING NATIONAL INITIATIVES FOR OPEN SCIENCE IN EUROPE

Monitoring based on User experience so as to compute:

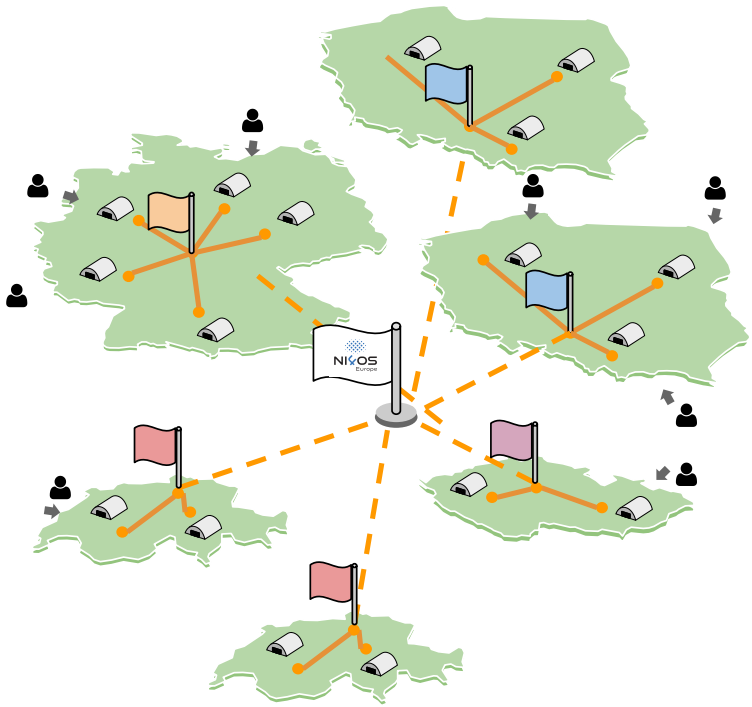
- Status
- Availability
- Reliability



Monitoring NI4OS

BUILDING NATIONAL INITIATIVES FOR OPEN SCIENCE IN EUROPE

Users / Researchers all around the world will have access to NI4OS services.



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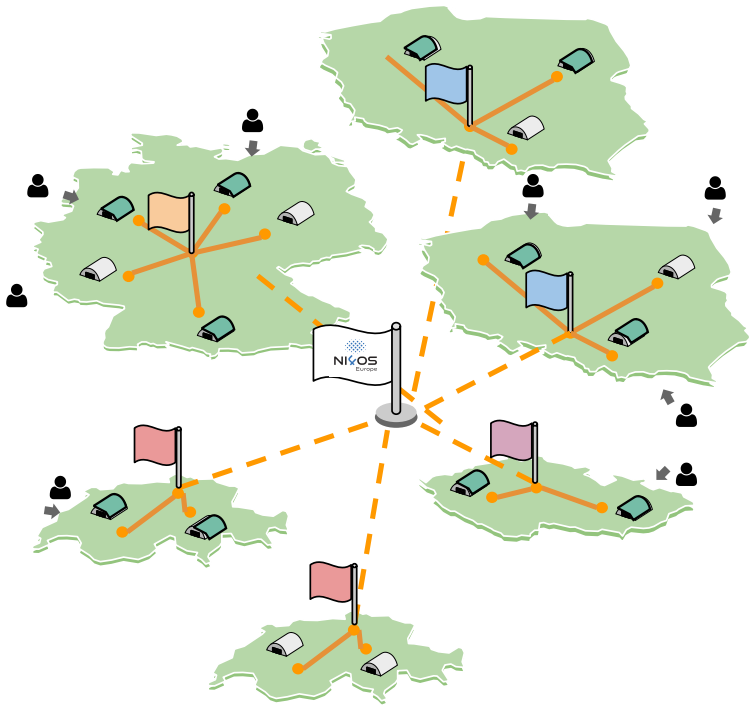

Monitoring NI4OS

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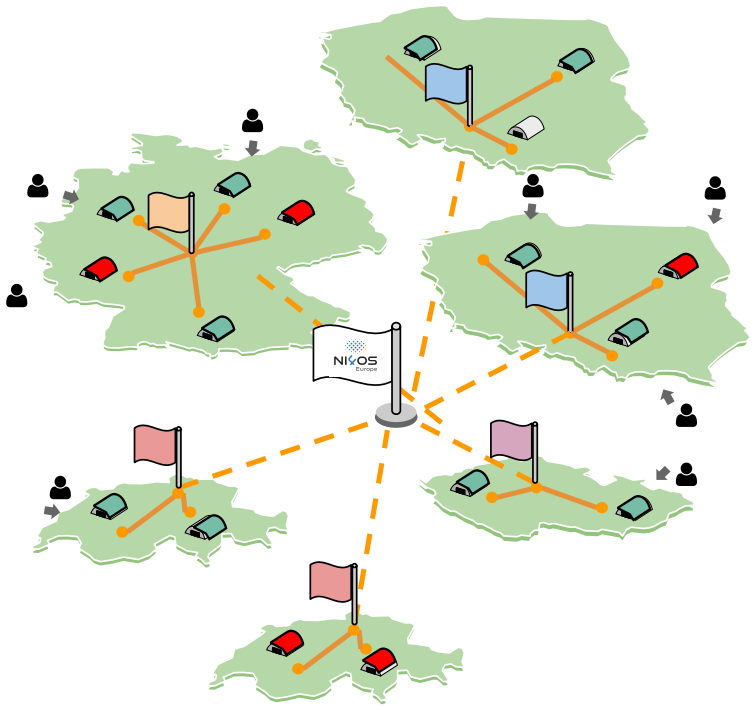

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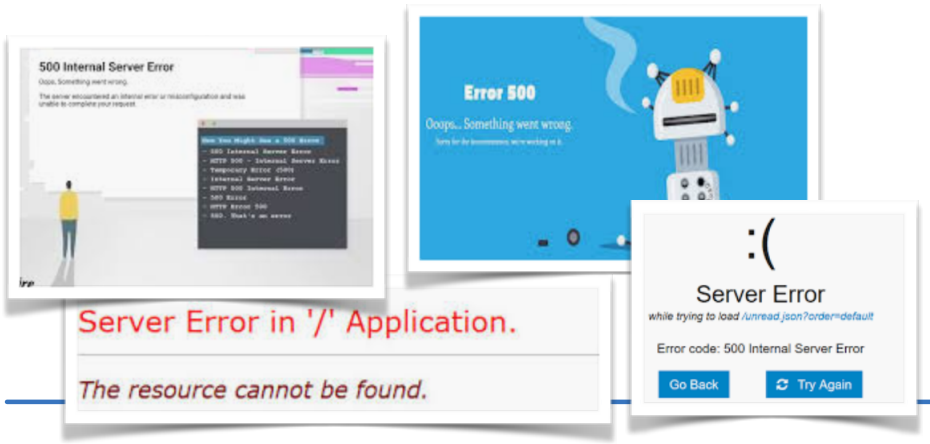

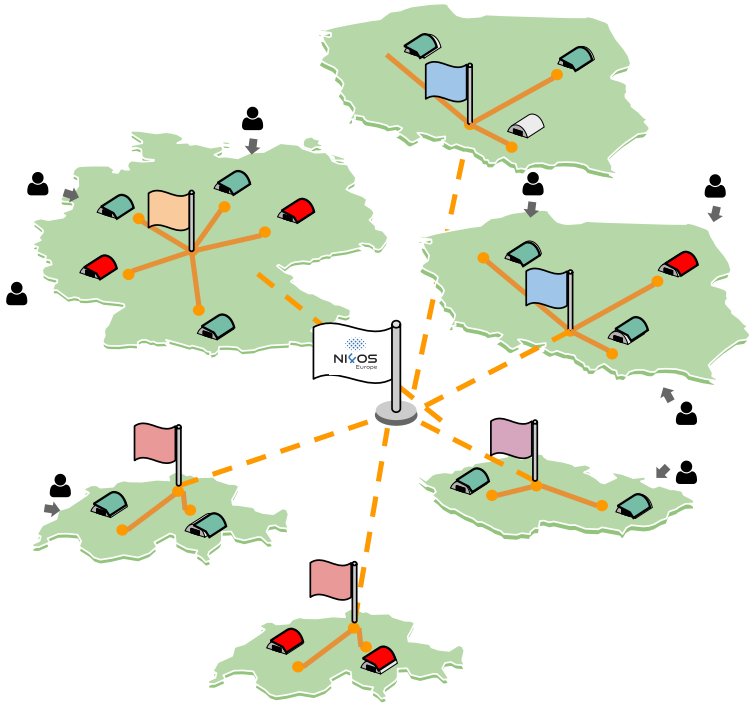

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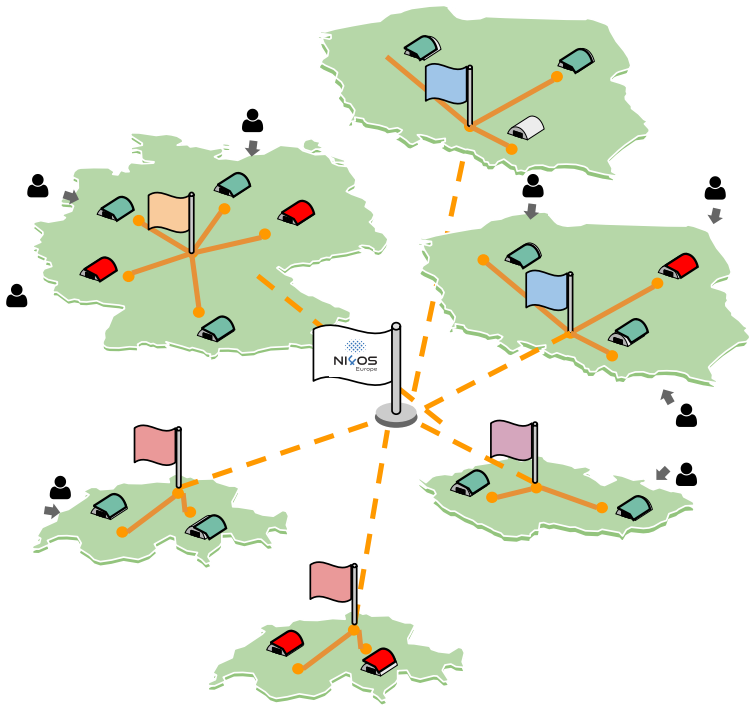
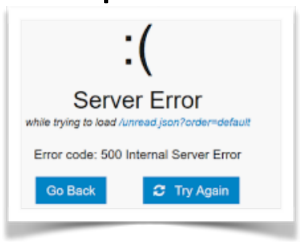


The problem



Service remains unavailable longer than expected.

Monitoring NI4OS

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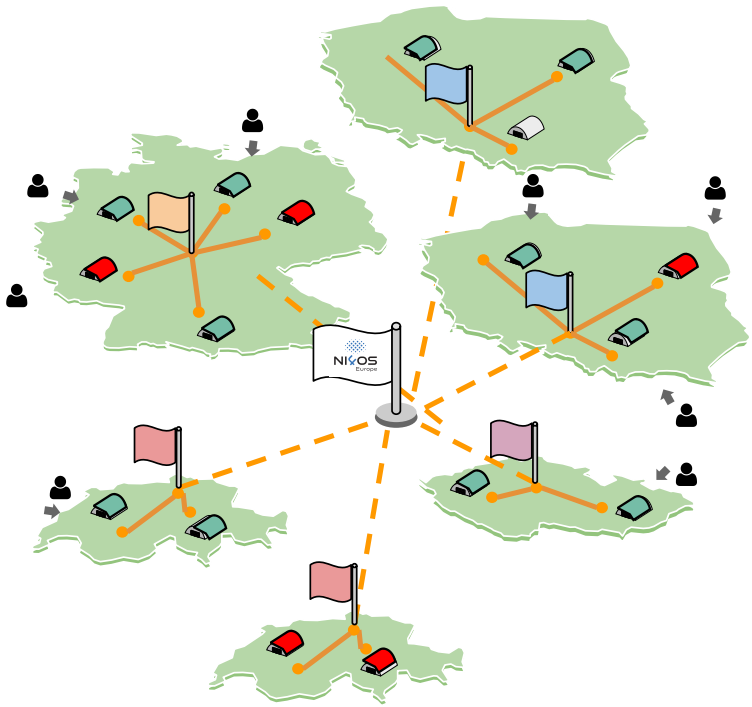
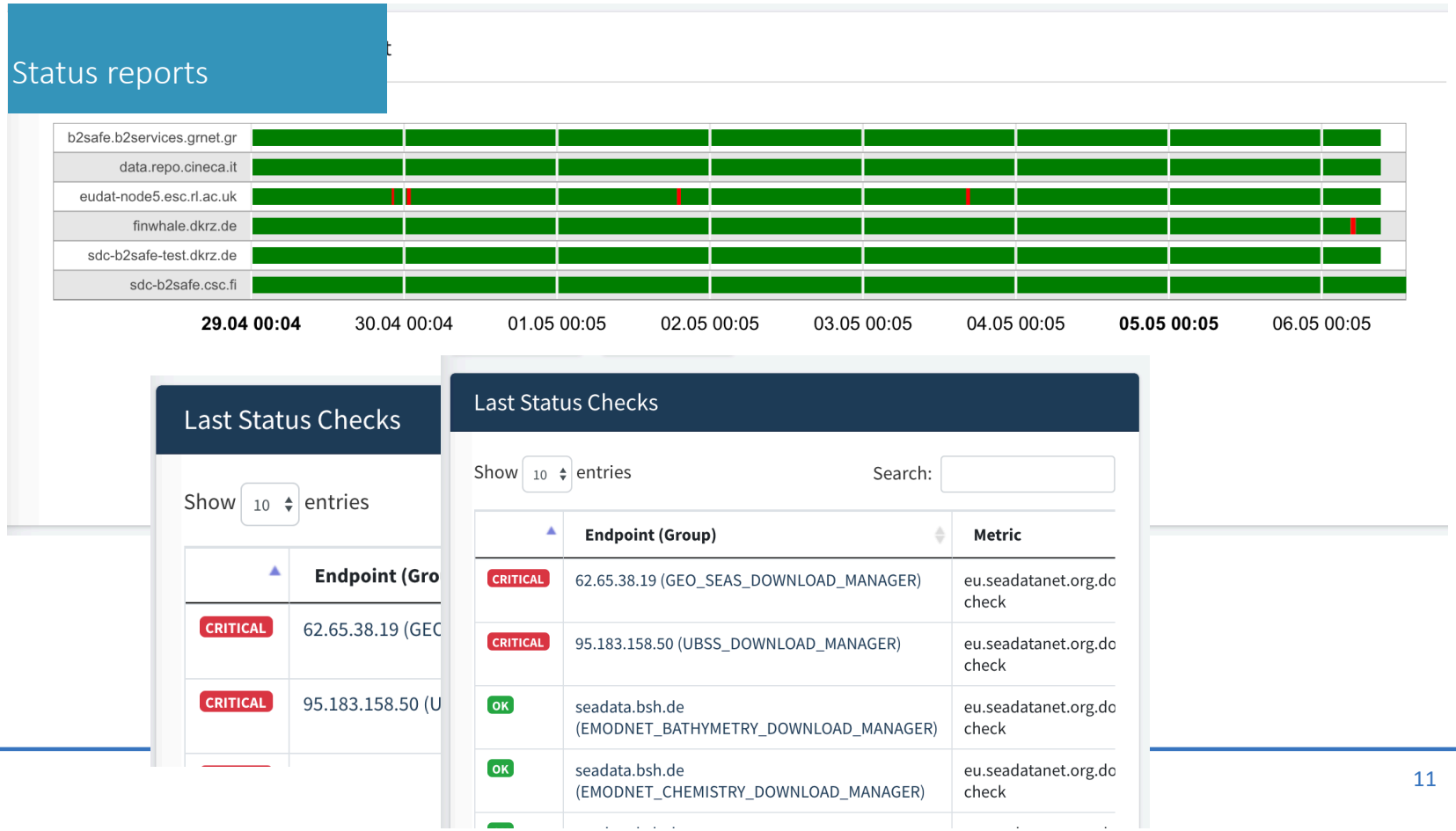


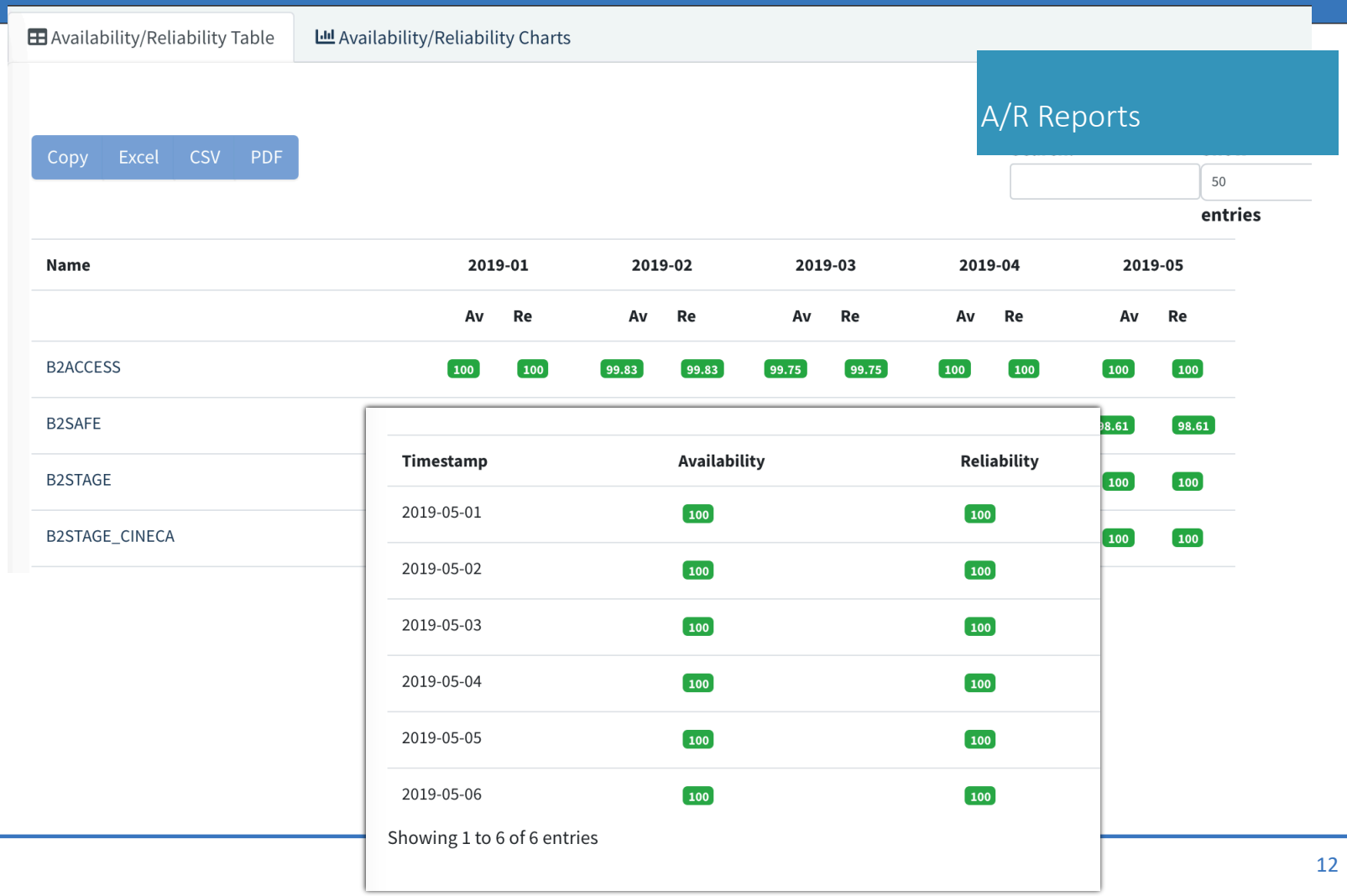
The solution

Monitor | Analyse | Report | Alert

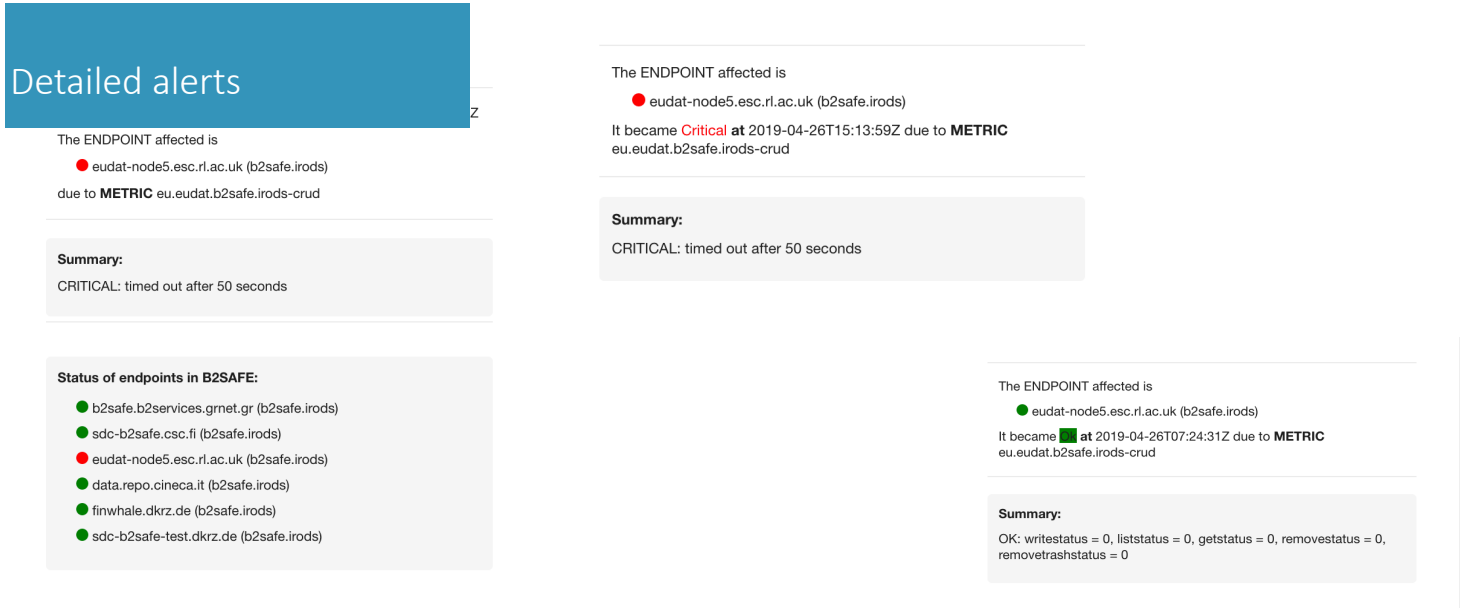
Real Time Status Report



A/R Reports


Availability/Reliability Table
Availability/Reliability Charts
A/R Reports
Copy
Excel
CSV
PDF
50
entries
Name
2019-01
2019-02
2019-03
2019-04
2019-05
Av
Re
B2ACCESS
B2SAFE
B2STAGE
B2STAGE_CINECA
Timestamp
Availability
Reliability
2019-05-01
2019-05-02
2019-05-03
2019-05-04
2019-05-05
2019-05-06
Showing 1 to 6 of 6 entries

Real Time Alerts



ARGO is ready
Is your service

Ready for onboarding?

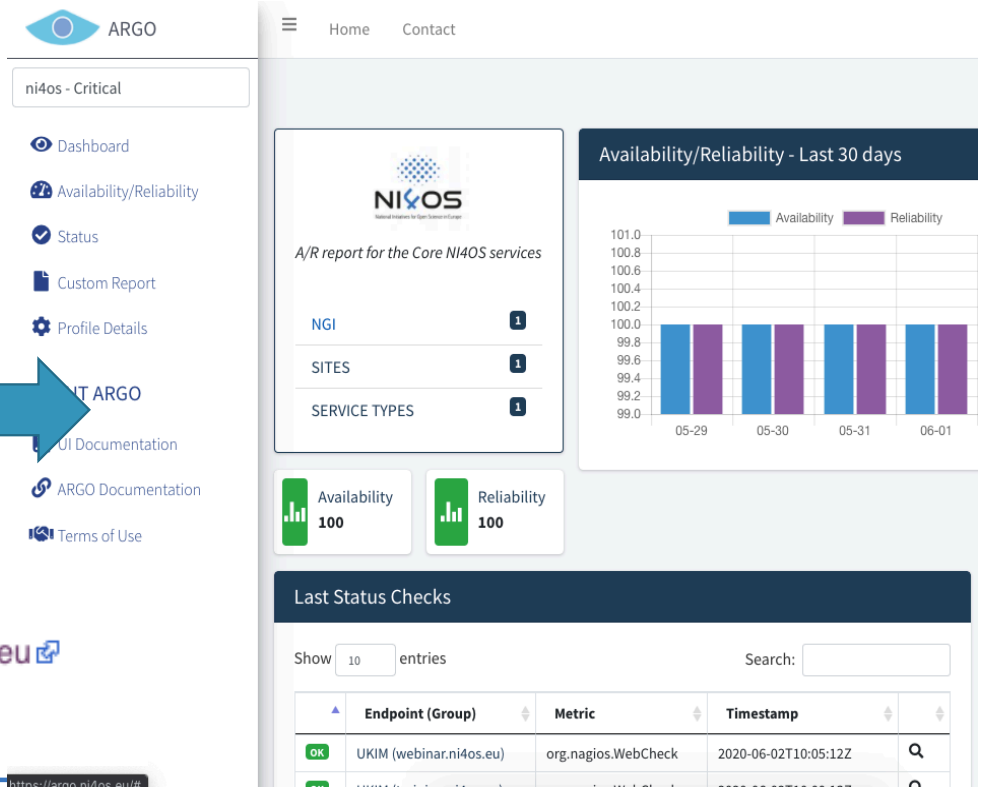
NIKOS Europe

What do we a need from a SP ?

Follow the Guidelines and View the Results.

Integration Guide for Service Providers at the WIKI

View the Results https://argo.ni4os.eu/



Monitoring guide for SPs

The ARGO Monitoring service provides a flexible and scalable framework for monitoring status, availability and re infrastructures with medium to high complexity. ARGO generates reports using customer defined profiles (e.g. for generation, ARGO takes into account custom factors such as the importance of a specific service endpoint and sc

ARGO Monitoring Service for NI4OS consists of production and development infrastructure. Production infrastruct generating reports and raising alarms for production-grade on-boarded services. Development infrastructure is us probes. Web UI can be found:

- Production: https://argo.ni4os.eu
- Development: https://argo-devel.ni4os.eu

Contents [hide]

1 Topology
  1.1 Topology Information
  1.2 Extra GOCDB attributes
2 Metrics
  2.1 Service probe
  2.2 Probe Development Process
3 Checklist
4 References

Main page
Recent changes
Random page
Help about MediaWiki

Tools

What links here
Related changes
Special pages
Printable version
Permanent link
Page information

Monitoring

The basics

The starting point from SP

Generic Service - (Repository service)

I am an SP and i want to start monitoring my service. Actually this is an onine repository at https://www.ni4os-repository.com that we run at GRNET.

Until we start using helpdesk

Send an email to : argo@ni4os.eu

The basic(s) from the Monitoring: main sources of truth

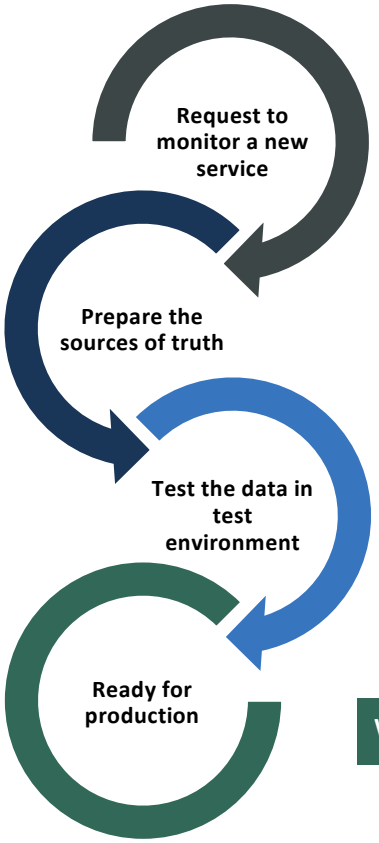
The topology of the infrastucture and the services it contains

Kind of tests (metrics) to execute for a given service

A list of dependencies that create profiles needed for the monitoring

1. How Services and associated tests are grouped into profiles that instruct monitoring instances what kind of tests to execute
2. how monitored items are grouped and form hierarchies

Lets see the process



The monitoring team receives a new request

The basic sources of truth (Topology, Metrics, Profiles) are collected

The monitoring team starts monitoring the service in devel instance to check that everything is running smoothly

When everything is ready the service goes on production

Monitoring

1) Topology: The topology of the infrastructure and the services it contains

Topology : 1st step

- Information about
  - the **monitored service(s)**
  - the **service types** they are running (ex. wiki)
  - the **service endpoints** of the service (ex. endpoint)
  - the way they are organized (ex. in groups of sites, in groups of services). Model different types of infrastructure architectures
  - the **service actors** (owners, admins)

Topology based on example

an online repository at https://www.ni4os-repository.com that we run at GRNET.

SITE	The organization responsible for the service.		GRNET
Service Type	Each *Service Type* can have a defined set of *metrics*, which are explicit tests that we check		repository
Endpoint	the combination of an hostname and Service Type		a repository at www.ni4os-repository.com uses port 443
Service actors	the people responsible for the service operation		Administrator: Stelios Papadopoulos steliospapa@grnet.gr Site Owner: Themis Zamani themis@grnet.gr Security: Manos Papadopoulos steliospapa@grnet.gr

The tool we use

- GOCDB is a configuration database at gocdb.ni4os.eu.

When adding service endpoint following fields are mandatory for monitoring service:

Production Level (Is this service in production?):

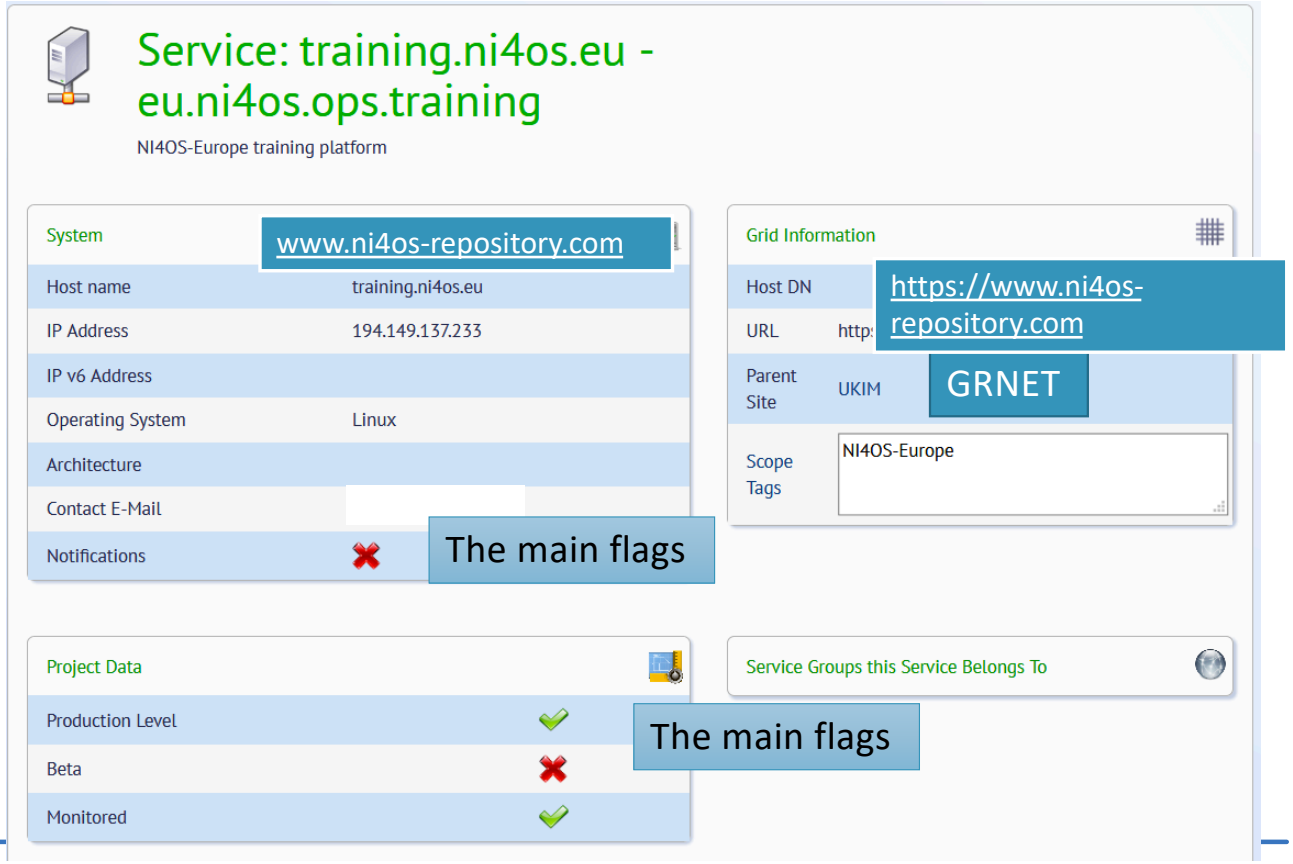
- Y = monitored on production & development infrastructure
- N = monitored only on development infrastructure

Monitored (Is this service monitored?)

- must be set to Y

Notifications (Do you wish to receive notifications about this service?)

- set to Y if you wish to receive alerts.

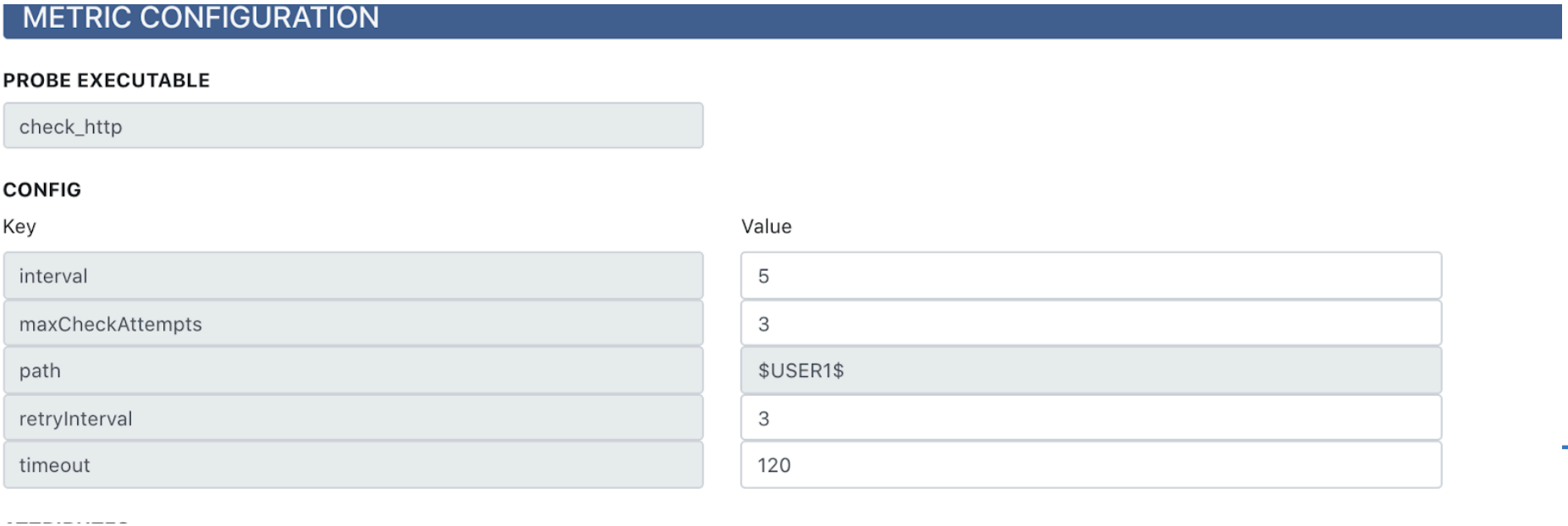


Monitoring

2) What to check : metrics

What to check : metrics

- A metric is a simple chunk of code that checks specific functionality of a given service
  - org.nagiosexchange.Portal-WebCheck: checks the http if it responds
  - eu.egi.CertValidity: checks the validity of a certificate



Metrics based on the example (first checks)

an onine repository at https://www.ni4os-repository.com that we run at GRNET.

Service Type

Each *Service Type* can have a defined set of *metrics*, which are explicit tests that we check

repository

https://www.ni4os-repository.com	First checks to start monitoring the service
Web service	Portal-WebCheck: checks the http if it responds
Under https	eu.egi.CertValidity: checks the validity of a certificate

Metrics based on the example (user perspective)

an onine repository at https://www.ni4os-repository.com that we run at GRNET.

Service Type

Each *Service Type* can have a defined set of *metrics*, which are explicit tests that we check

repository

https://www.ni4os-repository.com	From the user prespective
Login	Check the login functionality of the service
Upload a file	Check the upload functionality of the service

Create your service probe

Introduce Your Service

Describe your service

Intro
A few thinks about your service and the technologies it uses ?

Does it support an authorization and authentication mechanism ?

Is there an interconnection with another Ni4OS service ?

Which are the main functions the user uses?

Introduce your service

Describe your service

- **Intro**
  A few thinks about your service and the technologies it uses ?
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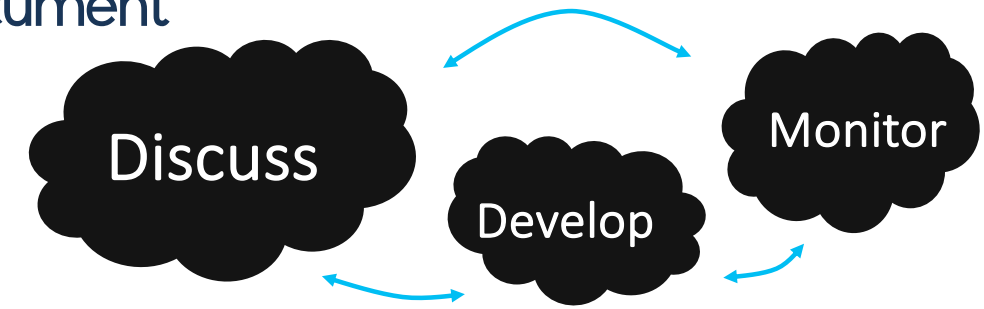
Probe Development

Specify and Document



Probe Development

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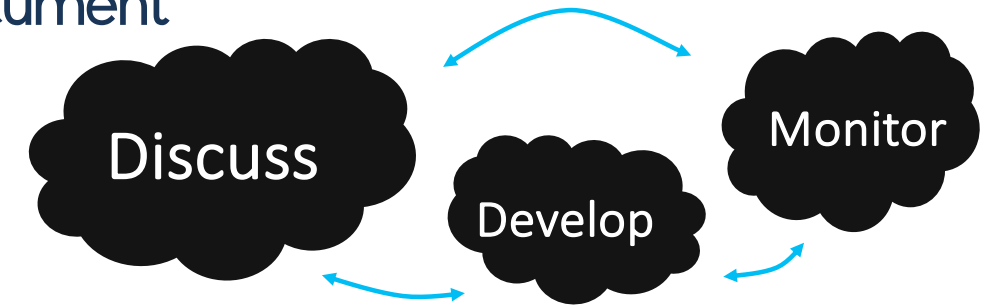


Discuss

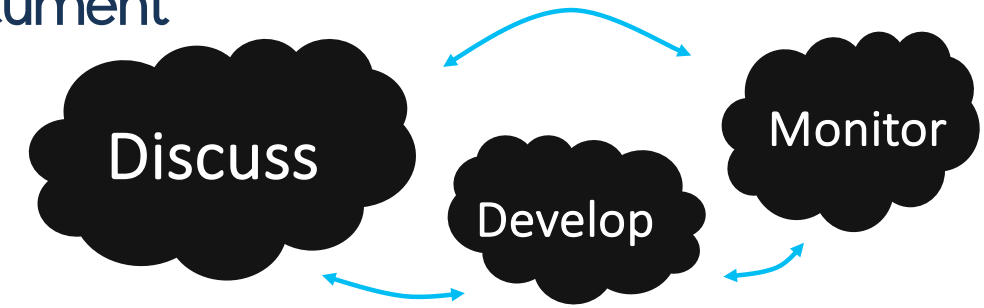
what to check

Discussion with representatives - developers of each service in order to agree on a set of monitored metrics.

New ticket so as to support and help.

Probe Development

Specify and Document



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Develop

how to check

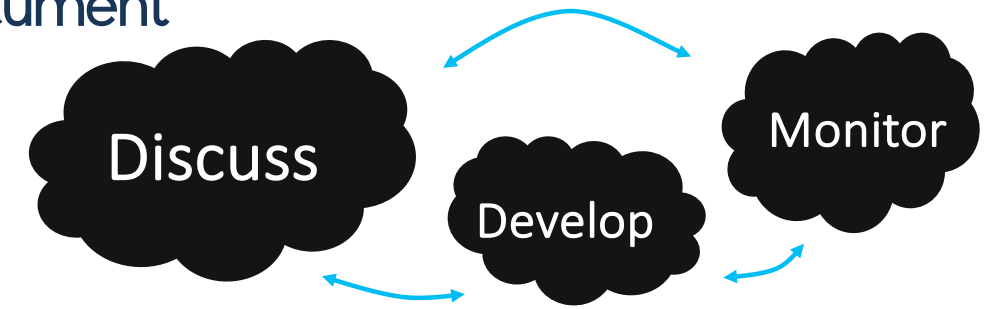
Development and testing of probe(s).

The development lifecycle includes: coding of the probe, documentation, testing and packaging.

guidelines, documentation and training material is available.

Probe Development

Specify and Document



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Monitor

starting to check

The lifecycle of the deployment of the service probe is based on the following repetitive steps: a) test, verify. if it passes the tests b) guidelines for the service owners are created. The monitoring team makes the necessary configurations. c) The A/R report(s) changes!!!

Monitoring

3) Profiles: A list of dependencies that create profiles needed for the monitoring

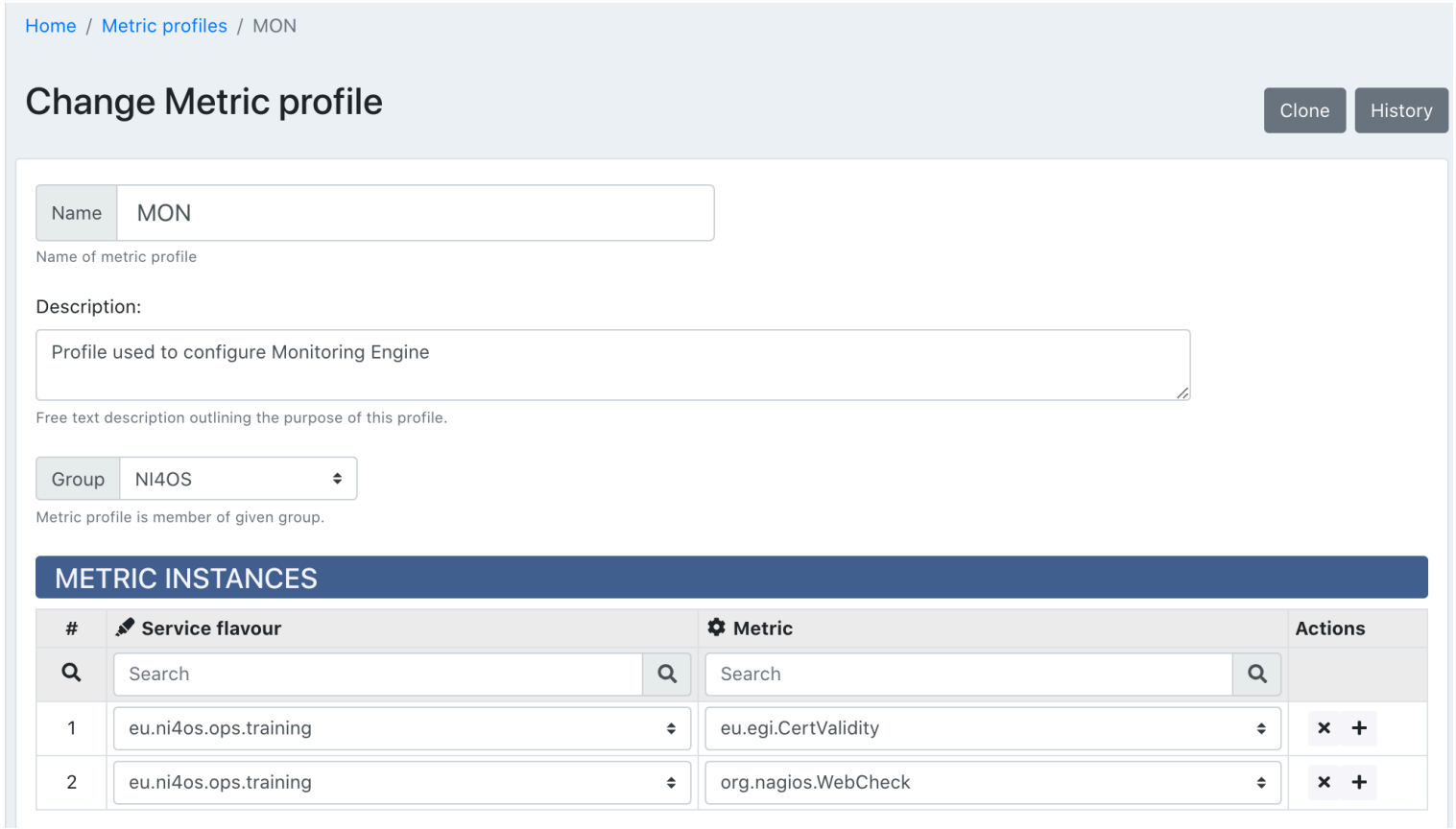
Metrics Profile

Services and associated metrics are grouped into profiles that instruct monitoring instances what kind of tests to execute for all and for a given service.

OPS_CRITICAL

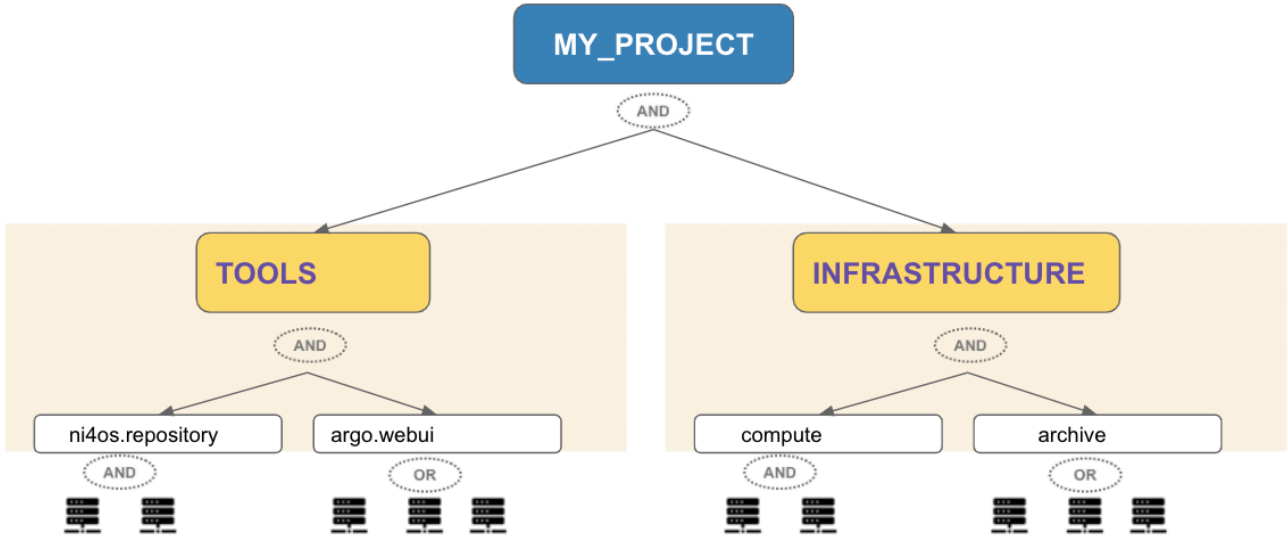
- ni4os.repository → eu.egi.CertValidity
- ni4os.repository → org.nagiosexchange.Portal-WebCheck
- Argo.webui → org.nagios.ARGOWeb-AR
- Argo.webui → org.nagios.ARGOWeb-Status

Metrics Profile



Aggregation Profiles

Define how monitored items are grouped and form hierarchies



Operations Profile

- How two different statuses are combined. In principle these define how ANDing and ORing operations are performed between status values.

```
{
  "available_states": [
    "OK",
    "WARNING",
    "UNKNOWN",
    "MISSING",
    "CRITICAL",
    "DOWNTIME"
  ],
  "operations": [
    {
      "name": "AND",
      "truth_table": [
        {  "a": "OK", "b": "OK",       "x": "OK" },
        {  "a": "OK", "b": "WARNING",  "x": "WARNING" },
        {  "a": "OK", "b": "UNKNOWN",  "x": "UNKNOWN" },
        {  "a": "OK", "b": "MISSING",  "x": "MISSING" },
        {  "a": "OK", "b": "CRITICAL", "x": "CRITICAL"},
        ...
      ]
    }
    ...
```

Now that we know:

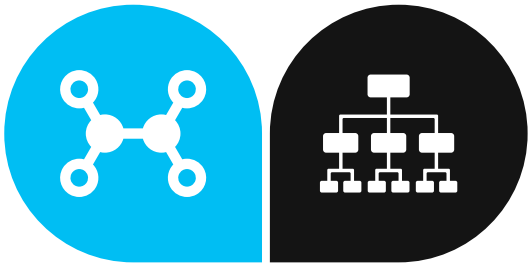
- The **topology** of the infrastructure
- **What** to check (metric profile)
- **how** monitored items are grouped (aggregation profile)
- how ANDing and ORing **operations** are performed (operations profile)

So lets start monitoring

The Process

Services to monitor

We define the services to monitor

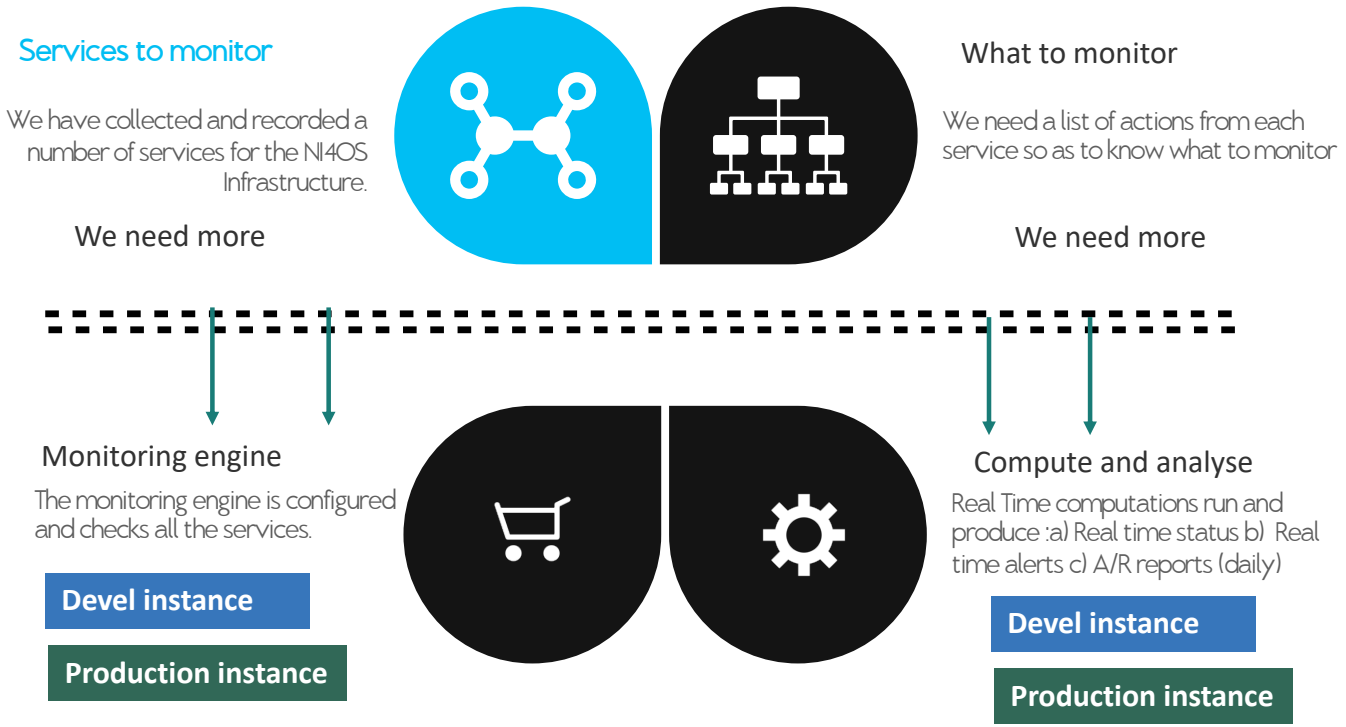


What to monitor

We need a list of actions from each service so as to know what to monitor

This will happen periodically!!

The Process


Services to monitor
We have collected and recorded a number of services for the NI4OS Infrastructure.
We need more
What to monitor
We need a list of actions from each service so as to know what to monitor
We need more
Monitoring engine
The monitoring engine is configured and checks all the services.
Devel instance
Production instance
Compute and analyse
Real Time computations run and produce :a) Real time status b) Real time alerts c) A/R reports (daily)
Devel instance
Production instance

Alerts

Is there a problem with your service?

An alert should be sent !

analyze the monitoring results and **send alerts** based on a **set of rules!**

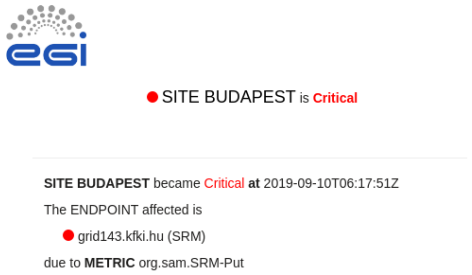
[KR-KNU-T3] - Service CREAM-CE is CRITICAL

Alert ID	5bde6370-51bb-4945-aa5b-2556c8aa4ae1
Create Time	2018-04-17 09:46:17.753000
Monitored Time	2018-04-17T09:46:11Z
Processed Time	2018-04-17T09:46:17Z
Repeated	false
Resource	KR-KNU-T3/CREAM-CE
Event Type	servicestatus
Severity	Indeterminate -> Critical
Status	Open

MORE DETAILS

Questions? Email EGI Monitoring Team

the monitoring team



● SITE BUDAPEST is **Critical**

SITE BUDAPEST became Critical **at** 2019-09-10T06:17:51Z

The ENDPOINT affected is

● grid143.kfki.hu (SRM)

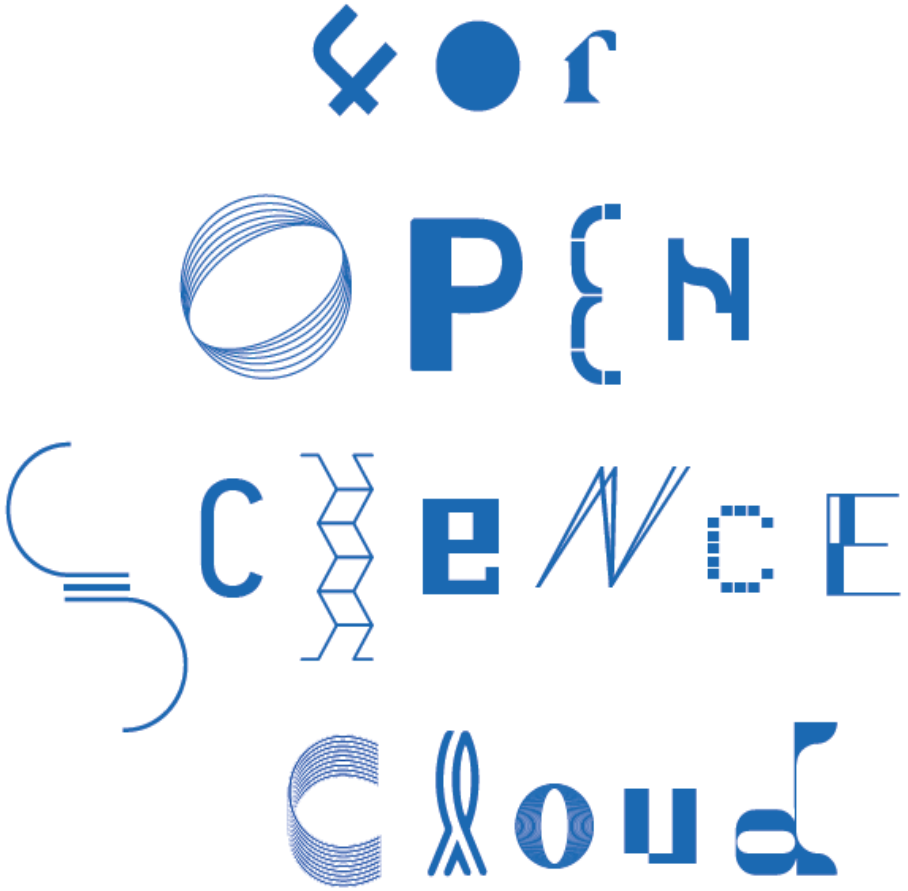
due to **METRIC** org.sam.SRM-Put

Service Check List

Category	Check list	Service Provider	Monitoring Team	GOCDB Team
Topology	Topology information about the Site owner (one time)			
	Topology information about the service and the service endpoints			
	Topology information about the service actors			
Metrics	Starting monitoring with the basic checks			
	Metrics (from user perspective). Creation of probe			
	Starting monitoring from the user perspective			
Profiles	Metrics profile. Decision of the grouping of the metrics into profiles			
	Aggregation profiles. Decision on how monitored items are grouped and form hierarchies			

Thanks!

https://ni4os.eu/

https://twitter.com/NI4OS_eu

https://www.facebook.com/NI4OS/