



**SeaDataNet**

*PAN-EUROPEAN INFRASTRUCTURE  
FOR OCEAN & MARINE DATA  
MANAGEMENT*

## ***WP2.4 System monitoring and Metrics***

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*SeaDataNet II – plenary meeting  
19 Sep 2012, Rhodes, Greece*

## ***What is network monitoring?***

The term **network monitoring** describes the use of a system that constantly monitors a computer network for slow or failing components and that notifies the network administrator in case of outages.

In the fields of SDN, network monitoring service monitors through Internet the SDN services (web pages, DMs, etc) to confirm that they are accessible and available, notify persons in charge to take action in case of service failure and keep statistics.

## ***Benefits of monitoring***

- Monitoring presence is crucial when implementing widely distributed systems over the Internet.
- Is also more and more a commitment for some projects funded by the European Commission like Research Infrastructure project (DG-Research) or Global Monitoring for Environment and Security (GMES - DG\_Industry).
- In real time, to be able to alert when incidents are detected and to correct them as soon as possible;

## *Benefits of monitoring*

- In a longer term, to identify critical components within widely distributed systems and to update them to improve their robustness;
- To provide continuous information about the overall availability of provided services.
- As statistics, to inform the consortium of the usage of services, portals, websites etc.
- The WP2 monitoring activities will also give input to the coordination by OGS of the WP7 scientific access **services**.

DATE	01-2012	02-2012	03-2012	04-2012	05-2012	06-2012	07-2012	08-2012	09-2012	10-2012	11-2012	12-2012	01-2013	02-2013	03-2013	04-2013	05-2013	06-2013	07-2013	08-2013	09-2013	10-2013	11-2013	12-2013	01-2014	02-2014	03-2014	04-2014	05-2014	06-2014	07-2014	08-2014	09-2014	10-2014	11-2014	12-2014	01-2015	02-2015	03-2015	04-2015	05-2015	06-2015	07-2015	08-2015	09-2015	10-2015							
PROJECT MONTH	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48							
<b>PHASE I: Monitoring services inventory, existing monitoring services upgrade.</b>																																																					
Task a : Developing and distribution of the online survey versions.																																																					
<b>PHASE II: Starting up monitoring services with pilot partners</b>																																																					
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Task b: Examination and analysis of the first monitoring data																																																					
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<b>PHASE IV: Download Manager plugin development</b>																																																					
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<b>PHASE V: Design and development a portal to export and share monitoring results</b>																																																					
Task a: Portal design and development																																																					
Task b: Development of the detailed information capability																																																					
<b>PHASE VI: Definition and development of global availability indicator</b>																																																					
Task a: Definition of formula																																																					
Task b: Definition of services' weights																																																					
Task c: Development of appropriate software																																																					
Task d: Testing indicator module																																																					
<b>PHASE VII: Developing a messaging system to notify the administrators</b>																																																					
Task a: Definition of "service down"																																																					
Task b: Software development for recognizing "service down"																																																					
Task c: Development of messaging system																																																					
<b>PHASE VIII: Establishment of a second monitoring center</b>																																																					
Task a: Selection of second data center																																																					
Task b: Installation of monitoring service with HCMR support																																																					
<b>PHASE IX: Services usage monitoring</b>																																																					
Task a: Collection of sample data from monitored services																																																					
Task b: Setting up a software tools suite to compile the collected data to reports																																																					
Task c: Production of service usage reports																																																					
Annual Reports																																																					

# *Monitoring Plan*

# ***Network Monitoring Plan***

**PHASE I: Monitoring services inventory, existing monitoring services upgrade.**

**PHASE II: Starting up monitoring services with pilot partners**

**PHASE III: Developing plugins and defining configuration for web services, web forms and CAS.**

**PHASE IV: Download Manager plug-in development.**

# ***Network Monitoring Plan***

**PHASE V: Design and development of a portal to export and share monitoring results**

**PHASE VI: Definition and development of global availability indicator**

**PHASE VII: Developing a messaging system to notify the administrators**

**PHASE VIII: Establishment of a second monitoring center.**

**PHASE IX: Services usage monitoring:**

## **Description Of Work (*done*)**

### **PHASE I: Monitoring services inventory, existing monitoring services upgrade.**

- **Task a** : Development and distribution of the online survey ✓
- **Task b** : Update of Nagios software, plug-ins and other tools to the latest versions ✓

### **PHASE II: Starting up monitoring services with pilot partners**

- **Task a**: Testing the monitoring system using pilot services from specific partners ✓
- **Task b**: Examination and analysis of the first monitoring data ✓
- **Task c**: Extension of monitoring service to all partners ✓
- **Task d**: Compilation of monitoring data to regular reports ✓



## *Description Of Work (done)*

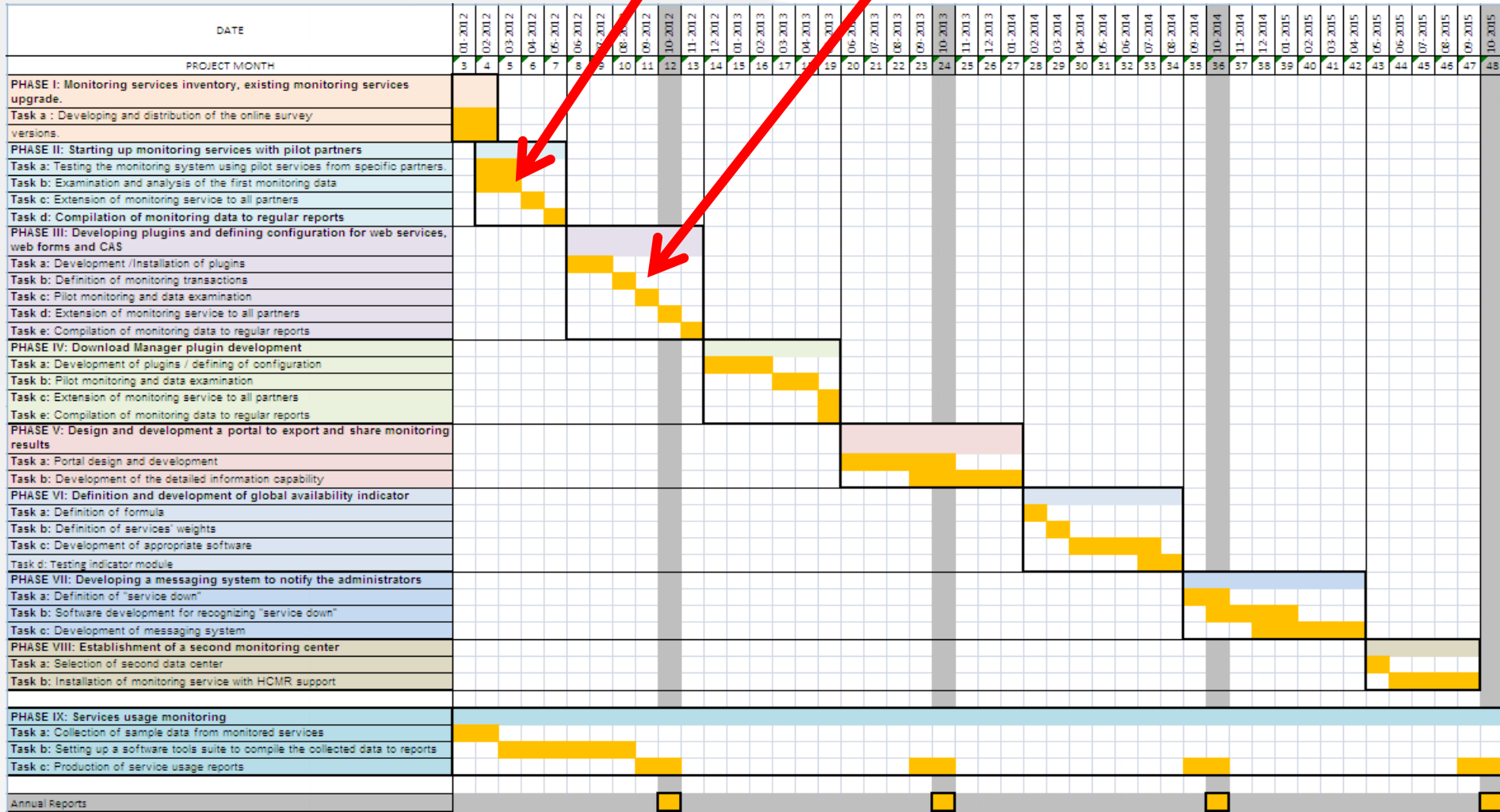
### **PHASE III: Developing plugins and defining configuration for web services, web forms and CAS.**

- **Task a:** Development /Installation of plugins **Working on it**
- **Task b:** Definition of monitoring transactions **Working on it**
- **Task c:** Pilot monitoring and data examination **Working on it**
- **Task d:** Extension of monitoring service to all partners **Not yet to be done**
- **Task e:** Compilation of monitoring data to regular reports **Not yet to be done**

# Monitoring Plan

March 2012

September 2012



## 1<sup>st</sup> year deliverables status

Deliverable	N°	Delivery month	Leader
Monitoring plan	2.4	3	HNODC
Operational monitoring system	2.5	6	HNODC
Regular metrics analysis reports	2.6	12	HCMR

## *What is being monitored until now?*

A total of 82 services...

- 29 SeaDataNet Download Managers
- 10 SeaDataNet Services
- 23 GeoSeas Download Managers
- 20 UBSS Download Managers

## ***SDN Services (10 services)***

- SeaDataNet homepage - IFREMER
- CDI homepage - MARIS
- CDI homepage (Expert Search) - MARIS
- EDIOS homepage - MARIS
- EDMERP homepage - MARIS
- EDMO homepage - MARIS
- EDMED homepage - BODC
- ROSCOP homepage - BSH
- Monitoring services (Nagios & Nagvis) – HCMR-HNODC



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# SDN DMs

Partner abbreviation	EDMO code	Country	Address
BSH-DOD	96	Germany	<a href="http://seadata.bsh.de/dm/">http://seadata.bsh.de/dm/</a>
ENEA	136	Italy	<a href="http://192.107.66.19/dm/">http://192.107.66.19/dm/</a>
EPA	2108	Lithuania	<a href="http://dm.gamta.lt/dm/">http://dm.gamta.lt/dm/</a>
FMI	1725	Finland	<a href="http://fodc.fmi.fi/dm/">http://fodc.fmi.fi/dm/</a>
HCMR-HNODC	269	Greece	<a href="http://hnodc-dm.ath.hcmr.gr/dm/">http://hnodc-dm.ath.hcmr.gr/dm/</a>
IBSS	840	Ukraine	<a href="http://193.42.157.76/dm/index.html">http://193.42.157.76/dm/index.html</a>
IFREMER	486	France	<a href="https://www.ifremer.fr/dm/">https://www.ifremer.fr/dm/</a>
IHPT	590	Portugal	<a href="http://dm.hidrografico.pt/dm/">http://dm.hidrografico.pt/dm/</a>
IMR	612	Norway	<a href="http://crius.nodc.no/dm/">http://crius.nodc.no/dm/</a>
IO-BAS	692	Bulgaria	<a href="http://193.68.190.38/dm/">http://193.68.190.38/dm/</a>
IOF	700	Croatia	<a href="http://galijula.izor.hr/dm_f/">http://galijula.izor.hr/dm_f/</a>
IOI	708	Malta	<a href="http://193.188.45.233/dm/">http://193.188.45.233/dm/</a>
IORAS (SIO)	685	Russia	<a href="http://dm.ocean.ru/dm/">http://dm.ocean.ru/dm/</a>
MHI-DMIST	727	Ukraine	<a href="http://dm.ocean.nodc.org.ua/dm/">http://dm.ocean.nodc.org.ua/dm/</a>
MI	396	Ireland	<a href="http://cdi.marine.ie/dm/">http://cdi.marine.ie/dm/</a>
MRI	583	Iceland	<a href="http://dm.hafro.is">http://dm.hafro.is</a>
MSI	713	Estonia	<a href="http://sahm.ttu.ee/dm/">http://sahm.ttu.ee/dm/</a>
MSI\ NIB	1228	Slovenia	<a href="http://sdn-dm.mbss.org/dm/">http://sdn-dm.mbss.org/dm/</a>
NERC-BODC	43	United Kingdom	<a href="http://grid.bodc.nerc.ac.uk/dm/">http://grid.bodc.nerc.ac.uk/dm/</a>
NERI	729	Denmark	<a href="http://seadatanet.dmu.dk/dm/">http://seadatanet.dmu.dk/dm/</a>
NIMRD	697	Romania	<a href="http://sdn.rmri.ro/dm/">http://sdn.rmri.ro/dm/</a>
NIOO	633	Netherlands	<a href="http://nodcdata.nioz.nl/dm/">http://nodcdata.nioz.nl/dm/</a>
NIOZ	630	Netherlands	<a href="http://tethys.nioz.nl/dm/">http://tethys.nioz.nl/dm/</a>
OC-UCY	711	Cyprus	<a href="http://www.oceanography.ucy.ac.cy/dm/index.html">http://www.oceanography.ucy.ac.cy/dm/index.html</a>
OGS	120	Italy	<a href="http://nodc.ogs.trieste.it/dm/">http://nodc.ogs.trieste.it/dm/</a>
RBINS-MUMM	1578	Belgium	<a href="http://www.seadatanet.be/dm/">http://www.seadatanet.be/dm/</a>
RIHMI-WDC	681	Russia	<a href="http://dpms.meteo.ru/dm/">http://dpms.meteo.ru/dm/</a>
TSU-DNA	693	Georgia	<a href="http://188.93.88.48/dm/">http://188.93.88.48/dm/</a>
VLIZ	422	Belgium	<a href="http://dlmgr.vliz.be/dm/">http://dlmgr.vliz.be/dm/</a>

## *Download Managers monitoring*

We can monitor only DMs that are updated in the latest version.

It is crucial for all DMs to be updated to the latest version in order to be monitored.

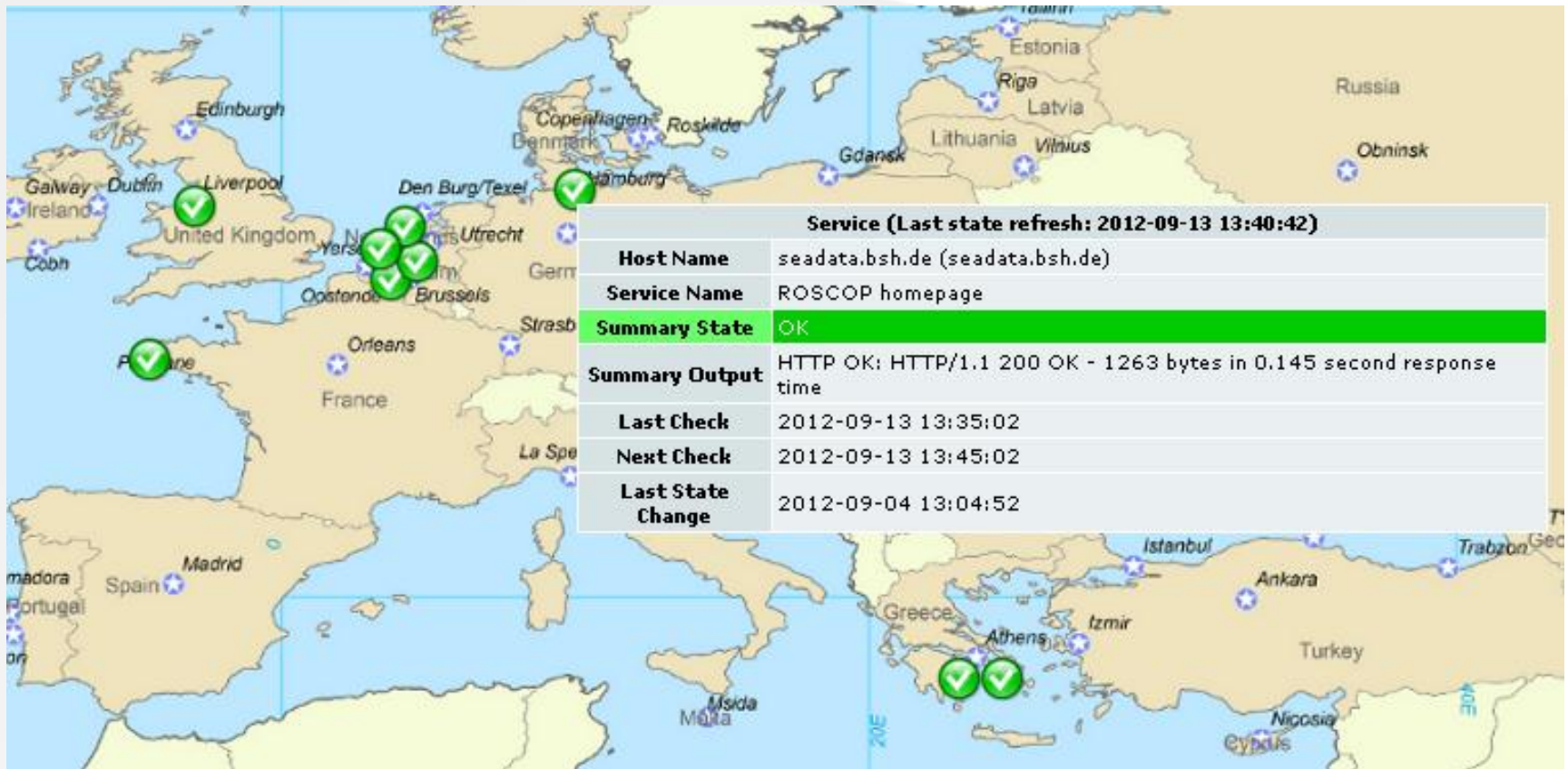


## ***Visualization Tool***

In order to view the state of the services in real time in a more friendly way a visualization tool developed.



## SDN Services on map



# SDN Download Managers



## *E-mail Notifications - Alerts*

Monitoring system sends e-mail notifications when a service is down to inform all persons responsible.



In order to avoid false notifications, please inform SeaDataNet team ([netmon@hcmr.gr](mailto:netmon@hcmr.gr)) about any changes of mail addresses or person responsible for every SDN service.



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# Reporting

## SDN DMs – Availability report 06-01-2012 to 09-14-2012

Servicegroup 'SeaDataNet Download Manager' Service State Breakdowns:

Host	Service	% Time OK	% Time Warning	% Time Unknown	% Time Critical	% Time Undetermined
188.93.88.48	TSU DM	95.095% (95.095%)	0.000% (0.000%)	0.000% (0.000%)	4.905% (4.905%)	0.000%
192.107.66.19	ENEA DM	99.967% (99.967%)	0.000% (0.000%)	0.000% (0.000%)	0.033% (0.033%)	0.000%
193.188.45.233	IOI DM	100.000% (100.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000%
193.42.157.76	IBSS DM	100.000% (100.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000%
193.68.190.38	BGODC-IOBAS DM	99.375% (99.375%)	0.000% (0.000%)	0.000% (0.000%)	0.625% (0.625%)	0.000%
cdi.marine.ie	MI DM	100.000% (100.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000%
crius.nodc.no	IMR DM	100.000% (100.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000%
dlimgr.vliz.be	VLIZ DM	100.000% (100.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000%
dm.gamta.it	EPA DM	100.000% (100.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000%
dm.hafro.is	MRI DM	99.770% (99.770%)	0.000% (0.000%)	0.000% (0.000%)	0.230% (0.230%)	0.000%
dm.hidrografico.pt	IHPT DM	99.717% (99.717%)	0.000% (0.000%)	0.000% (0.000%)	0.283% (0.283%)	0.000%
dm.ocean.nodc.org.ua	MHI MIST DM	90.410% (90.410%)	0.000% (0.000%)	0.000% (0.000%)	9.590% (9.590%)	0.000%
dm.ocean.ru	IORAS SIO DM	100.000% (100.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000%
dpms.meteo.ru	RHMI DM	100.000% (100.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000%
fodc.fmi.fi	FMI DM	100.000% (100.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000%
galijula.izor.hr	IZOR DM	99.480% (99.480%)	0.000% (0.000%)	0.000% (0.000%)	0.520% (0.520%)	0.000%
grid.bodc.nerc.ac.uk	BODC DM	99.779% (99.779%)	0.000% (0.000%)	0.000% (0.000%)	0.221% (0.221%)	0.000%
hnodc-dm.ath.hcmr.gr	hnodc dm	96.328% (96.328%)	0.000% (0.000%)	0.000% (0.000%)	3.672% (3.672%)	0.000%
nodc.ogs.trieste.it	OGS DM	99.915% (99.915%)	0.000% (0.000%)	0.000% (0.000%)	0.085% (0.085%)	0.000%
nodcdata.nioz.nl	NIOO DM	100.000% (100.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000%
sahm.ttu.ee	MSI DM	99.118% (99.118%)	0.000% (0.000%)	0.000% (0.000%)	0.882% (0.882%)	0.000%
sdn-dm.mbss.org	MSI-NIB DM	100.000% (100.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000% (0.000%)	0.000%
sdn.rmri.ro	NIMRD DM	98.563% (98.563%)	0.000% (0.000%)	0.000% (0.000%)	1.437% (1.437%)	0.000%
seadata.bsh.de	BSH DM	99.434% (99.434%)	0.000% (0.000%)	0.000% (0.000%)	0.566% (0.566%)	0.000%
seadatanet.dmu.dk	neri DM	99.987% (99.987%)	0.000% (0.000%)	0.000% (0.000%)	0.013% (0.013%)	0.000%
tethys.nioz.nl	NIOZ DM	96.491% (96.491%)	0.000% (0.000%)	0.000% (0.000%)	3.509% (3.509%)	0.000%
www.ifremer.fr	IFREMER DM	97.874% (97.874%)	0.000% (0.000%)	0.000% (0.000%)	2.126% (2.126%)	0.000%
www.oceanography.ucy.ac.cy	CYOC DM	94.726% (94.726%)	0.000% (0.000%)	0.000% (0.000%)	5.274% (5.274%)	0.000%
www.seadatanet.be	MUMM DM	97.702% (97.702%)	0.000% (0.000%)	0.000% (0.000%)	2.298% (2.298%)	0.000%
Average		98.749% (98.749%)	0.000% (0.000%)	0.000% (0.000%)	1.251% (1.251%)	0.000%

## Service 'BGODC-IOBAS DM' 08-01-12 to 09-01-2012

### Service State Trends

Last Updated: Thu Sep 13 15:13:42 EEST 2012  
Nagios® Core™ 3.4.1 - [www.nagios.org](http://www.nagios.org)  
Logged in as *nagiosadmin*

- [View Trends For This Host](#)
- [View Availability Report For This Service](#)
- [View Alert Histogram For This Service](#)
- [View Alert History For This Service](#)
- [View Notifications For This Service](#)

### Service 'BGODC-IOBAS DM' On Host '193.68.190.38'



08-01-2012 00:00:00 to 09-01-2012 00:00:00  
Duration: 31d 0h 0m 0s

First assumed service state: Backtracked archives:

Unspecified

4

Report period:

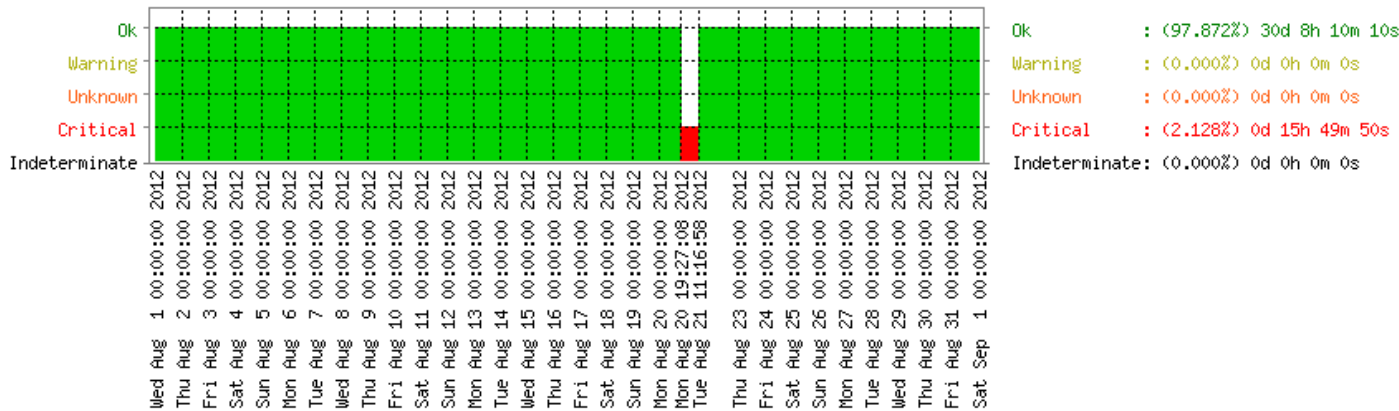
Zoom factor:

Last Month

4

### State History For Service 'BGODC-IOBAS DM' On Host '193.68.190.38'

Wed Aug 1 00:00:00 2012 to Sat Sep 1 00:00:00 2012



## ***Conclusions...***

The basic goals of network monitoring have already been achieved because:

- Basic SDN services are being monitored.
- Notification subsystem has been developed and sends e-mail notifications to persons in charge.
- Keeps statistics and can produce basic reports about availability of the services.
- Has a tool to view in real-time the status of all services being monitored.

***Thank you!***



**Questions?**