

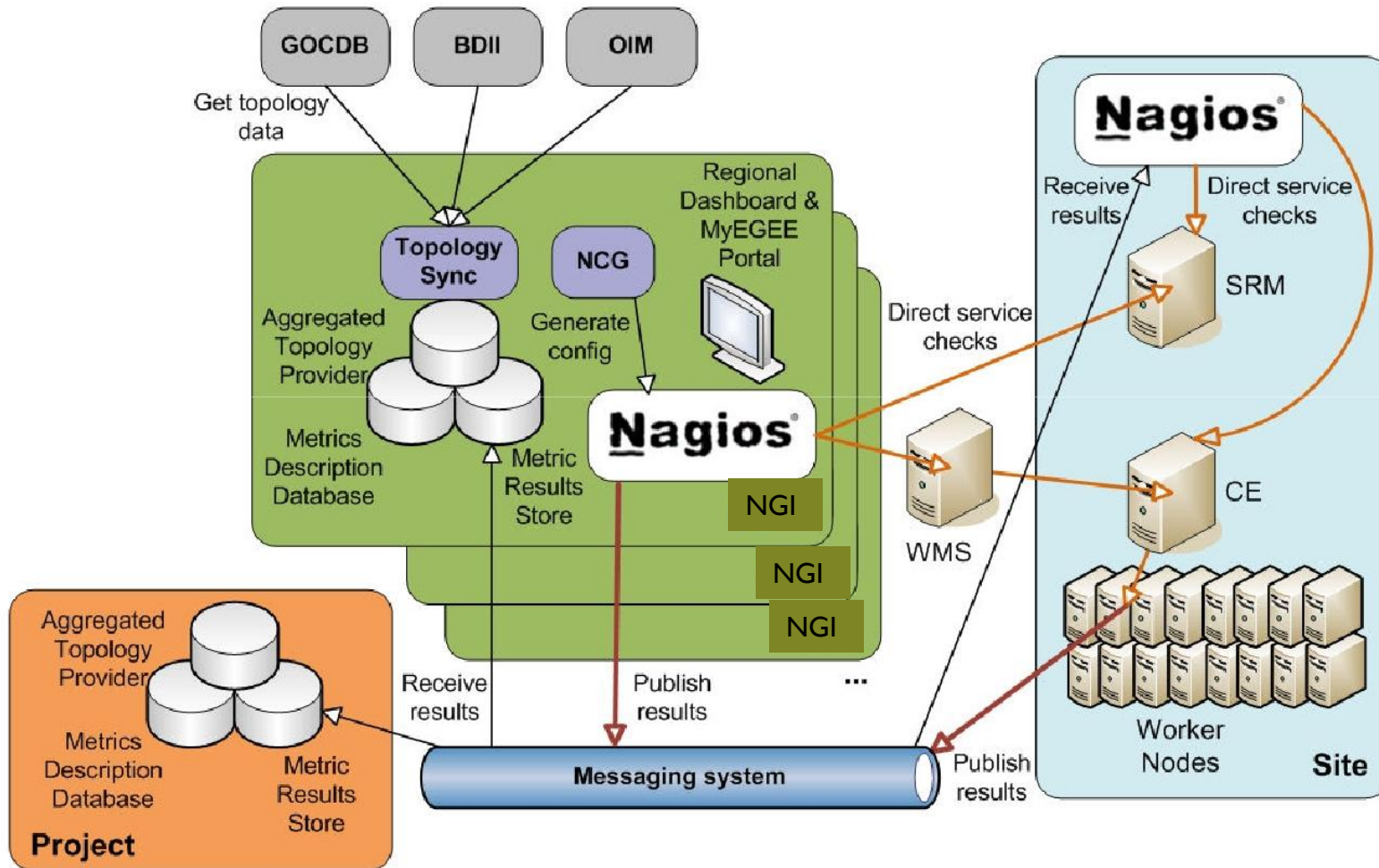
Bonne pratique des outils de monitoring regional

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Plan

- ▶ 1 Architecture Monitoring EGI
- ▶ 2 Architecture Monitoring France Grille
- ▶ 3 Fonctionnement de la Nagios BOX
 - ▶ 3.1 Descriptif des sondes CE, SE et BDII (seuls tests critiques)
- ▶ 4 Calcul de Fiabilité/Disponibilité des sites
- ▶ 5MYEGEE
- ▶ 6 Astuces et Bonne pratique
- ▶ 7 Installer une nagios BOX pour un site ou une VO

Architecture Monitoring EGI (1 / 3)



Architecture Monitoring EGI (2/3)

- **Nagios :**
 - Système de monitoring, Open Source <http://www.nagios.org/>
 - Revisité durant le projet EGEE pour arriver avec le module NCG à une Nagios Box adaptée au monitoring des sites de grilles .
 - Nagios supervise les différents services et nœuds des sites enregistrés dans la GOCDDB.
 - Une interface web permet de visualiser les résultats et l'historique.
 - Il envoie des notifications de changements d'états via un bus de message basé sur les technologies AMQ
- **Une infrastructure complète de monitoring à plusieurs niveaux s'est construite autour des Nagios Boxes**



Architecture Monitoring EGI (3/3)

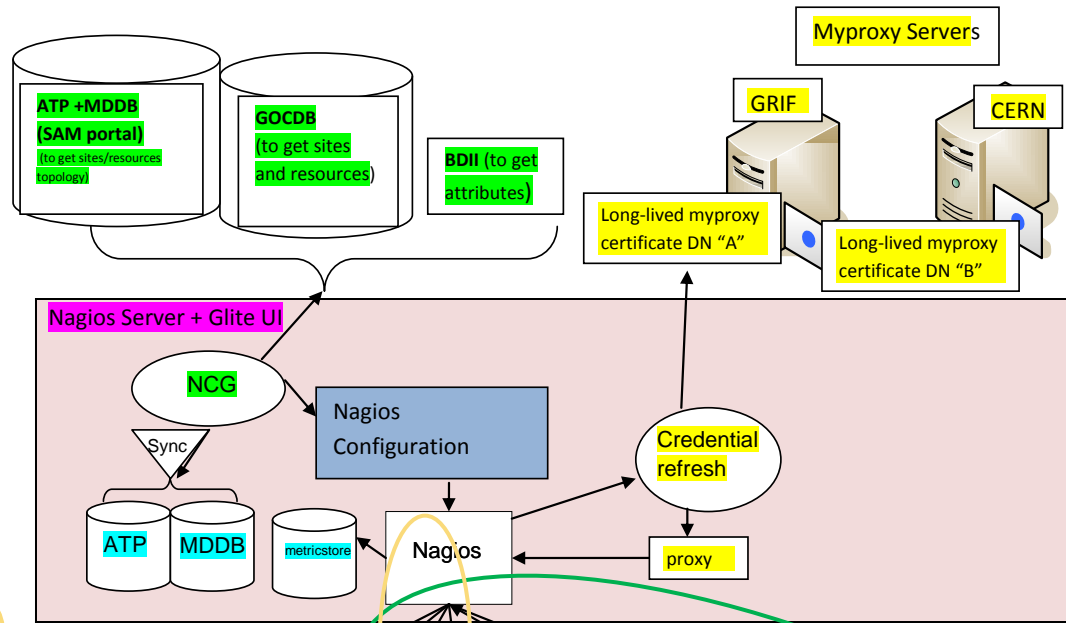
- ▶ Des modules annexes sont utilisés dans l'architecture de monitoring .
- **Metric Description Database (MDDB)**
 - Base de données qui contient la description des métriques utilisées par Nagios, et aussi les métriques calculées pour la disponibilité des services.
- **Metric Results Store (MRS)**
 - Base de données qui contient les résultats utilisés sur du long terme (historique) des tests Nagios .
- **ATP (Aggregated Topology Provider)**
 - Base de données topologiques. Elle contient l'agrégation des données provenant de la GOC DB , du BDII , de OIM (Information Management System – projet OSG) et des VOs .

Architecture Monitoring France Grille

- Nagios France : <https://ccnagboxli01.in2p3.fr/nagios/>
 - Instance française validée
 - Instance hébergé au CC sur un cluster VMWARE avec la fonctionnalité High Availability
 - Groupe de travail et documentation fournie :
 - <https://francegrid.in2p3.fr/index.php?title=MonitoringRegionalUser>

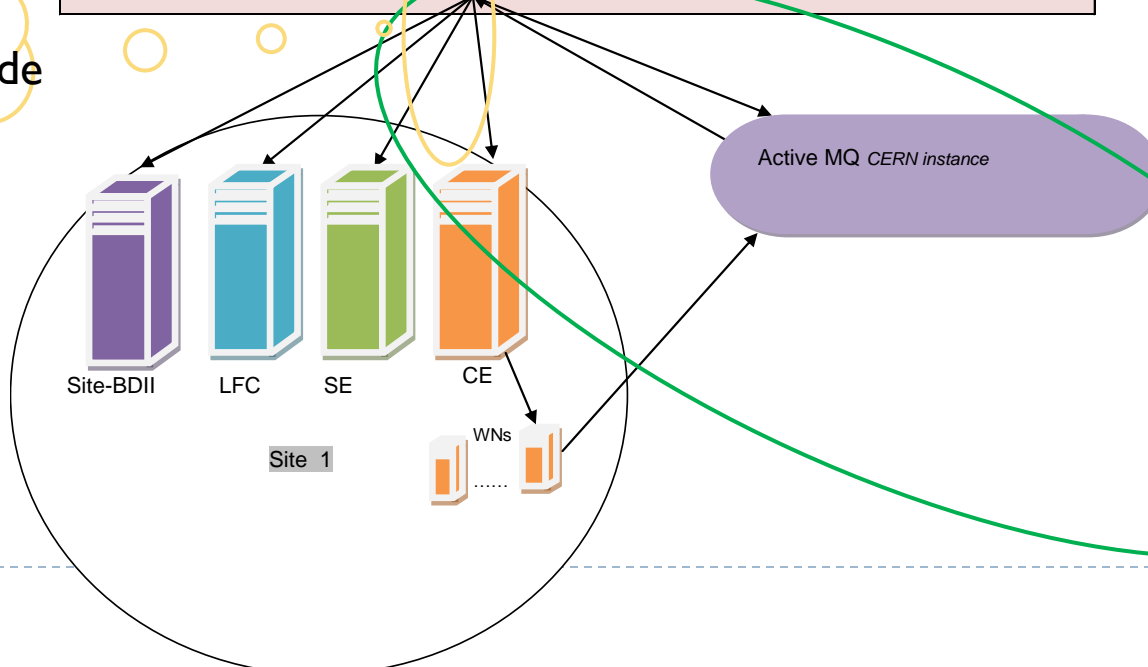


Fonctionnement de la nagios BOX



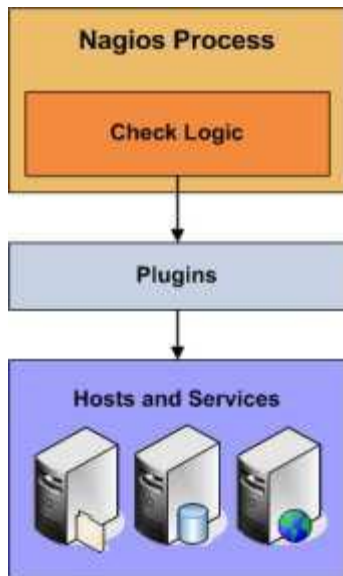
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Nagios: Active/passive checks

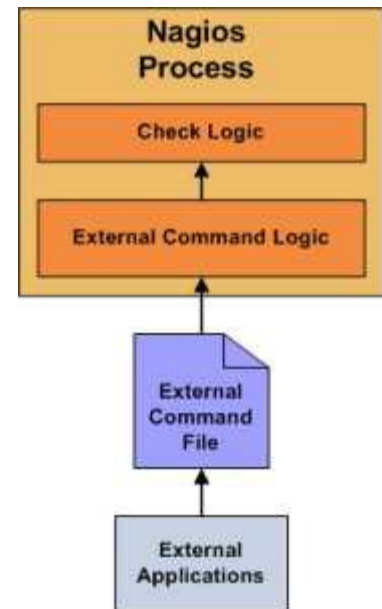
Active checks are initiated by the Nagios process
Active checks are run on a regularly scheduled basis



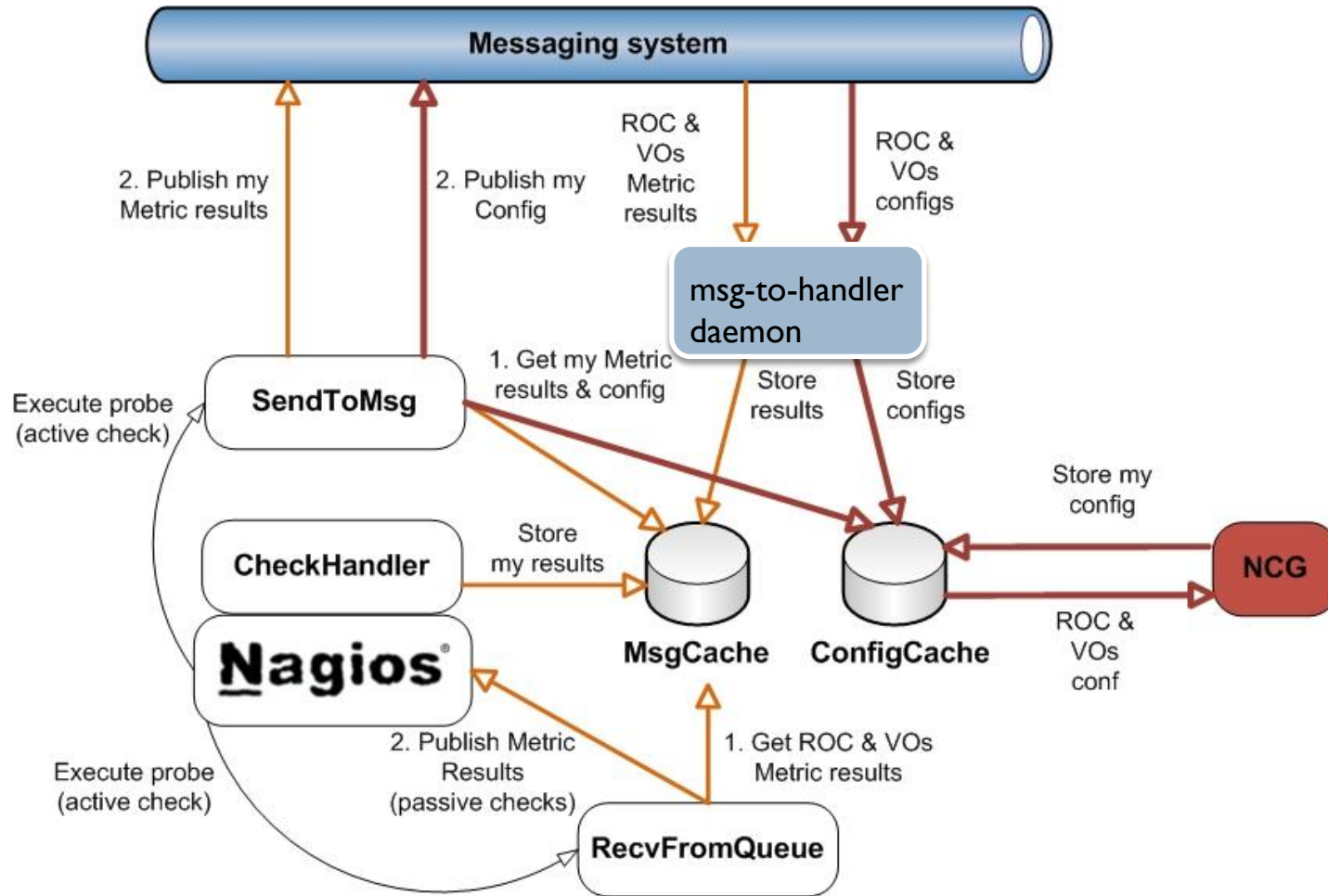
Passive checks are initiated and performed external applications/processes
Passive check results are submitted to Nagios for processing

Passive checks are useful for monitoring services that are:

Asynchronous in nature and cannot be monitored effectively by polling their status on a regularly scheduled basis



Détail sur le fonctionnement de la nagios BOX avec MSG



Sondes critiques

(SRMv2, hr.srce.SRM2-CertLifetime)
(SRMv2, org.sam.SRM-Put)
(SRMv2, org.sam.SRM-LsDir)
(SRMv2, org.sam.SRM-Get)
(SRMv2, org.sam.SRM-Ls)
(SRMv2, org.sam.SRM-GetURLs)
(SRMv2, org.sam.SRM-GetURLs)
(SRMv2, org.sam.SRM-Del)

(Site-BDII, org.bdii.Entries)
(Site-BDII, org.gstat.SanityCheck)

(CE, hr.srce.GRAM-CertLifetime)
(CE, org.sam.CE-JobSubmit)
(CE, org.sam.WN-RepCr)
(CE, org.sam.WN-CAver)
(CE, org.sam.WN-RepISenv)
(CE, org.sam.WN-Rep)
(CE, org.sam.WN-Bi)
(CE, org.sam.WN-RepGet)
(CE, org.sam.WN-RepDel)
(CE, org.sam.WN-RepFree)
(CE, org.sam.WN-Csh)
(CE, org.sam.WN-RepRep)
(CE, org.sam.WN-SoftVer)



Détail sur le fonctionnement de la nagios BOX pour les CE

Nagios CE (and creamCE) metrics

Carlos Carranza

Nagios CE (and creamCE) metrics

The screenshot displays the Nagios web interface. The browser window title is "Nagios - Mozilla Firefox". The address bar shows the URL "https://ccnagboxli01.in2p3.fr/nagios/". The interface is organized into several sections:

- General:** Home, Documentation
- Current Status:** Tactical Overview, Map, Hosts, Services, Host Groups (Summary, Grid), Service Groups (Summary, Grid), Problems (Services (Unhandled), Hosts (Unhandled), Network Outages)
- Quick Search:** A search input field.
- Reports:** A section for reports.

The main content area shows a list of services. The services are grouped by host:

- cclcgceli01.in2p3.fr:**
 - hr.srce.GRAM-CertLifetime: OK
- org.sam.CE:**
 - org.sam.CE-JobState-ops: OK
 - org.sam.CE-JobSubmit-ops: OK
- org.sam.WN:**
 - org.sam.WN-Bi-ops: OK
 - org.sam.WN-CAver-ops: OK
 - org.sam.WN-Csl1-ops: OK
 - org.sam.WN-Rep-ops: OK
 - org.sam.WN-RepCr-ops: OK
 - org.sam.WN-RepDel-ops: OK
 - org.sam.WN-RepFree-ops: OK
 - org.sam.WN-RepGet-ops: OK
 - org.sam.WN-Rep1Serv-ops: OK
 - org.sam.WN-RepRep-ops: OK
 - org.sam.WN-SoftVer-ops: OK

The bottom status bar indicates the current time is 29°C and Today is 24°C.

Nagios Box metrics

The screenshot shows the Nagios web interface in a browser window. The main content area displays the 'Service Status Details For Host Group 'nagios''. The interface includes a left-hand navigation menu with sections for General, Current Status, Reports, and Notifications. The main table lists various services for the host 'ccnagboxli01.in2p3.fr', with columns for Host, Service, Status, Last Check, Duration, Attempt, and Status Information. Several services are highlighted with blue arrows pointing to their respective rows.

Host	Service	Status	Last Check	Duration	Attempt	Status Information
ccnagboxli01.in2p3.fr	hr_srce_CAcist-Version	OK	07-01-2010 18:06:29	0d 21h 18m 13s	1/2	Official IGTf version is 1.36. Official LCG version is 1.36. Installed version is 1.36. Comparing with LCG version. Valid distribution version found.
	hr_srce_CerLifetime	OK	07-02-2010 12:45:58	37d 1h 16m 18s	1/2	CERT LIFETIME OK - Certificate will expire in 218.17 days (Feb 5 14:52:00 2011 GMT)
	hr_srce_GridProxy-Get-/ops/Role=lcgadmin	OK	07-02-2010 12:34:23	17d 22h 49m 18s	1/3	MyProxy credential retrieved. VOMS credential retrieved.
	hr_srce_GridProxy-Valid-/ops/Role=lcgadmin	OK	07-02-2010 15:16:04	17d 22h 39m 17s	1/3	Grid proxy is valid. Certificate will expire in 8.51 hours (Jul 2 22:04:23 2010 GMT)
	org_eege_A^PSync	OK	07-02-2010 15:01:59	2d 14h 52m 38s	1/10	Connecting : gridmsg001.cern.ch:6163
	org_eege_CheckConfig	OK	07-02-2010 15:16:10	37d 1h 16m 5s	1/3	check_config OK - No new/updated configuration.
	org_eege_ImportGocdbDowntimes	OK	07-02-2010 12:08:55	8d 23h 15m 42s	1/3	GOCDB_DOWNTIMES OK - Downtimes successfully synchronized.
	org_eege_MDDBSync	OK	07-02-2010 14:55:50	9d 0h 28m 47s	1/10	MDDB_SYNC: mddb-synchronizer was successfully run, see logfile.
	org_eege_RecvFromQueue	OK	07-02-2010 15:21:16	37d 1h 30m 55s	1/4	RecvFromQueue OK - Successfully imported 12 messages.
	org_eege_SendToMetricStore	OK	07-02-2010 15:21:37	37d 1h 15m 52s	1/4	SendToDb OK - Successfully inserted 55 messages.
	org_eege_SendToMsg	OK	07-02-2010 15:21:01	14d 6h 12m 11s	1/4	SendToMsg OK - Successfully sent 88 messages, 6 configurations to gridmsg102.cern.ch:6163.
	org_nagios_DiskCheck	OK	07-02-2010 14:46:29	37d 1h 15m 46s	1/3	DISK OK - free space: / 693 MB (69% inode=32%); /dev/shm 8023 MB (100% inode=99%); /boot 269 MB (93% inode=99%); /home 1473 MB (76% inode=85%); /opt 746 MB (78% inode=97%); /tmp 952 MB (99% inode=99%); /usr 983 MB (25% inode=75%); /var 8326 MB (54% inode=99%); /var/core 1846 MB (96% inode=99%);
	org_nagios_ProcessCronD	OK	07-02-2010 15:16:35	37d 1h 30m 42s	1/3	PROCS OK: 1 process with command name 'cronD'
	org_nagios_ProcessMsgToHandler	OK	07-02-2010 15:16:35	37d 1h 15m 39s	1/3	PROCS OK: 1 process with command name 'msg-to-handler'
	org_nagios_ProcessNpcd	OK	07-02-2010 15:16:35	37d 1h 30m 36s	1/3	PROCS OK: 1 process with command name 'npcd'
	org_sam_CE-JobMonit-/ops/Role=lcgadmin	OK	07-02-2010 15:23:02	17d 22h 24m 34s	1/2	OK: Jobs processed - 14
	org_sam_CREAMCE-JobMonit-/ops/Role=lcgadmin	OK	07-02-2010 15:21:48	17d 22h 39m 28s	1/2	OK: Jobs processed - 12
	org_sam_mpi_CE-JobMonit-/ops/Role=lcgadmin	OK	07-02-2010 15:23:15	17d 22h 24m 28s	1/2	OK: Jobs processed - 3

At the bottom of the interface, there is a search bar with 'Find: CPPM', navigation buttons for 'Previous' and 'Next', and a status bar showing 'Done' and system information: 'ccnagboxli01.in2p3.fr Now: 31 °C Today: 31 °C'.

The org.sam.CE metrics

▶ **org.sam.CE-JobState (active + passive)**

- Run hourly.
- Submit grid job in active mode.
- accepts passive check results for the submitted grid jobs
- holds a status of the grid (activejob.map).

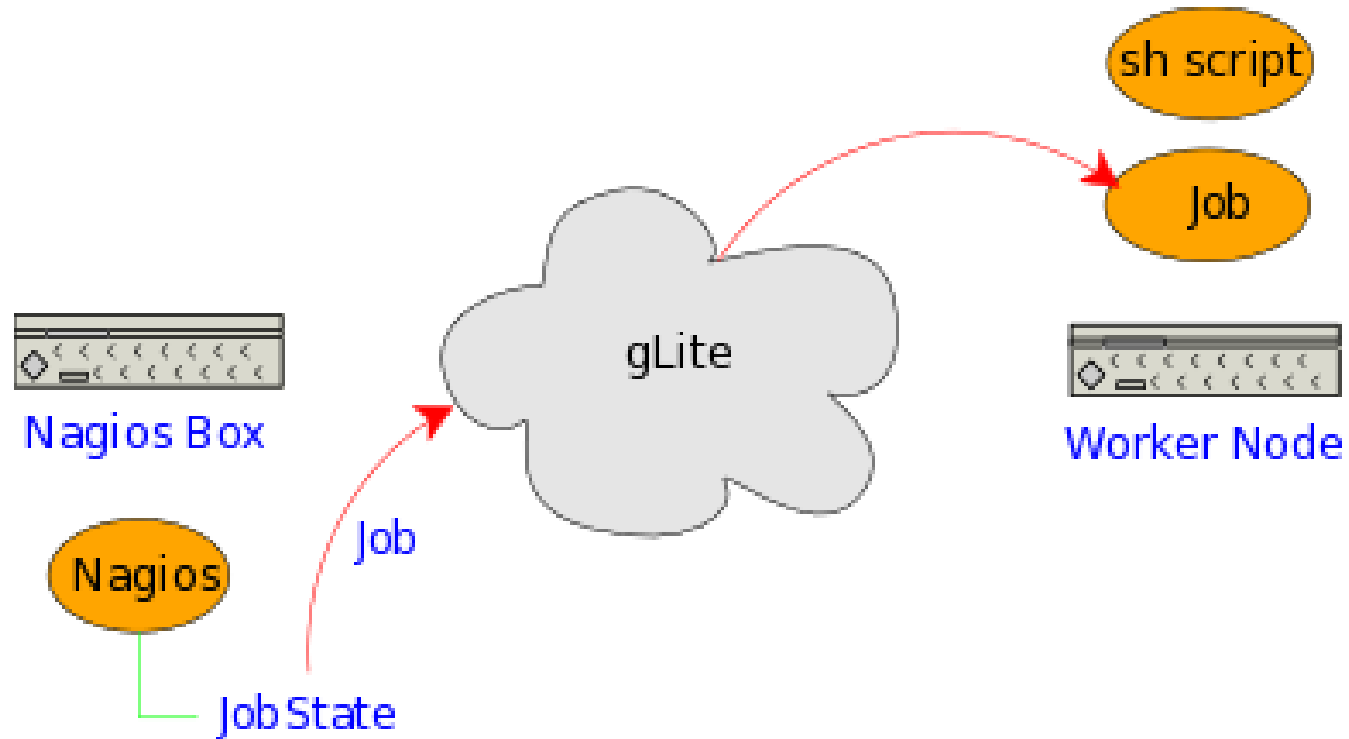
▶ **org.sam.CE-JobMonit (active)**

- Run each five minuts.
- Checks statuses of all submitted jobs and updates CE-JobState and CE-JobSubmit (acts as a babysitter for all grid jobs submitted by CE-JobState service instances).
- CE-JobState and CE-JobSubmit are updated (as passive checks) either via Nagios command file or NSCA.
- Update the status of the grid job(activejob.map).

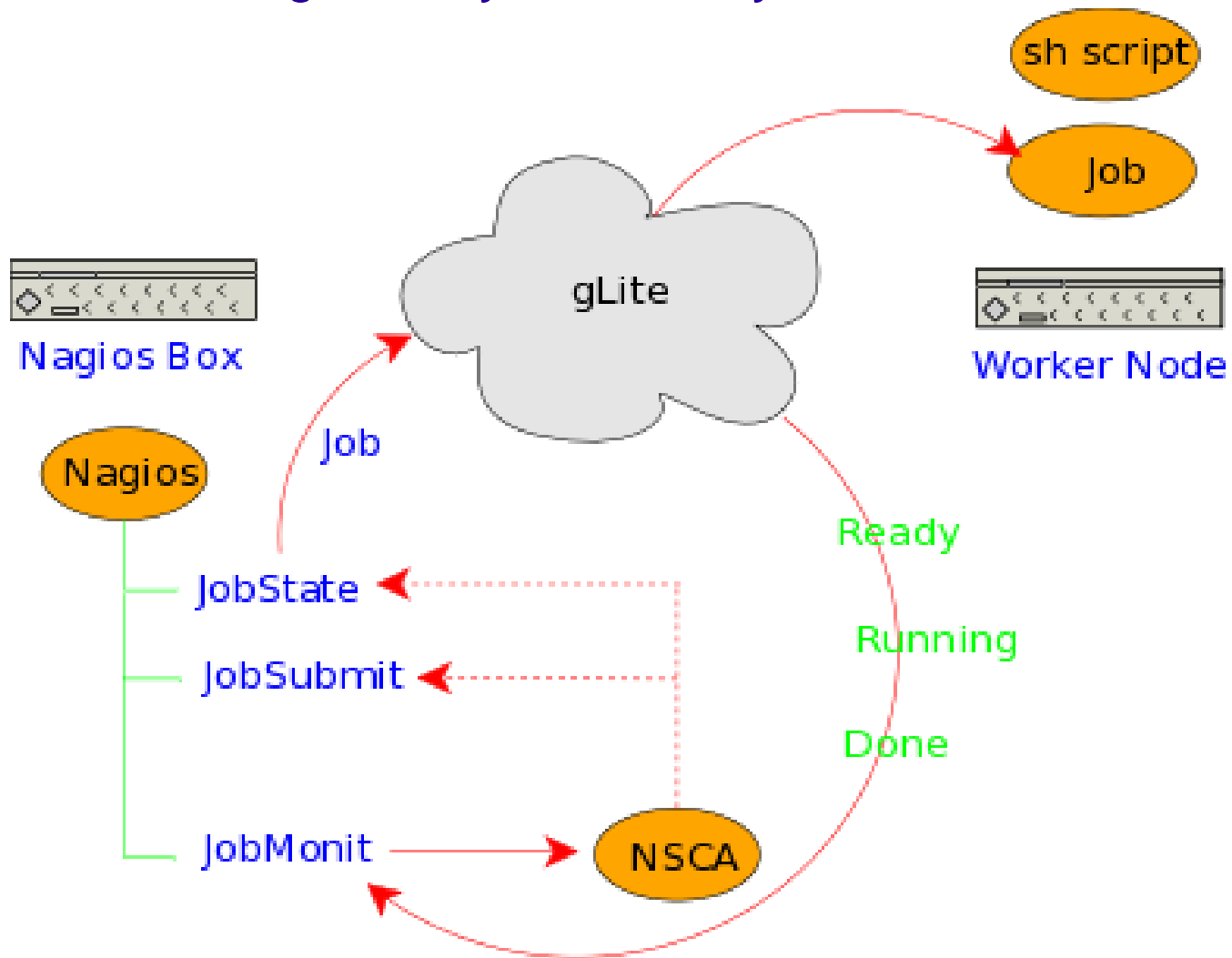
▶ **org.sam.CE-JobSubmit (passive)**

- Holds terminal status of job submission, mapping from gLite job terminal states ['Done','Aborted','Canceled'] to Nagios status
▶ [Ok Warning,Critical,Unknown].

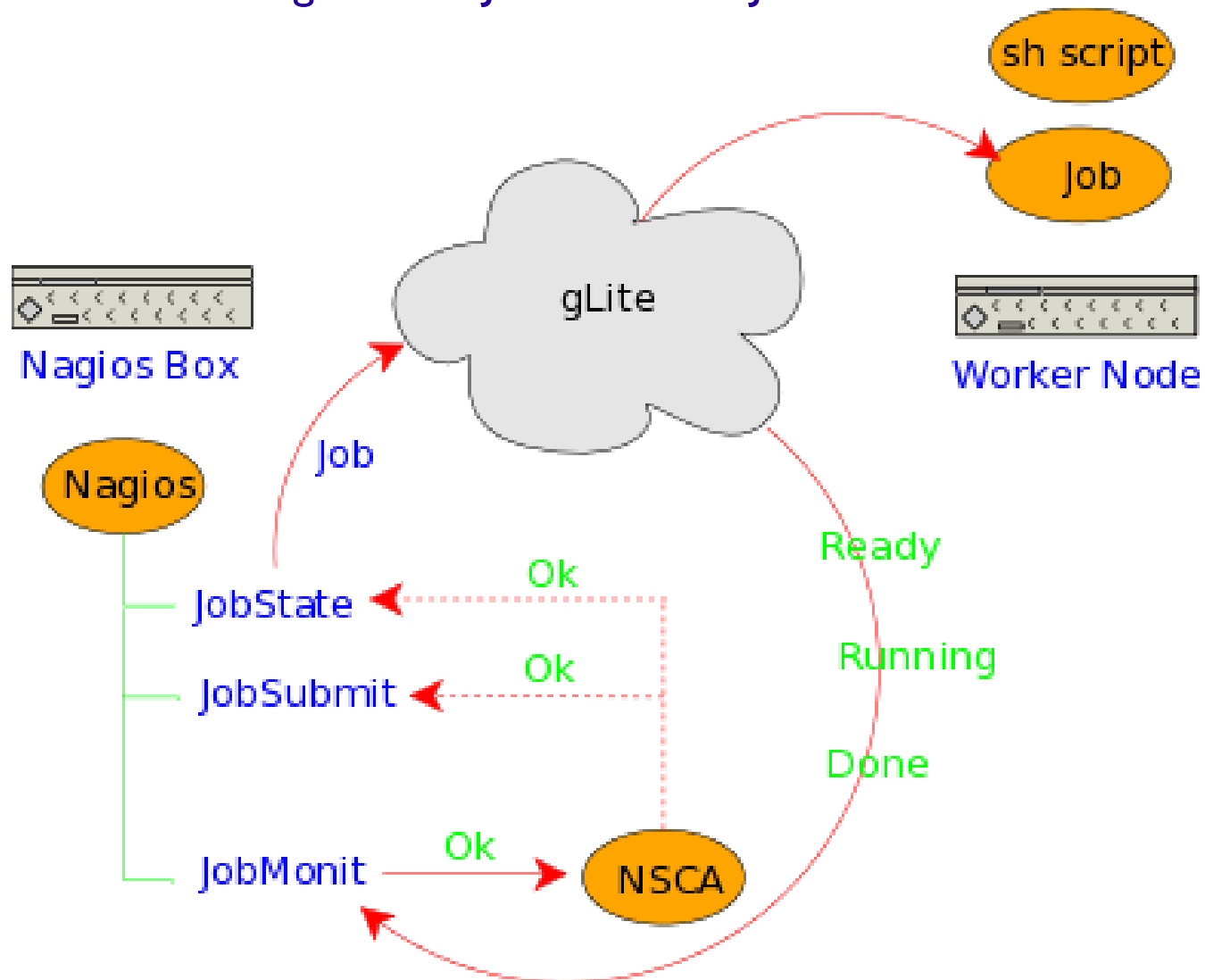
org.sam.CE-JobState (active)



org.sam.CE-JobMonit and JobSubmit



org.sam.CE-JobMonit and JobSubmit



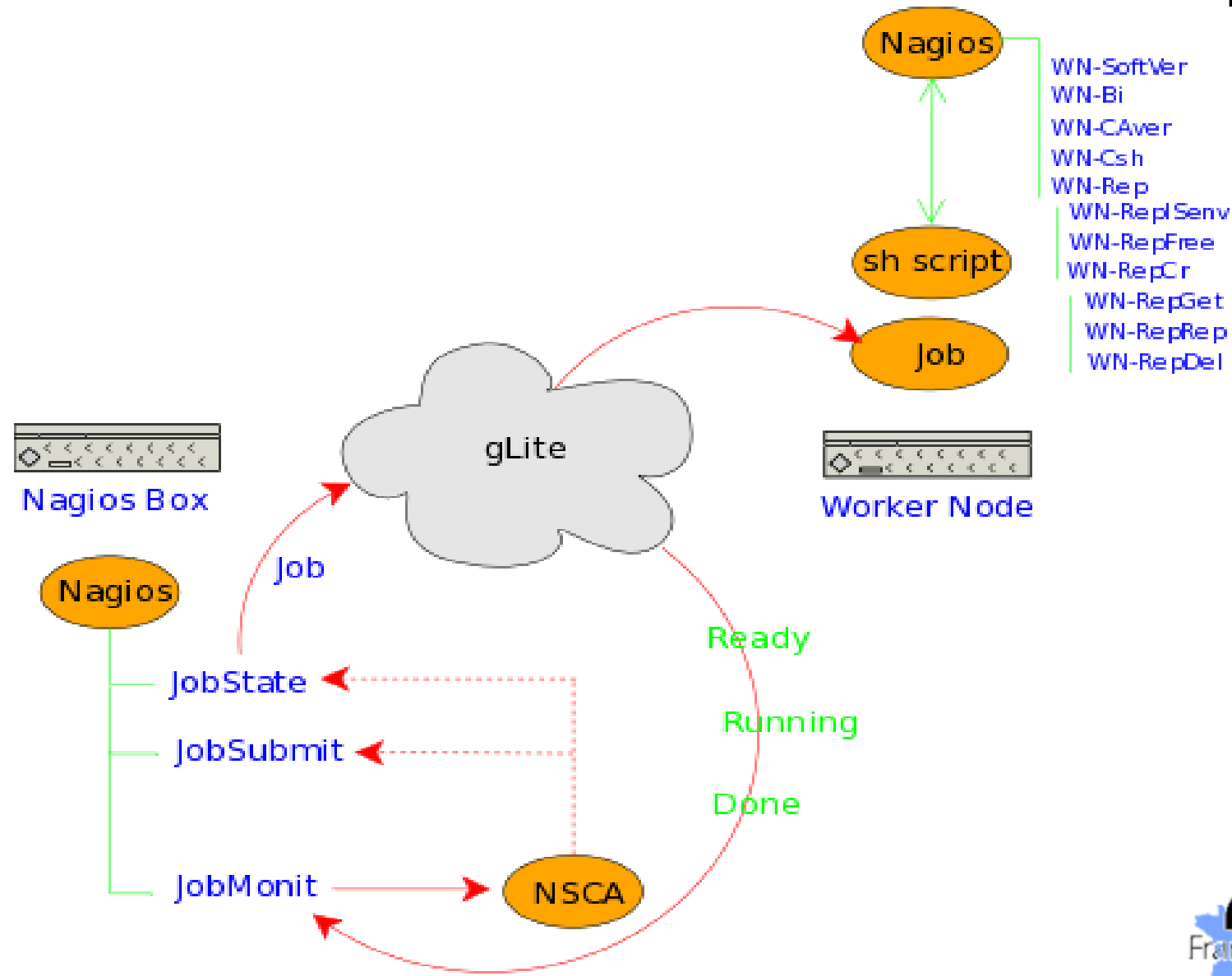
A JDL Job

```
[  
Type="Job";  
JobType="Normal";  
Executable = "script.sh";  
StdError = "gridjob.out";  
StdOutput = "gridjob.out";  
Arguments = "<jdlArguments>";  
InputSandbox = {"script.sh", "file.tar.gz"};  
OutputSandbox = {"gridjob.out"};  
RetryCount = <jdlRetryCount>;  
ShallowRetryCount = <jdlShallowRetryCount>;  
Requirements = other.GlueCEInfoHostName ==  
    "<jdlReqCEInfoHostName>";  
]
```

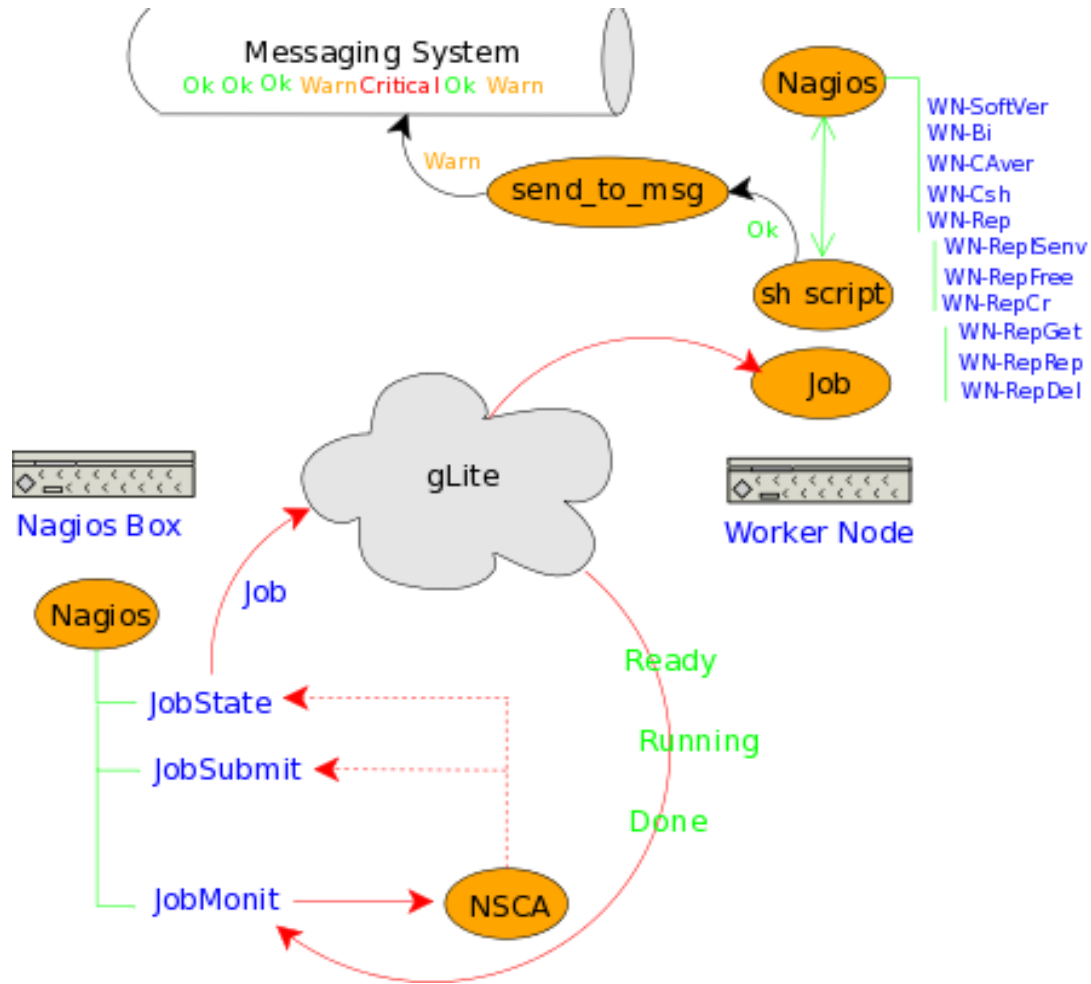
▶ A tarball including ...

- ▶ The Nagios binary
- ▶ Some tools
 - nagiosstats
 - msg-brokers
 - send_to_msg
- ▶ The Nagios conf
- ▶ The WN's probes





Publishing WN's metrics



```
[root@ccnagboxli01 marce01.in2p3.fr]# cat jobOutput_h0F2Xra2ZJINX3nX02hT_g/gridjob.out 2 |
```

```
=== [Wed Jun 16 15:06:06 CEST 2010] ===
```

```
=== Running on ===
```

```
=== Site: IN2P3-CPPM
```

```
=== CE: marce01.in2p3.fr:2119/jobmanager-pbs-ops
```

```
=== WN: marwn72.in2p3.fr
```

```
=== WN arch: x86_64
```

```
CPython 2.4.3
```

```
Traceback (most recent call last):
```

```
File "<string>", line 1, in ?
```

```
ImportError: No module named _lcg_util
```

```
bin/python
```

```
Can we import Python LDAP ...
```

```
YES.
```

```
Can we import _lcg_util now?
```

```
lcg_util version
```

```
lcg_util-1.7.6-2
```

```
GFAL-client-1.11.8-3
```

```
Message Broker URI was not given. Trying to obtain it from IS.
```

```
Brokers found in 'PROD' network [BDII cclcgtopbdii01.in2p3.fr:2170]:
```

```
stomp://gridmsg102.cern.ch:6163/
```

```
stomp://gridmsg101.cern.ch:6163/
```

```
stomp://msg.cro-ngi.hr:6163/
```

```
stomp://broker.afroditi.hellasgrid.gr:6163/
```

```
Brokers were sorted by min access time. Taking the first one.
```

```
Message Broker URI: stomp://gridmsg102.cern.ch:6163/
```

```
Message Broker destination: /queue/grid.probe.metricOutput.EGEE.a23827b5aeb12d21d3a4c987d1941a1c
```

```
Setting Nagios configuration.
```



Nagios Core 3.2.1

Copyright (c) 2009-2010 Nagios Core Development Team and Community Contributors

Copyright (c) 1999-2009 Ethan Galstad

Last Modified: 03-09-2010

License: GPL

Website: <http://www.nagios.org>

Nagios 3.2.1 starting... (PID=22809)

Local time is Wed Jun 16 15:06:07 CEST 2010

Nagios pid: 22809

_send_to_msg [Wed Jun 16 15:06:16 CEST 2010]: Successfully published 1 messages

_send_to_msg [Wed Jun 16 15:06:21 CEST 2010]: Successfully published 6 messages

_send_to_msg [Wed Jun 16 15:06:30 CEST 2010]: Successfully published 1 messages

_send_to_msg [Wed Jun 16 15:06:38 CEST 2010]: Successfully published 1 messages

_send_to_msg [Wed Jun 16 15:06:54 CEST 2010]: Successfully published 1 messages

_send_to_msg [Wed Jun 16 15:06:57 CEST 2010]: Successfully published 2 messages

>>>>>>>>>>>>>>>>>> Wed Jun 16 15:06:59 CEST 2010

T |S|c|U|O|W|C|A|P|

12|6|12|0|10|2|0|0|6|

Services Total 12 Checked: 12

All services were checked. Killing Nagios.

Nagios was successfully killed.

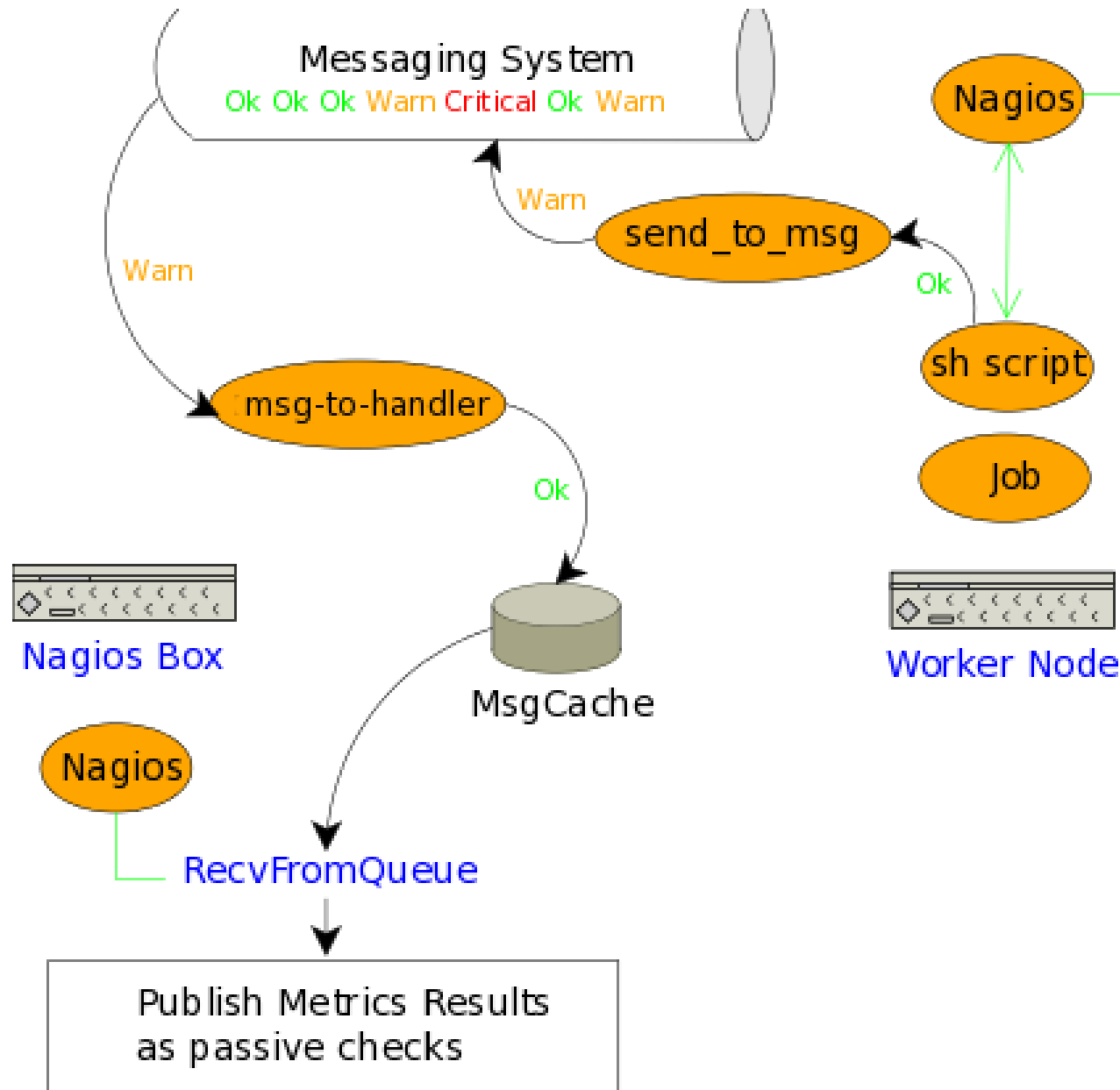
Successfully shutdown... (PID=22809)

Wed Jun 16 15:07:01 CEST 2010

===== Wed Jun 16 15:07:01 CEST 2010

[root@ccnagboxli01 marce01.in2p3.fr]#





Détail sur le fonctionnement de la nagios BOX pour les SEs

org.sam.SRM-All-ops Wrapper metric to launch the other metrics and publish passive checks results to Nagios.

org.sam.SRM-GetURLs Get full SRM endpoint(s) and storage areas from BDII.

org.sam.SRM-LsDir List content of VO's top level space area(s) in SRM.

org.sam.SRM-Put Copy a local file to the SRM into default space area(s).

org.sam.SRM-Ls List (previously copied) file(s) on the SRM.

org.sam.SRM-GetURLs Get Transport URLs for the file copied to storage.

org.sam.SRM-Get Copy given remote file(s) from SRM to a local file.

org.sam.SRM-Del Delete given file(s) from SRM

Détail sur le fonctionnement de la nagios BOX pour les SiteBDII

org.bdi.Entries: measure the response time as well as the number of entries returned.

org.gstat.SanityCheck :This probe is used to connect to the BDII - TopBDII and check the value of main attributes published to see if the publication of the site is consistent

<https://francegrid.in2p3.fr/index.php?title=Org.gstat.SanityCheck>

Calcul de Fiabilité/Disponibilité des sites

Availability : Availability of a service instance, service or a site over a given period is defined as the fraction of time the same was UP during the known interval in the given period.

Availability = UP period / (Total period – UNKNOWN period)

Availability = Up fraction / (Up fraction + Down fraction + Scheduled Down fraction)

Reliability : Reliability of a service instance, service or a site over a given period is defined as the ratio of the time interval it was UP over the time interval it was supposed (scheduled) to be UP during the known interval in the given period.

Reliability = UP period / (Total period – UNKNOWN period – Scheduled Downtime)

Reliability = Up fraction / (Up fraction + Down fraction)

Calcul de Fiabilité/Disponibilité des sites

(SRMv2, hr.srce.SRM2-CertLifetime)

(SRMv2, org.sam.SRM-Put)

(SRMv2, org.sam.SRM-LsDir)

(SRMv2, org.sam.SRM-Get)

(SRMv2, org.sam.SRM-Ls)

(SRMv2, org.sam.SRM-GetURLs)

(SRMv2, org.sam.SRM-GetURLs)

(SRMv2, org.sam.SRM-Del)

(Site-BDII, org.bdi.Entries)

(Site-BDII, org.gstat.SanityCheck)

(CE, hr.srce.GRAM-CertLifetime)

(CE, org.sam.CE-JobSubmit)

(CE, org.sam.WN-RepCr)

(CE, org.sam.WN-CAver)

(CE, org.sam.WN-RepIServ)

(CE, org.sam.WN-Rep)

(CE, org.sam.WN-Bi)

(CE, org.sam.WN-RepGet)

(CE, org.sam.WN-RepDel)

(CE, org.sam.WN-RepFree)

(CE, org.sam.WN-Csh)

(CE, org.sam.WN-RepRep)

(CE, org.sam.WN-SoftVer)

-Uniquement basé sur les sondes critiques ci dessus

-beaucoup plus d'état UNKNOWN depuis qu'on est passé à nagios: il peut manquer des résultats des tests (on passe en unknown pour gridview seulement au bout de 24 heures de non résultat)

-pour les calculs d'availability/reliability la période de temps utilisé ne prend pas les périodes UNKNOWN: si beaucoup d'état UNKNOWN les calculs ont beaucoup moins de sens.