



WLCG Nagios Monitoring

Cristina del Cano Novales

Introduction

- A Nagios based monitoring system for grid services
- Designed for a multi-level monitoring system
 - Sites, ROCs, Projects

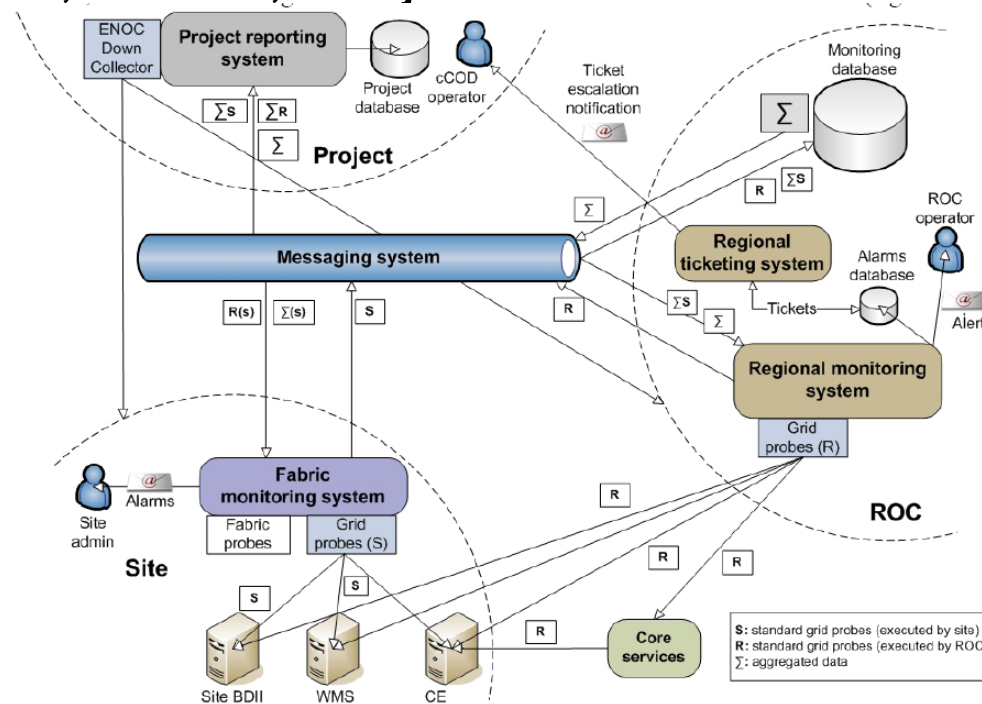


Figure 14 : Interaction between site, regional and central monitoring



Introduction

- Provides a Nagios installation, a glite-UI and a configuration tool
- Gathers configuration information from different sources
 - Sites, contacts, services, tests,...



Components

- 3 main components
 - gLite-UI
 - Nagios
 - NCG: Nagios Configuration Generator



gLite-UI

- To run local tests against grid sites from the Nagios machine
- Requires a proxy
 - Proxy retrieval by Nagios probe
 - No functionality to upload



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:

Reports

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 - Summary
 - Histogram
- Notifications
- Event Log

System

- Comments
- Downtime
- Process Info
- Performance Info
- Scheduling Queue
- Configuration

Current Network Status
 Last Updated: Fri Mar 19 09:01:28 GMT 2010
 Updated every 601 seconds
 Nagios® Core™ 3.2.0 - www.nagios.org
 Logged in as /C=UK/O=eScience/OU=CLR/C=L=RAU/CN=cristina.delcano.novales

- [View Status Overview For This Service Group](#)
- [View Status Summary For This Service Group](#)
- [View Service Status Grid For This Service Group](#)
- [View Service Status Detail For All Service Groups](#)

Host Status Totals

Up	Down	Unreachable	Pending
3	0	0	0

All Problems	All Types
0	3

Service Status Totals

Ok	Warning	Unknown	Critical	Pending
16	0	0	0	0

All Problems	All Types
0	16

Service Status Details For Service Group 'nagios-internal'

Host ↑↓	Service ↑↓	Status ↑↓	Last Check ↑↓	Duration ↑↓	Attempt ↑↓	Status Information
myproxy.nqs.ac.uk ⚠	hr_srce.MyProxy-ProxyLifetime-nqs.ac.uk	OK	03-19-2010 08:03:16	3d 17h 57m 6s	1/3	Certificate will expire in 5.03 days (Mar 24 08:41:12 2010 GMT)
nqs-dev.nqs.ac.uk ⚠	hr_srce.CAdist-Version	OK	03-18-2010 11:38:27	1d 21h 23m 1s	1/2	Official IGTF version is 1.34. Official LCG version is 1.34. Installed version is 1.34. Comparing with LCG version. Valid distribution version found.
	hr_srce.CertLifetime	OK	03-18-2010 11:05:52	13d 23h 31m 34s	1/2	CERT LIFETIME OK - Certificate will expire in 378.15 days (Mar 31 14:34:47 2011 GMT)
	hr_srce.GridProxy-Get-nqs.ac.uk	OK	03-19-2010 07:57:43	3d 17h 56m 57s	1/3	MyProxy credential retrieved. VOMS credential retrieved.
	hr_srce.GridProxy-Valid-nqs.ac.uk	OK	03-19-2010 08:49:55	6d 18h 29m 29s	1/3	Grid proxy is valid. Certificate will expire in 10.63 hours (Mar 19 19:27:43 2010 GMT)
	org.egee.ATPSync	OK	03-19-2010 08:22:12	15d 23h 15m 6s	1/10	Error:fetching XML data from url: http://cic.gridops.org/downloadRP.php?section=lavoisier&rname=vocardPublic&vo=all <urlopen error (111, 'Connection refused')>
	org.egee.CheckConfig ⚠	OK	03-19-2010 08:42:13	15d 23h 31m 32s	1/3	check_config OK - No new/updated configuration.
	org.egee.ImportGocdbDowntimes ⚠	OK	03-19-2010 06:58:03	15d 23h 27m 14s	1/3	GOCDB_DOWNTIMES OK - Downtimes successfully synchronized.
	org.egee.MDDBSync	OK	03-19-2010 08:38:29	8d 23h 49m 44s	1/10	MDDB_SYNC: mddb-synchronizer was successfully run, see logfile.
	org.egee.RecvFromQueue ⚠	OK	03-17-2010 15:03:30	15d 23h 18m 37s	1/4	RecvFromQueue OK - No messages imported.
	org.egee.SendToMetricStore ⚠	OK	03-17-2010 09:42:32	16d 0h 15m 18s	1/4	SendToDb OK - Successfully inserted 1 messages.
	org.egee.SendToMsg ⚠	OK	03-17-2010 15:03:15	1d 22h 20m 7s	1/4	SendToMsg OK - No messages to send.
	org.nagios.DiskCheck ⚠	OK	03-19-2010 08:20:13	16d 0h 9m 35s	1/3	DISK OK - free space: / 15269 MB (83% inode=98%); /tmp 9037 MB (98% inode=99%); /var/log 13553 MB (98% inode=99%); /var/nagios 18203 MB (99% inode=99%); /boot 883 MB (96% inode=99%); /dev/shm 501 MB (100% inode=99%);
	org.nagios.ProcessCronD	OK	03-19-2010 09:00:39	15d 23h 31m 30s	1/3	PROCS OK: 1 process with command name 'cronD'
	org.nagios.ProcessMsgToQueue	OK	03-19-2010 08:53:00	15d 23h 27m 12s	1/3	PROCS OK: 1 process with command name 'msg-to-queue'
	org.nagios.ProcessNpcd	OK	03-19-2010 08:51:31	15d 23h 22m 54s	1/3	PROCS OK: 1 process with command name 'npcd'

16 Matching Service Entries Displayed

NCG

- Configuration generator
- Gathering configuration information from different sources
- Could be used with other monitoring tools (not only Nagios)



NCG

- Main configuration file `ncg.conf`
- Specifies sources of data
- Same structure as Apache HTTP server configuration
 - Global and module-specific parameters according to markup sections corresponding to the perl modules inside NCG



```

<NCG::LocalMetrics>
  <File>
    DB_FILE=/etc/ncg/ncg.localdb
    DB_DIRECTORY=/etc/ncg/ncg-localdb.d
  </File>

  <Hash>
    NATIVE=Nagios
  </Hash>

  #<MDDB/>

</NCG::LocalMetrics>

```

ncg.conf

```

[root@qos-dev NCG]# ls
ConfigConverter.pm  LocalMetrics          LocalRules.pm        SiteDB.pm
ConfigGen           LocalMetricsAttrs    RemoteMetrics        SiteInfo
ConfigGen.pm       LocalMetricsAttrs.pm RemoteMetrics.pm     SiteInfo.pm
ConfigPublish      LocalMetrics.pm      SiteContacts         SiteSet
ConfigPublish.pm   LocalRules           SiteContacts.pm     SiteSet.pm
[root@qos-dev NCG]# ls -R LocalMetrics/
LocalMetrics/:
File.pm  Hash.pm  MDDB.pm
[root@qos-dev NCG]# █

```

NCG

- Three phases:
 - Topology Information Gathering:
 - List of sites
 - Information about services, hosts, contacts
 - Probe Description
 - List and description of metrics
 - Association between metrics and services
 - Configuration Generation
 - For a specific monitoring tool (Nagios...)



Topology Information

- SiteSet: List of sites to monitor
 - ATP , File, GOCDB, LDAP
- SiteInfo: Information for each site
 - ATP, ENOC, File, GOCDB, LDAP, SAM
- SiteContacts: Information for contacts for each site
 - GOCDB
- LocalRules: Add/remove contact information
 - File



```

"
<NCG::SiteSet>

# <LDAP>
#   LDAP_ADDRESS=ngsinfo-dev.grid-support.ac.uk
# </LDAP>
# <GOCDB>
#   ROC=UKI
#   CERT_STATUS=Uncertified
# </GOCDB>
<UKDB>
  ROC=UKI
</UKDB>
<File>
  DB_FILE=/etc/ngc/ngc.localdb
  DB_DIRECTORY=/etc/ngc/ngc-localdb.d
</File>

</NCG::SiteSet>

```

```
# NCG module for gathering site contacts.
```

```

<NCG::LocalRules>
  <File>
    DB_FILE=/etc/ngc/ngc.localdb
    DB_DIRECTORY=/etc/ngc/ngc-localdb.d
  </File>
</NCG::LocalRules>

```

```

# NCG module for gathering site contacts.
# This data is used for AuthZ on Nagios web interface
<NCG::SiteContacts>
  # This will fetch users from GOCDB
  # Currently only site admins & security officers
  <GOCDB>
    GOCDB_USER=$GOCDB_USER
    GOCDB_PASSWORD=$GOCDB_PASSWORD
  </GOCDB>
</NCG::SiteContacts>

```

```

# NCG modules for gathering site information
<NCG::SiteInfo>
  <GOCDB>
    NODE_MONITORED=N
  </GOCDB>
<GOCDB/>

# <LDAP>
#   LDAP_ADDRESS=ngsinfo-dev.grid-support.ac.uk
#   ADD_HOSTS=1
# </LDAP>
  <File>
    DB_FILE=/etc/ngc/ngc.localdb
    DB_DIRECTORY=/etc/ngc/ngc-localdb.d
  </File>
</NCG::SiteInfo>

<NCG::SiteInfo NGS-WMS>
  <File>
    DB_FILE=/etc/ngc/ngc.WMS
    DB_DIRECTORY=/etc/ngc/ngc-localdb.d
  </File>
</NCG::SiteInfo>

```

ncg.localdb

```
ADD_SITE!NGS-WMS
```

```
SERVICE_METRIC!CE!ngs.general.GSISSH-Test  
METRIC_METRICSET!ngs.general.GSISSH-Test!GSISSH  
METRIC_PROBE!ngs.general.GSISSH-Test!ngs.general/GSISSH-probe  
METRIC_NATIVE!ngs.general.GSISSH-Test!Nagios  
METRIC_CONFIG!ngs.general.GSISSH-Test!timeout!60  
METRIC_CONFIG!ngs.general.GSISSH-Test!path!/usr/libexec/grid-monitoring/probes  
METRIC_CONFIG!ngs.general.GSISSH-Test!timeout!600  
METRIC_CONFIG!ngs.general.GSISSH-Test!interval!60  
METRIC_CONFIG!ngs.general.GSISSH-Test!retryInterval!15  
METRIC_CONFIG!ngs.general.GSISSH-Test!maxCheckAttempts!4
```

```
METRIC_FLAG!ngs.general.GSISSH-Test!OBSESS  
METRIC_FLAG!ngs.general.GSISSH-Test!NRPE
```

```
METRIC_PARAMETER!ngs.general.GSISSH-Test!-x!/etc/nagios/globus/userproxy.pem-ngs.ac.uk  
METRIC_PARAMETER!ngs.general.GSISSH-Test!-p!2222  
METRIC_PARAMETER!ngs.general.GSISSH-Test!-n!0  
METRIC_PARAMETER!ngs.general.GSISSH-Test!-m!ngs.general.GSISSH-Test
```

ngs.WMS

```
# test configuration for NCG::SiteSet::File  
# add site egee.srce.hr and CERN-PROD to  
# multisite config
```

```
ADD_HOST!ngswms01.ngs.ac.uk  
ADD_HOST_SERVICE!ngswms01.ngs.ac.uk!WMS
```

```
~  
~
```

Probe Description

- Merges topology information with data defining tests
- Association between services and tests
- Two types of probes:
 - Remote (passive nagios tests)
 - Local (active nagios tests)



Probe Description

- LocalMetrics: Defines metrics (probe to be used, VO, dependencies)
 - Hash, MDDDB, File
- LocalMetricsAttrs: Variable metric attributes (port number,...)
 - Active, LDAP, File
- RemoteMetrics: Metrics information from central services
 - SAM, Nagios, NPM



Configuration Generation

- Configuration for the specific monitoring tool
- Only Nagios implemented
- Lots of variables can be set
 - Proxy information
 - ROC name
 - Probes directory
 - Template directory
- All this values used in probes



Nagios

- Standard installation of Nagios
- Configured by NCG
- Web interface:
 - Access by certificates
 - Access control list created from SiteContacts module



Service Status Details For All Hosts

General

- Home
- Documentation

Current Status

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- Downtime
- Process Info
- Performance Info
- Scheduling Queue
- Configuration

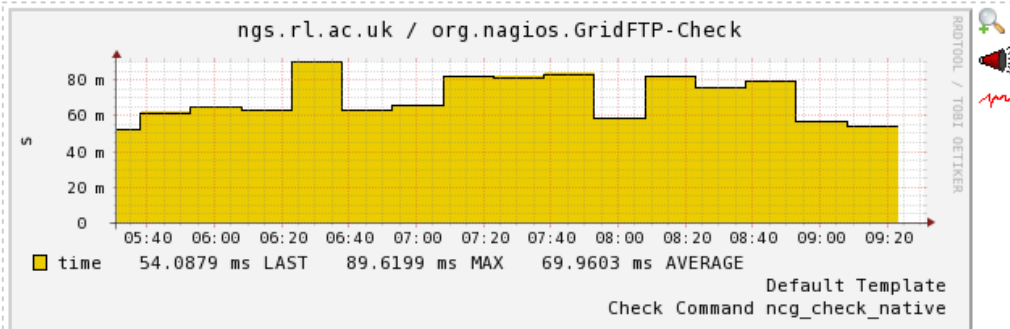
Host ↑↓	Service ↑↓	Status ↑↓	Last Check ↑↓	Duration ↑↓	Attempt ↑↓	Status Information
myproxy-test.nqs.ac.uk	hr_srce.MyProxy-ProxyLifetime-nqs.ac.uk	OK	03-23-2010 07:55:00	0d 21h 27m 41s	1/3	Certificate will expire in 6.12 days (Mar 29 10:53:16 2010 GMT)
nqs.rl.ac.uk	hr_srce.CAdist-Version-nqs.ac.uk	OK	03-22-2010 14:38:28	0d 17h 44m 13s	1/4	Official IGTF version is 1.34. Official LCG version is 1.34. Installed version is 1.34. Comparing with LCG version. Valid distribution version found.
	hr_srce.GRAM-Auth-nqs.ac.uk	OK	03-23-2010 08:08:28	0d 17h 44m 13s	1/4	GRAM Authentication test successful
	hr_srce.GRAM-CertLifetime	OK	03-23-2010 04:56:46	0d 15h 25m 55s	1/2	CERT LIFETIME OK - Certificate will expire in 10.15 days (Apr 2 08:31:30 2010 GMT)
	hr_srce.GridFTP-Transfer-nqs.ac.uk	OK	03-23-2010 07:38:27	0d 17h 44m 14s	1/4	Upload to remote computer succeeded. Download from remote computer succeeded. File successfully removed from remote computer. Received file is valid.
	nqs_general.GRAM-Command-nqs.ac.uk	OK	03-23-2010 07:50:26	0d 2h 32m 15s	1/4	GRAM OK: Command successfully executed. Output is: "1269330626 TERM environment variable not set. ". Result matches the expected result.
	nqs_general.GSISsh-Test	OK	03-23-2010 07:42:16	0d 17h 40m 25s	1/4	GSISsh Test successful
	org.gstat.CE	OK	03-23-2010 07:38:27	0d 17h 44m 14s	1/4	OK - errors 0, warnings 0, info 0
	org.nagios.GridFTP-Check	OK	03-23-2010 08:08:27	0d 17h 44m 14s	1/4	FTP OK - 0.058 second response time on port 2811 [220 nqs.rl.ac.uk GridFTP Server 2.5 (gcc64dbg, 1182369948-63) ready.]
	org.nmap.GRAM	OK	03-23-2010 08:18:27	0d 17h 44m 14s	1/2	NMAP OK - open
nqs-dev.nqs.ac.uk	hr_srce.CAdist-Version	OK	03-22-2010 15:21:13	5d 20h 44m 14s	1/2	Official IGTF version is 1.34. Official LCG version is 1.34. Installed version is 1.34. Comparing with LCG version. Valid distribution version found.
	hr_srce.CertLifetime	OK	03-22-2010 15:21:13	17d 22h 52m 47s	1/2	CERT LIFETIME OK - Certificate will expire in 373.97 days (Mar 31 14:34:47 2011 GMT)
	hr_srce.GridProxy-Get-nqs.ac.uk	OK	03-23-2010 07:21:13	0d 21h 29m 1s	1/3	MyProxy credential retrieved. VOMS credential retrieved.
	hr_srce.GridProxy-Valid-nqs.ac.uk	OK	03-23-2010 08:21:13	0d 21h 28m 35s	1/3	Grid proxy is valid. Certificate will expire in 10.50 hours (Mar 23 18:51:13 2010 GMT)
	org.egee.ATPSync	OK	03-23-2010 07:51:13	19d 22h 36m 19s	1/10	Connecting : gridmsg001.cern.ch:6163
	org.egee.CheckConfig	OK	03-23-2010 07:55:56	19d 22h 52m 45s	1/3	check_config OK - No new/updated configuration.
	org.egee.ImportGoodbDowntimes	OK	03-23-2010 07:41:13	0d 0h 41m 28s	1/3	GOCDB_DOWNTIMES OK - Downtimes successfully synchronized.
	org.egee.MDDBSync	OK	03-23-2010 07:51:13	12d 23h 10m 57s	1/10	MDDB_SYNC: mddb-synchronizer was successfully run, see logfile.
	org.egee.RecvFromQueue	OK	03-23-2010 08:19:29	19d 22h 39m 50s	1/4	RecvFromQueue OK - No messages imported.
	org.egee.SendToMetricStore	OK	03-17-2010 09:42:32	19d 23h 36m 31s	1/4	SendToDb OK - Successfully inserted 1 messages.
	org.egee.SendToMsg	OK	03-22-2010 17:17:56	0d 15h 19m 45s	1/4	SendToMsg OK - No messages to send.
	org.nagios.DiskCheck	OK	03-23-2010 08:21:13	3d 18h 17m 18s	1/3	DISK OK - free space: / 15252 MB (83% inode=98%); /tmp 9037 MB (98% inode=99%); /var/log 13419 MB (97% inode=99%); /var/nagios 18203 MB (99% inode=99%); /boot 883 MB (96% inode=99%); /dev/shm 501 MB (100% inode=99%);
	org.nagios.ProcessCronD	OK	03-23-2010 08:21:13	19d 22h 52m 43s	1/3	PROCS OK: 1 process with command name 'cronD'
org.nagios.ProcessMsgToQueue	OK	03-23-2010 08:21:13	19d 22h 48m 25s	1/3	PROCS OK: 1 process with command name 'msg-to-queue'	
org.nagios.ProcessNpcd	OK	03-23-2010 08:21:13	19d 22h 44m 7s	1/3	PROCS OK: 1 process with command name 'npcd'	

25 Matching Service Entries Displayed

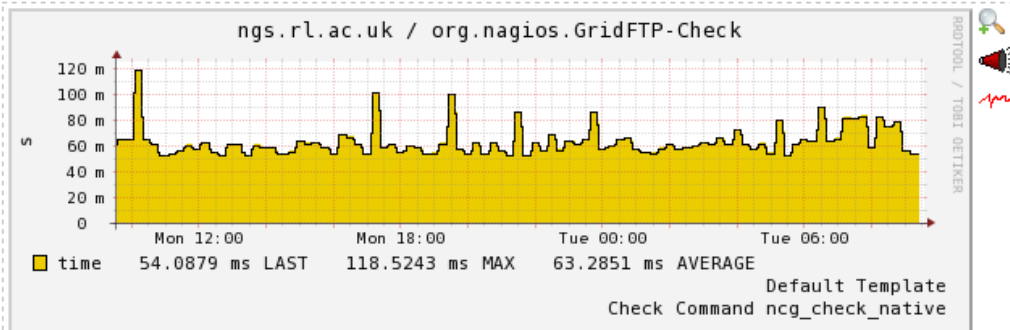


Service Overview

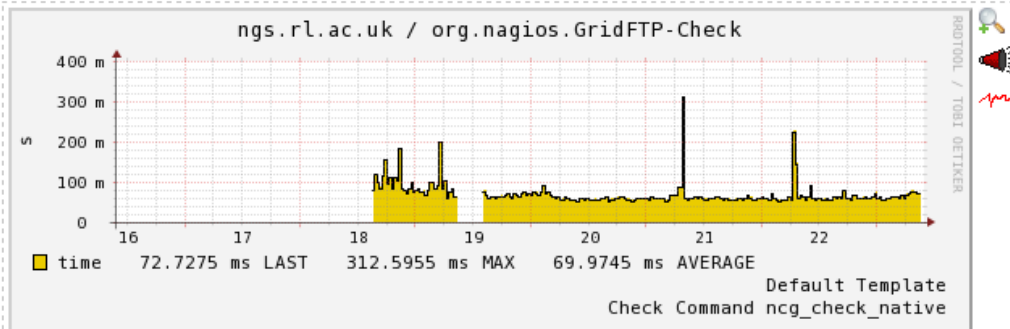
4 Hours (23.03.10 5:30 - 23.03.10 9:30)



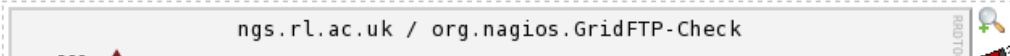
24 Hours (22.03.10 9:30 - 23.03.10 9:30)



One Week (16.03.10 9:30 - 23.03.10 9:30)



One Month (21.02.10 9:30 - 23.03.10 9:30)



Search:



Host: [ngs.rl.ac.uk](#)
 Service: [org.nagios.GridFTP-C...](#)
 Hoststate: UP [HARD]
 Servicestate: OK [HARD]
 Created: 23.03.10 9:23

- [Host Perfdata](#)
- [org.gstat.CE](#)
- [org.nagios.GridFTP-C...](#)

PNP 0.9.12 RRDtool

PNP is an addon to nagios which analyzes performance data provided by plugins and stores them automatically into RRD-databases



Hr.srce.CertLifetime

(Redirected from [Hr.srce.GRAM-CertLifetime](#))

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- 3 Dependencies
- 4 Service groups
- 5 Package
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- 7 Flags
- 8 Troubleshooting
 - 8.1 WARNING

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Description

Metric checks the validity of certificate.

In case of service checks, it connects to service and retrieves certificate via SSL.

In case of local checks, it opens a certificate file.

Intervals

Normal interval: 24 hours

Retry interval: 60 minutes

Number of retries: 4

Dependencies

Service checks should depend on TCP checks.

Service groups

<serviceName>, local

Package

grid-monitoring-probes-hr.srce

Probe

Tests and Probes

- Probe specification in:

<https://twiki.cern.ch/twiki/bin/view/LCG/GridMonitoringProbeSpecification>

- One probe can include several metrics
- Probe input should include some arguments (-h, -l, -m, -u)
- Probe output in key value pair format
- Probes written in perl



NSCA

- Nagios Service Check Acceptor
- Tests results can also be sent to the Nagios box by using NSCA



Message Bus (ActiveMQ)

- Results of the tests can be published to the network of brokers (at CERN)
- Results can be read from there by anyone interested
- Results can also be read from the message bus (nagios passive tests)





Questions?



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WLCG-Nagios for the NGS

Cristina del Cano Novales

WLCG-Nagios for the NGS

- What options do we have?
- What do we need?
- Some considerations...
- How much work is it?
- An example...



What options do we have?

- Independent NGS instance?
- NGS instance in parallel to gridPP instance?
- One Nagios instance for UKI?



What do we need?

- WLCG-Nagios needs:
 - List of sites
 - List of hosts per site
 - List of contacts per site
 - List of services per host
 - Metrics
 - Metrics – services association
 - Other smaller bits of information



To think about...

- What tests are provided out of the box by WLCG-Nagios?
- What tests is INCA running? Are they all necessary?
- Any other tests we might be interested in?
- Where do we keep all the information needed? (GOCDDB!)



How much work?

- Decide on where to store information – GOCDDB!
- Get sites to start publishing correct information: Site + Hosts + Services + Contacts
- Decide on what we want to test
 - use as many WLCG-Nagios tests as we can - implement any others we need
- Decide on standard way to add tests to system
- Implement changes on WLCG-Nagios system



An example...





Questions?



cristina.del-cano-novales@stfc.ac.uk