

How To Maintain Over 20 Monitoring Appliances

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Nagios[®] WORLD CONFERENCE 2014

Introduction & Agenda

- History
- Installation
- Look and Feel
- Administration
- Alerting
- Maintenance
- Checks
- Conclusion
- Questions

Agenda



Deltics Nagios Appliance



NagVis

phpMyAdmin



Thruk

sFlow


SALTSTACK

RRDtool
logging & graphing

History

Version 1

- Installed in /opt/monitoring
- Using compiled sources
- Hardly upgradable



The screenshot shows the Nagios 1.0 web interface. On the left is a sidebar with navigation links like 'Home', 'Hosts', 'Services', etc. The main area displays a table of monitored hosts. The table has columns for host name, status, and other details. Many hosts are listed with a status of 'Up' or 'Down'.

Version 2

- Installed in the “usual” paths
- Using pre-compiled RPM packages
- Upgradable using yum
- Introduced SNMP monitoring
- Using SNMPTT for snmptraps
- SMS text alerting

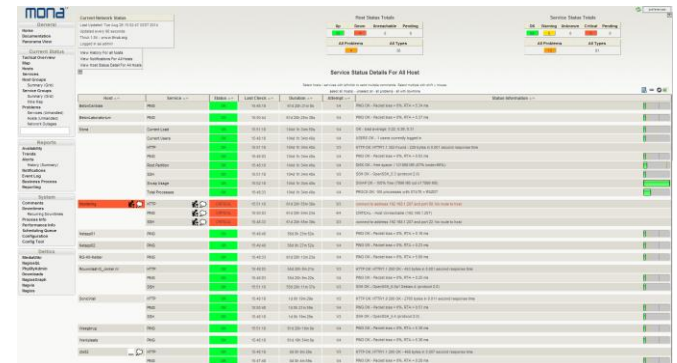


The screenshot shows the Nagios 2.0 web interface. It features a more modern layout with a sidebar on the left and a main content area. The main area displays a table of monitored hosts, similar to Version 1 but with a different visual style. The table includes columns for host name, status, and other details.

History

Version 3

- Based on Nagios 4.X
- Latest NagiosQL for configuration
- New frontend / webinterface (Thruk)
- Saltstack (salt-ssh) for global configuration
- Useraccounts for all engineers
- Sflow
- RRDTool



Installation

- Based on CentOS 6.5
- Extra repositories (EPEL + Deltics)
- Standard packages for Thruk / RRDTool / phpMyAdmin / MediaWiki enz.
- Adjusted or own RPM files for Nagios / NagVis / thirdparty / NagiosQL / Mona_BG / nagios_plugins_BG / nagios_plugins / smstools3



Installation

- Using PXE boot for initial installation
- Kickstart file for default configuration
- Using RPM dependencies in mona_BG to install all packages needed
- Default CentOS and EPEL for most packages
- Using the Deltics repository for self created packages

Installation

```
=====
Package                                Arch                                Version                                Repository                                Size
=====
Updating:
nagios                                i386                                4.0.8-3.el6                            BetaGraphics                                2.7 M
nagios-contrib                        i386                                4.0.8-3.el6                            BetaGraphics                                24 k
nagios-devel                          i386                                4.0.8-3.el6                            BetaGraphics                                75 k
nagios-plugins                        i386                                2.0.3-1                                BetaGraphics                                1.2 M
nagios-plugins-nrpe                   i686                                2.15-2.el6                            epel                                          23 k
nagios-plugins_BG                     i386                                0.1-140707_1.centos6_BG               BetaGraphics                                1.3 M
Installing for dependencies:
perl-Class-Accessor                   noarch                              0.31-6.1.el6                            base                                          26 k
perl-Config-Tiny                      noarch                              2.12-7.1.el6                            base                                          23 k
perl-Math-Calc-Units                  noarch                              1.07-6.el6                              epel                                          41 k
perl-Nagios-Plugin                    noarch                              0.35-1.el6                              epel                                          61 k
perl-Params-Validate                  i686                                0.92-3.el6                              base                                          75 k
Transaction Summary
=====
Install      5 Package(s)
Upgrade      6 Package(s)

Total download size: 5.5 M
Is this ok [y/N]: █
```


Look and Feel

The screenshot displays the Nagios web interface. On the left is a navigation menu with sections: General (Home, Documentation, Panorama View), Current Status (Tactical Overview, Map, Hosts, Services, Host Groups, Service Groups, Problems), Reports (Availability, Trends, Alerts, Notifications, Event Log, Business Process, Reporting), System (Comments, Downtimes, Process Info, Performance Info, Scheduling Queue, Configuration, Config Tool), and Deltics (MediaWiki, NagiosQL, PhpMyAdmin, Downloads, NagiosGraph, Nagvis, Nagios).

The main content area features a 'Current Network Status' box with update information and a 'Host Status Totals' table:

Up	Down	Unreachable	Pending
4	0	0	0
All Problems		All Types	
0		1	

Below this is a 'Service Status Totals' table:

Ok	Warning	Unknown	Critical	Pending
4	0	0	0	0
All Problems		All Types		
0		8		

The central section is titled 'Service Status Details For All Host' and includes a table for the 'localhost' host:

Host	Service	Status	Last Check	Duration	Attempt	Status Information
localhost	Current Load	OK	01:25:51	0d 0h 9m 51s	1/4	OK - load average: 1.10, 0.76, 0.35
	Current Users	OK	01:21:29	0d 0h 9m 13s	1/4	USERS OK - 0 users currently logged in
	HTTP	OK	01:22:06	0d 0h 8m 36s	1/3	HTTP OK: HTTP/1.1 302 Found - 229 bytes in 0.066 second response time
	PING	OK	01:22:44	0d 0h 3m 44s	1/4	PING OK - Packet loss = 0%, RTA = 0.02 ms
	Root Partition	OK	01:23:21	0d 0h 3m 7s	1/4	DISK OK - free space: / 216928 MB (99% inode=99%):
	SSH	OK	01:23:59	0d 0h 2m 29s	1/3	SSH OK - OpenSSH_5.3 (protocol 2.0)
	Swap Usage	OK	01:24:36	0d 0h 1m 52s	1/4	SWAP OK - 100% free (7999 MB out of 7999 MB)
	Total Processes	OK	01:25:14	0d 0h 1m 14s	1/4	PROCS OK: 114 processes with STATE = RSZDT

At the bottom of the service details section, it states '8 of 8 Matching Service Entries Displayed'.

Look and Feel

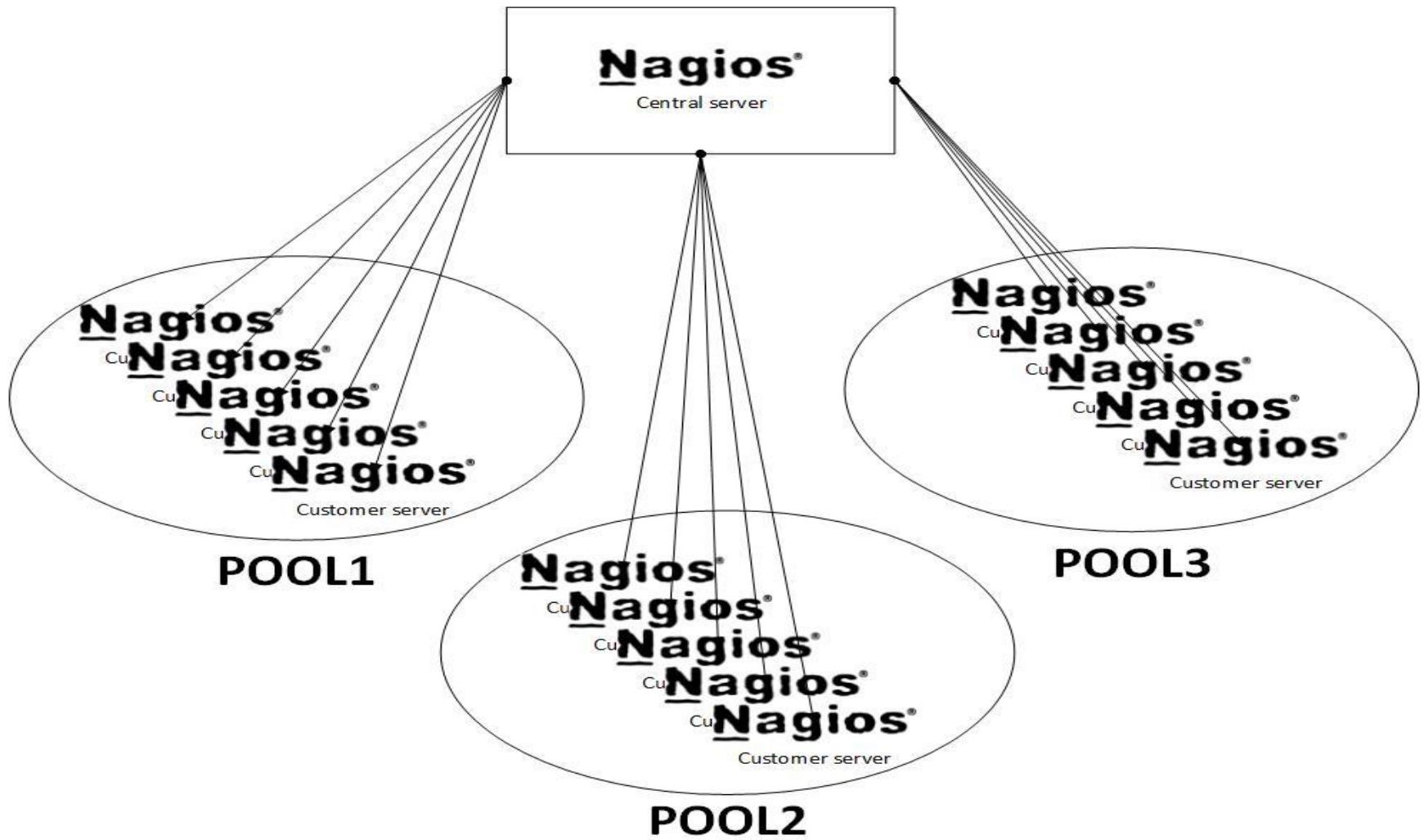
Deltics

MediaWiki
NagiosQL
PhpMyAdmin
Downloads
NagiosGraph
Nagvis
Nagios

Extra added menu for additional tools

- **Mediawiki** for customer information
- **NagiosQL** for web based configuration
- **PhpMyAdmin** for MySQL management
- **Downloads** for custom download map (for firmware or other software)
- **NagiosGraph** for performance output graphics
- **Nagvis** for a graphical overview of the customer environment
- **Nagios** for the default Nagios (Mona v2) webinterface

Deltics Nagios network



Deltics - Administration



Deltics Tactical System Overview

Last check: Tue, 02 Sep 2014 17:40:36 +0200



DELITICS - BMA						
	23 up	0 down	0 acknowledged	0 unreachable	0 pending	
	0 warnings	0 acknowledged	1 critical	1 acknowledged	0 unknown	40 ok
	95 up	1 down	1 acknowledged	0 unreachable	0 pending	
	7 warnings	6 acknowledged	2 critical	2 acknowledged	0 unknown	897 ok
	137 up	0 down	0 acknowledged	0 unreachable	0 pending	
	3 warnings	3 acknowledged	6 critical	5 acknowledged	0 unknown	612 ok
	31 up	2 down	0 acknowledged	0 unreachable	0 pending	
	2 warnings	2 acknowledged	6 critical	6 acknowledged	5 unknown	154 ok
	45 up	0 down	0 acknowledged	0 unreachable	0 pending	
	2 warnings	0 acknowledged	0 critical	0 acknowledged	0 unknown	277 ok
	13 up	0 down	0 acknowledged	0 unreachable	0 pending	
	1 warnings	1 acknowledged	0 critical	0 acknowledged	0 unknown	97 ok
	240 up	0 down	0 acknowledged	0 unreachable	0 pending	
	0 warnings	0 acknowledged	0 critical	0 acknowledged	0 unknown	1049 ok
	13 up	0 down	0 acknowledged	0 unreachable	0 pending	
	0 warnings	0 acknowledged	0 critical	0 acknowledged	0 unknown	33 ok
	5 up	0 down	0 acknowledged	0 unreachable	0 pending	
	0 warnings	0 acknowledged	0 critical	0 acknowledged	0 unknown	61 ok
	64 up	0 down	0 acknowledged	0 unreachable	0 pending	
	1 warnings	1 acknowledged	0 critical	0 acknowledged	0 unknown	211 ok
	11 up	2 down	2 acknowledged	0 unreachable	0 pending	
	2 warnings	2 acknowledged	2 critical	2 acknowledged	0 unknown	144 ok
	35 up	1 down	1 acknowledged	0 unreachable	0 pending	
	6 warnings	4 acknowledged	7 critical	6 acknowledged	1 unknown	67 ok

DELITICS - HENGLO						
	40 up	0 down	0 acknowledged	0 unreachable	0 pending	
	4 warnings	1 acknowledged	1 critical	1 acknowledged	0 unknown	271 ok
	570 up	0 down	0 acknowledged	0 unreachable	0 pending	
	0 warnings	0 acknowledged	1 critical	0 acknowledged	0 unknown	801 ok
	26 up	0 down	0 acknowledged	0 unreachable	0 pending	
	2 warnings	2 acknowledged	0 critical	0 acknowledged	0 unknown	137 ok
	22 up	0 down	0 acknowledged	0 unreachable	0 pending	
	0 warnings	0 acknowledged	0 critical	0 acknowledged	0 unknown	147 ok
	65 up	0 down	0 acknowledged	0 unreachable	0 pending	
	1 warnings	1 acknowledged	0 critical	0 acknowledged	0 unknown	386 ok
	185 up	2 down	2 acknowledged	0 unreachable	0 pending	
	16 warnings	1 acknowledged	5 critical	3 acknowledged	0 unknown	770 ok
	55 up	0 down	0 acknowledged	0 unreachable	0 pending	
	1 warnings	0 acknowledged	1 critical	1 acknowledged	0 unknown	496 ok
	8 up	0 down	0 acknowledged	0 unreachable	0 pending	
	0 warnings	0 acknowledged	0 critical	0 acknowledged	0 unknown	53 ok
	19 up	1 down	1 acknowledged	0 unreachable	0 pending	
	0 warnings	0 acknowledged	1 critical	1 acknowledged	0 unknown	169 ok
	347 up	0 down	0 acknowledged	0 unreachable	0 pending	
	1 warnings	0 acknowledged	0 critical	0 acknowledged	0 unknown	351 ok
	319 up	49 down	41 acknowledged	0 unreachable	0 pending	
	0 warnings	0 acknowledged	49 critical	41 acknowledged	0 unknown	326 ok
	79 up	4 down	1 acknowledged	0 unreachable	0 pending	
	8 warnings	6 acknowledged	16 critical	5 acknowledged	8 unknown	354 ok

Deltics - Administration

That's a total of:

2447 Hosts

&

7903 Service checks

in

24 Nagios installations

Multiple useraccounts

- In Nagios it is possible to use as many useraccounts you like.
- 25 useraccounts are currently used, for engineers and customerview accounts.
- Password recovery (setting a new password) can be done via a webpage.

(Re)set the passwords

```
#!/bin/bash
name=$1;
passwd=$2;
mailaddress=$3;

echo "<h1> The new password for:<font color=red> $name </font> is now: <font
color=red>$passwd</font></h1><br><br>"

echo "<br><br><br>"

sudo /usr/bin/salt-ssh "*" -r "sudo htpasswd -D /etc/nagios/htpasswd.users $name"
sudo /usr/bin/salt-ssh "*" -r "sudo htpasswd -mb /etc/nagios/htpasswd.users $name $passwd"

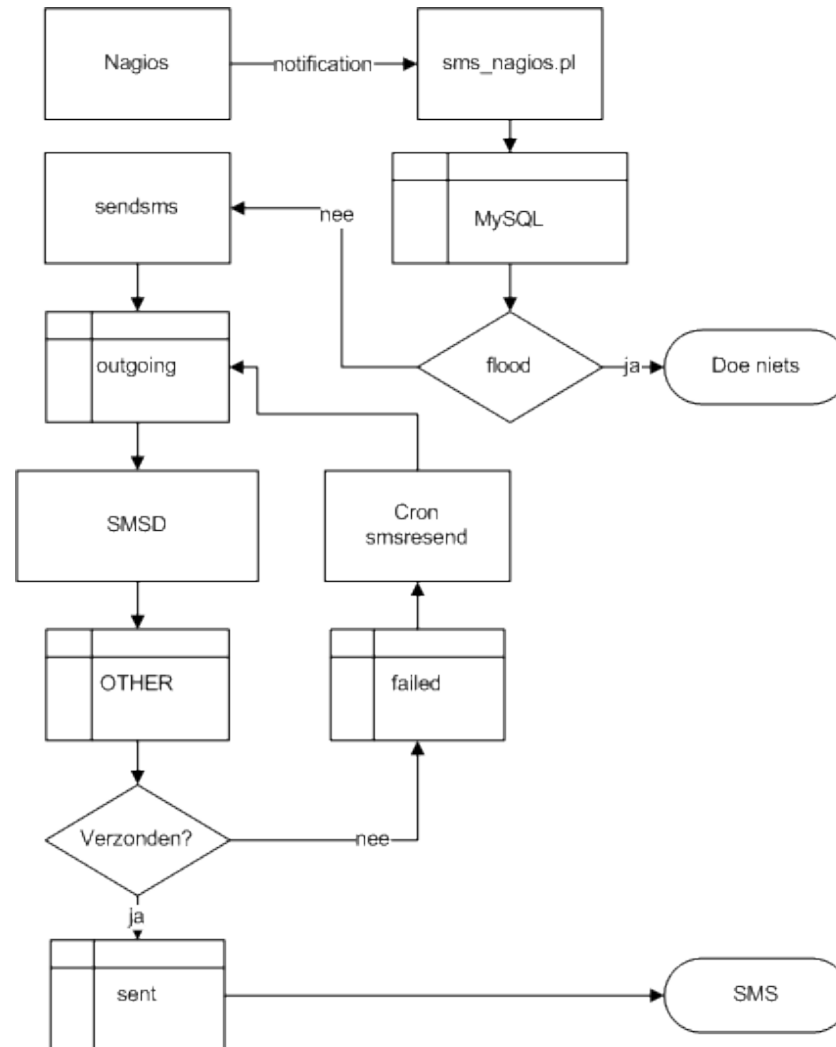
echo "<br><br><br>"
echo "<h1>An email message is sent to: <font color=red>$mailaddress </font>, did you not get the
message please contact: <a href=mailto:rob.hassing@deltics.nl>Rob Hassing</a><br><br><br></h1>"
# Email text/message
EMAILMESSAGE="The password for $name is changed to: $passwd"
# send an email using /bin/mail
echo $EMAILMESSAGE | /bin/mail -s "The new password for the Nagios Monitoring systems" "$mailaddress"
```

Notifications using Nagios

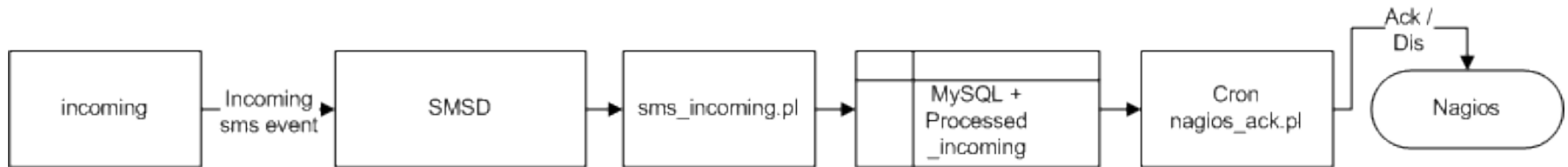
In Nagios you are able to create any event to notify the engineer/customer.

- SMS text alerting is used to notify the on call engineer.
- For backup an email is send to a corporate Google apps account.

SMS text alerting



SMS Acknowledgement



- An incoming SMS text message is received by the SMSD daemon
- The configuration says it has to start a script called 'sms_incoming.pl'
- This perl script updates the database and writes a file
- A cronjob looks in the directory for new files
- The MySQL database is altered and the file is processed and deleted

Change the on call engineer

Normally every week the on call engineer changes to the next person.

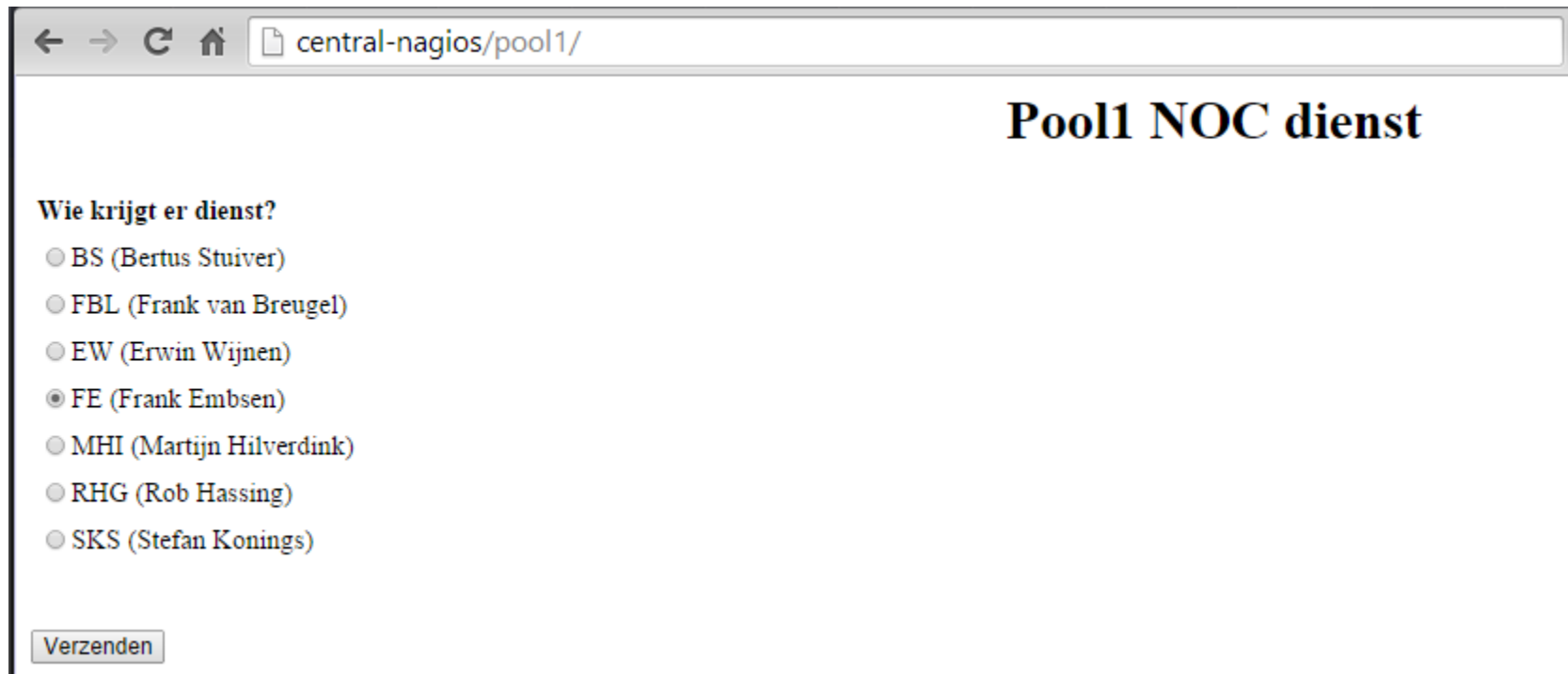
The “contacts.cfg” needs to be adjusted to send the notifications to the correct engineer.

On the central server a webpage is available to change who is on call.

All servers for this pool have to be changed.

Ssh scripts are used to change the settings everywhere.

Change the on call engineer



The screenshot shows a web browser window with the address bar containing 'central-nagios/pool1/'. The page title is 'Pool1 NOC dienst'. Below the title, there is a section titled 'Wie krijgt er dienst?' (Who gets the service?). This section contains a list of seven names, each preceded by a radio button. The first name, 'BS (Bertus Stuiver)', has its radio button selected. The other names are 'FBL (Frank van Breugel)', 'EW (Erwin Wijnen)', 'FE (Frank Embsen)', 'MHI (Martijn Hilverdink)', 'RHG (Rob Hassing)', and 'SKS (Stefan Konings)'. At the bottom of the list, there is a button labeled 'Verzenden' (Send).

← → ↻ 🏠 central-nagios/pool1/

Pool1 NOC dienst

Wie krijgt er dienst?

- ☐ BS (Bertus Stuiver)
- ☐ FBL (Frank van Breugel)
- ☐ EW (Erwin Wijnen)
- ☒ FE (Frank Embsen)
- ☐ MHI (Martijn Hilverdink)
- ☐ RHG (Rob Hassing)
- ☐ SKS (Stefan Konings)

Verzenden

The webinterface indicating who is on call now, and the possibility to change that.

Change the on call engineer

```
#!/bin/bash
newnumber=$1;
name=$2;
oldnumber=`grep -A1 pool1 /etc/nagios/contacts.cfg | grep pager | awk '{print $2}'`;
echo "The old number is: $oldnumber <br>";

/usr/bin/mysql -unagiosqlusr -ppassword -e "UPDATE db_nagiosql_v2.tbl_contact SET pager='$newnumber' WHERE contact_name LIKE '%pool1%'";
/usr/local/bin/change_pool_tel.pl pool1 $newnumber /etc/nagios/contacts.cfg >> /etc/nagios/contacts.cfg.new || ( echo "fout [$newnumber]" ; exit 1 )
mv -f /etc/nagios/contacts.cfg /etc/nagios/contacts.cfg.org;
mv -f /etc/nagios/contacts.cfg.new /etc/nagios/contacts.cfg;
chown apache /etc/nagios/contacts.cfg;
now=`date +%s`

commandfile='/var/nagios/rw/nagios.cmd'
echo "Restart nagios <br>"
printf "[%lu] RESTART_PROGRAM" $now > $commandfile
ennu=$newnumber;
echo "The new number is: $ennu <br>";
smstext="You are on call...for $HOSTNAME"
/usr/local/bin/sms_nagios.pl $ennu "$smstext"
echo "CustomerA";
ssh root@10.234.7.3 "/usr/local/bin/changes.sh $ennu";
echo "<br>";
echo "mail";
/usr/local/bin/python2.7 /usr/local/bin/gam/gam.py user pool1@deltics.info forward on $name keep
# Email text/message
EMAILMESSAGE="Now $newname will receive the mail for pool1@deltics.info"
# send an email using /bin/mail
echo $EMAILMESSAGE | /bin/mail -s "Mail for pool1 is being sent to you..." "pool1@deltics.info"
```

Change the on call engineer

Nagios[®]

Central server

Changing contacts.cfg

Altering MySQL database

Restart Nagios

Start scripts on remote Nagios servers

Nagios[®]

Remote servers

Changing contacts.cfg

Altering MySQL database

Restart Nagios

A text message and email is send to the new on call engineer

Maintenance

- Updates are installed via a yum repository
- Global updates are installed using salt-ssh to update all systems simultaneously

```
salt-ssh "*" -r "sudo yum -y update"
```

```
salt-ssh "*" -r "cd /etc/nagios && \  
sudo mv cgi.cfg cgi.cfg.org && \  
sudo wget http://betagraphics.blankurl.com/cgi.cfg && \  
sudo chown -R nagios.apache cgi.cfg && sudo chmod g+w cgi.cfg"
```

- New checks are installed by RPM package
And are manually configured in NagiosQL

Maintenance

- Backup via webdav to the repository server

```
#!/bin/bash
day=`date '+%A'`
cd /opt/backup/mysqldump/
tar zcvf nagios-log.tgz /var/log/nagios/
tar zcvf nagiosgraph-rrd.tgz /var/spool/nagiosgraph/
cadaver <<EOF
mkdir $HOSTNAME
cd $HOSTNAME
mput mysql$day.txt
mput wikidb$day.txt
mput db_nagiossql_v2$day.txt
mput nagios-log.tgz
mput nagiosgraph-rrd.tgz
quit
EOF
```

Checks

Some possible host and service checks:

Standard

- Ping, Cpu, Memory, Disk (via snmp)

Microsoft windows services checks

- Check Citrix, MSSQL and Exchange (snmp and WMI)

Protocol checks

- TCP check
- Imap, smtp, http check

NetApp checks

- Health check
- Volume en LUN checks
- Snapmirror lagtime

HP MSM wireless checks

Conclusion

- We continue to develop on our Nagios monitoring appliance
- Always the latest releases of Nagios will be used
- New features can easily be build in
- Customer requests are build in (extra checks)

Next steps:

- Easier way of deploying new checks in MySQL backend
- Make collections of Nagios installations for each pool using Thruk.

Questions?

Any questions?

Thanks!





The End

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