How To Maintain Over 20 Monitoring Appliances Rob Hassing

rob.hassing@deltics.com

Nagios World Conference 2014

Introduction & Agenda

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





Deltics Nagios Appliance





















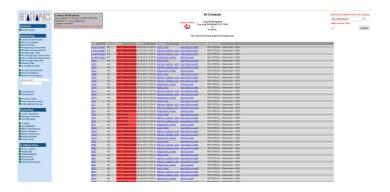
History

Version 1

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

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



200.2	Current Network Status Land Updated: Tips Aug 25 15 47 54 CEST 2014			Hood Status Totals Str. East Streethald Design		Serv	cir Status Totals			
nona							deletes Little			
AV.	Updated in			- 350c · · ·	1886 E	GMESS .				
PH.	Nagioe8 C	OLE on T C	4 - sourceages.org	ALCOHOL AL	LARSE		THE REAL PROPERTY.			
en e	8,02240 19									
	Van Hills	y For all	1095							
	Many Wood	Challen Ca	SALFar Al Houts							
tical Oceroise	Service Status Debais For All Hosts									
						27	and the property of	Property of the House		
	Land Familie	100 .							RECEPTION	
									Reports 5 - 100 of the mary no	
	Acad To		Service **	Status **	Lear Check **	Destina **	Attenut **	Balan Information		
	AMC		Bendonen CONSTRUCTION AND	000	25-99-2214-10-4035	ACTO AN TON 600	10	(at the file file to the file of the file of the file of the		
			ACCES TO SECURITY OF THE PERSON OF THE PERSO	2 1	inmin visit	be to other 274	11	Security SSF Exposition arrangement for 25K 5.25K, as SMC SSF MARE SBT Tue Aug 28 SHK - 15 KD 2K		
				7						
arrows (inchestral)	5535	95	Assessment CONTINUES AND	-	25-00-2214-15-41-21 25-00-2214-15-41-31	AZTS 40 YOM 20 Zau You Ziley Yu	10.	20: 80: 00: 10: 00: 20: 50: 20: 10: 20:		
			Retirects (SUI) mail	-	26.00.2214 19.45.50	State little Street To 1770 into direction Street	12	Der No. Die Fo. Die Prof. Die Fenge von der Killen villeren		
			NAME OF TAXABLE PARTY.	2 0	20.00.2014 10.0010	by the same de	11	Security 80'r legent to remote term and 15 25x 5 25x, and 6xx 5021 Abot 502" The Jung 20 2010 - 15 25 4"		
	MEAN		and and	1	20-00-2014 10-00-00	2 Mar 144 Star Star	17	Reports 30th Aspecia in second from part? No 20th 5 20th, and that DECT ASSESSED THE Analysis Control of State of the State of St		
	AUG-MAY!		NO.	2 5	25-99-2814-10-90-201	2 for the specific	100	Security Silver Sport to responsible social social social state of the social state of		
di	The same			7	200214 0221	200 m de 184	14			
district to	Minnet.	-	Acceptance CREST, AND CREST. Acceptance CREST, AND CREST.		25-00-2814 15-41-21 05-00-2814 16-41-26	The United	14	Str. Rec (Mr Fre Fre Str. Rec (Mr Fre Fre		
-			RECOGNICAL STREET	-	26-98-2814 10-40-00	Che in the bla	13.	DV - UP_ACT ACC MINE OF		
The state of the s			soloumu MS Tax	2	2010-2214-1046-23	officin No. 65	115	Dr. 489 TO in page of		
			SCHOOLS LIKE	- 2	25/88/2014 15:47:27	100 Tim So 201	719	DF-UNLE PRINT NO		
			Mile .	100	20-00-0314 1F40-08	7794 120 34× 876	100	PHE D1 - FADAL NO 276, PTA - 2 TF AV		
Statum of Lea			protein.	7 central	201010-0214-101122	1 No to 100 of 500	2119	Because an injurity as from your to the 12 or 12 the 12 th		
	100000	122.4	Name and Address of the Owner, where the Owner, which is the Ow	36	Reserved.	1794 Str 194 St	187	DESCRIPTION		
in .			SCHOOL STATE OF THE STATE OF TH	- 10	20-80-2014 (0-802)	1756 Ex 164 256	10.	(VUP_AND) NO.1 many on		
			809	- M	20-00-2014 10:47:22	1764 12n 37m 15s	118.	Proj. Dr Rapie top + Sts. Afric + Side res		
orticos cress Juliu			MANUAL PROPERTY AND ADDRESS OF THE PARTY AND A	9 (4)	25-96-2014 10-02-29	Both ide 2h	511	Sepulsy 55H Appart by render from art PT NS 25H 5 25H, are HARD 5627 SHHE 5857 Than Ang 28 28 H = 15 92 281		
Surmance India	R053084		Bandonica Atlanta And Editor	(A)	25/09/2014 15 H0 201	130 to 140.5%	115	Dr. Ric DN Tic BN		
Spenator Info solding Spena Ngasalina			Restructe(MALASSICE)	100	26 26 28 14 15 46 26	25% Diction 4%	54	DK-RX DN TX-2N		
The same of the sa			Austranou (1002), austrial, 1	M	25-36-2014 15-45-21	25to in 42m file	118	Dic Ro. (No. 174) Tr. (Fig.		
			BEIDDAM LAGARDATAL AND TOXAL BEIDDAM	- 25	20-00-2014 (0-472) 20-00-2014 (0-472)	175c (in nim 5)s 175c (in nim 3xs	10	Dir. Ro. (In To. 19). Dir. Ro. (In To. 19).		
			MASSESSA AMERICA AMERICAN	_ = _	200214742	1000 St 1010 SA	10	DC-DC-DR-DR-DR-DR-DR-DR-DR-DR-DR-DR-DR-DR-DR-		
			interaction and the	-	DOMESTIC CLASS	TETA TIM AT NO. 19	11	Dr. 100 bides of		
			Alla .	-	BEST HERE	2 to 20 to 16	19	MidDDI Federine v 25, Mile v 637 ms		
			entates.	7 WATER	DR-08/2014 78 71/04	0x 0x 30= 10x		Beauty and layer by an from an #110,234, 12 201 to 1288 EDGC mode Tue Aug 20,2316 - 18 10 01.		
	90.002	C2.4	Revision Office Co. (1981)	(Approximate	DESCRIPTION OF STREET	276+2+47+28s	687	No. No. 104 Pur No.		
			AND INCOMES AND TORY OF AMERI-	100	\$5.00 GETA 10.40 GE	gracin elm 17s	118	Dr. Ric On Till Phi		
			BACKSTON MARTINES AND	100	2010/02/14 15:45:21	2780 D1 4010 454	119	Dr. Ri. Dk Ps. Dk		
			Residence AND TORY AND	-	200214 0 021	25s (n 40 s 10	112	DI RI DI DI DI		
			Man .	2 0000			10	FIGD DIT. Feder too + 29, FISA + 5 (8 mg		
			ett atas	- Parkette	29-09-2014-76-70-00	(b) to life dos		Beauty, 85H lags to see as 9 TE 254 5 20K as USC 5001 1985 MST to USER \$CRC mate Top Aug 26 20TO 18 0 NST		
	(ADDISOL)		DATE THE STATE OF	- 25	25 HE 25 K 15 HE 25 25 HE 25 K 15 HE 25	Bac Str. 7m rs Zan 10m bro. Ny	10.	WE'TH ON WE'THIS COLUMN TAXABLE & AND ADDRESS OF ADDRES		
	MEDIC		SNA ISS		2010-2014-00-40.20	No tinants sayin in all	10	Proj (x. Paper typ. PS, NSA x 1-0) rej x TSP (x. x TSP x - 20) (x4)* none in X 2-5 accord reports tring		
	- ANDROVE		2943.709 103	25	25-08-2814-15-X1-20	Pagistrate AN	11	NTTP (AC NTTP > 200 (AC ADDRESS A 201 MEDIT RESPONSED AS		
	*****************************		State State	-	25/8/2014 15 (611)	50 Tr 51 A	14	#7TF DK #FTFF 12R DK -4T spain K SS waste section the		
			100,000 110		20021124	P42101.011.341	10	Prop On Francisco Ch. Principles		
	OF REAL PROPERTY.		200 THE	200	DOM: NO.	MID THAN	115	AFTE DE AFTE C 100 DE 401 DOMO É 467 MODE MADOR MADOR MADOR		
	-		es .	-	D00014-014030	742 151 AV 30s	118	First St. Faces Sec. 176, 655 4 107 de		
	(amount)		CHS. 750	36	20100-0014-15-4030	9429/SHA	78	HTTP DC HTTP: 1 200 DC HTT System E DG Income resource line		
			100	36	200021419402	- Number	118	FISS DI. Federico - 2%, 874 - 122 vs		
	BERRIES		200,200	-	20 00 00 14 10 et 24	41/31 HH 351	7.0	ATTRICK ATTRICTION OF ACT SHALL SEE HAVE REASON TO		
			All I	- 04	29-09-2014 19-45-36	etalle silve file	118	PIGE DC: Peaks how - DN, PTA = 1.60 yea		
	SERVICE .		AND THE PARTY NAMED IN COLUMN TWO IS NOT THE PAR	DK.	20 00 0014 10 40 00	N In red III	10.	ATTRON ATTRI 1 20 CV - 47 lates 1 22 more representation.		



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

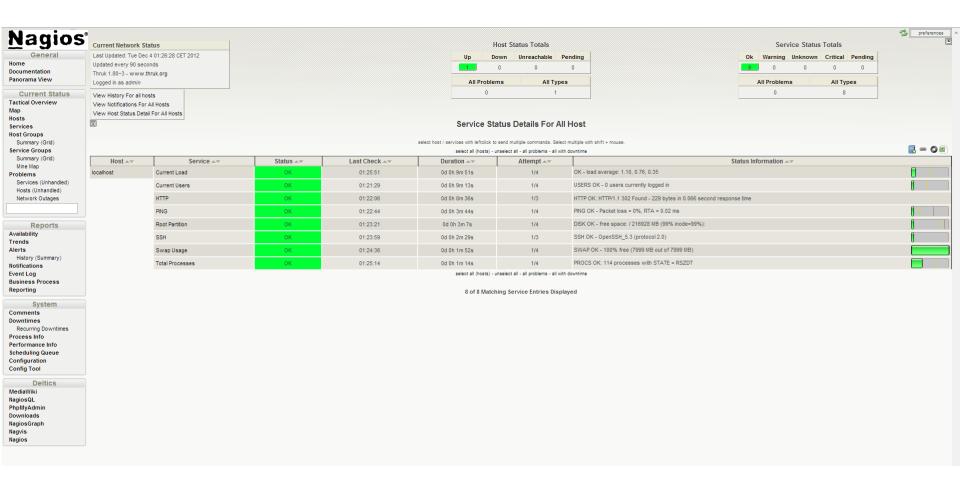


Installation

Package	Arch		Repository	 Size	
======================================	#10H	VC1510N	**************************************	512	
pdating:					
nagios	i386	4.0.8-3.el6	BetaGraphics	2.7	
nagios-contrib	i386	4.0.8-3.e16	BetaGraphics	24	
nagios-devel	i386	4.0.8-3.el6	BetaGraphics	75 1	
agios-plugins	i386	2.0.3-1	BetaGraphics	1.2 1	
nagios-plugins-nrpe	i686	2.15-2.e16	epel	23 1	
nagios-plugins_BG	i386	0.1-140707_1.centos6_BG	BetaGraphics	1.3 1	
stalling for dependencies:					
erl-Class-Accessor	noarch	0.31-6.1.el6	base	26	
erl-Config-Tiny	noarch	2.12-7.1.el6	base	23	
erl-Math-Calc-Units	noarch	1.07-6.el6	epel	41	
erl-Nagios-Plugin	noarch	0.35-1.el6	epel	61	
erl-Params-Validate	1686	0.92-3.el6	base	75	
ransaction Summary					
======================================					
ograde 6 Package(s)					
otal download size: 5.5 M					
s this ok [y/N]:					



Look and Feel





Look and Feel

Deltics

MediaWiki NagiosQL PhpMyAdmin Downloads NagiosGraph

Nagvis

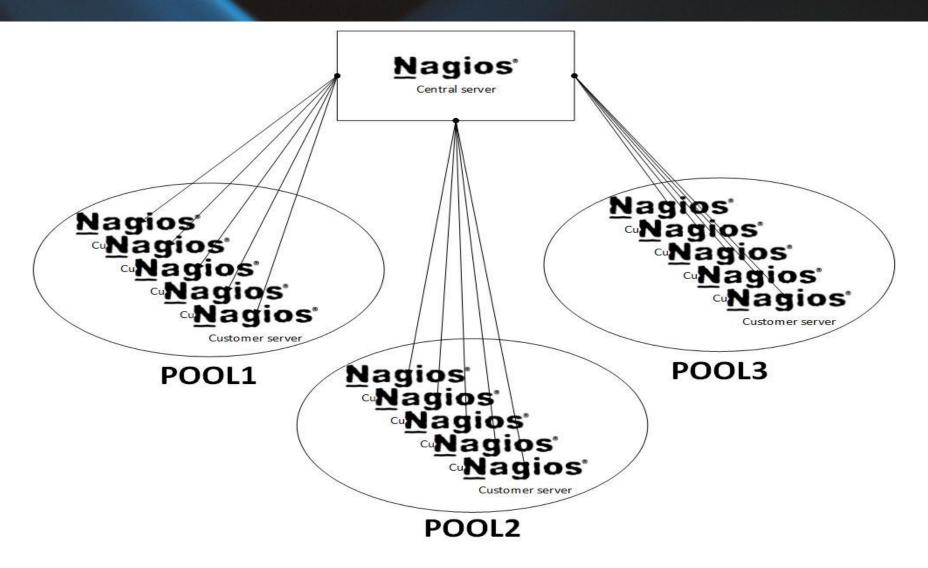
Nagios

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

delti	-	Deltie Last che	cs Tactical System (Overview -0200									
	ICS - BMA						DELT	TICS - HEN	CELO				
	23 up	0 down	0 acknowledged	0 unreachable	0 pendina		DEL	40 up	0 down	0 acknowledged	0 unreachable	0 pending	
W/A	0 warnings	0 acknowledged	1 critical	1 acknowledged	0 unknown	40 ok	Nagios		1 acknowledged	1 critical	1 acknowledged	0 unknown	271 ok
											3		
	95 up	1 down	1 acknowledged	0 unreachable	0 pending	7	(Married)	570 up	0 down	0 acknowledged	0 unreachable	0 pending	
ALC:	7 warnings	6 acknowledged	2 critical	2 acknowledged	0 unknown	897 ok	Nagios	0 warnings	0 acknowledged	1 critical	0 acknowledged	0 unknown	801 ok
						1							<u> </u>
	137 up	0 down	0 acknowledged	0 unreachable	0 pending			26 up	0 down	0 acknowledged	0 unreachable	0 pending	
Nagios	3 warnings	3 acknowledged	6 critical	5 acknowledged	0 unknown	612 ok	Nagios	2 warnings	2 acknowledged	0 critical	0 acknowledged	0 unknown	137 ok
010110			Oli III										
	31 up	2 down	0 acknowledged	0 unreachable	0 pending	18		22 up	0 down	0 acknowledged	0 unreachable	0 pending	
Nagios	2 warnings	2 acknowledged	6 critical	6 acknowledged	5 unknown	154 ok	Nagios	0 warnings	0 acknowledged	0 critical	0 acknowledged	0 unknown	147 ok
			7000										
الملد	45 up	0 down	0 acknowledged	0 unreachable	0 pending			65 up	0 down	0 acknowledged	0 unreachable	0 pending	
Nagios	2 warnings	0 acknowledged	0 critical	0 acknowledged	0 unknown	277 ok	Nagios	1 warnings	1 acknowledged	0 critical	0 acknowledged	0 unknown	386 ok
المليا	13 up	0 down	0 acknowledged	0 unreachable	0 pending			185 up	2 down	2 acknowledged	0 unreachable	0 pending	
Nagios	1 warnings	1 acknowledged	0 critical	0 acknowledged	0 unknown	97 ok	Nagios	16 warnings	s 1 acknowledged	5 critical	3 acknowledged	0 unknown	770 ok
Jan 1	240 up	0 down	0 acknowledged		0 pending		الماما	55 up	0 down	0 acknowledged	0 unreachable	0 pending	
Nagios	0 warnings	0 acknowledged	0 critical	0 acknowledged	0 unknown	1049 ok	Nagios	1 warnings	0 acknowledged	1 critical	1 acknowledged	0 unknown	496 ok
					m .			IAMES CONTRACTOR	and the same of th			100	
- N-/-	13 up	0 down	0 acknowledged	0 unreachable	0 pending		- A)-A-	8 up	0 down	0 acknowledged	0 unreachable	0 pending	
Nagios	0 warnings	0 acknowledged	0 critical	0 acknowledged	0 unknown	33 ok	Nagios	0 warnings	0 acknowledged	0 critical	0 acknowledged	0 unknown	53 ok
			-	φ	-							W	
NA.	5 up	0 down	0 acknowledged	0 unreachable	0 pending		An	19 up	1 down	1 acknowledged	0 unreachable	0 pending	
Meighor	0 warnings	0 acknowledged	0 critical	0 acknowledged	0 unknown	61 ok	Nagios	0 warnings	0 acknowledged	1 critical	1 acknowledged	0 unknown	169 ok
										N N N N N N N N N N N N N N N N N N N			
March -	64 up	0 down	0 acknowledged		0 pending	244 -1	4~	347 up	0 down	0 acknowledged	0 unreachable	0 pending	254
ALC:UE	1 warnings	1 acknowledged	0 critical	0 acknowledged	0 unknown	211 ok	Nagios	1 warnings	0 acknowledged	0 critical	0 acknowledged	0 unknown	351 ok
		8.1		0 1 11	0 1:								
- N-/	11 up 2 warnings	2 down 2 acknowledged	2 acknowledged 2 critical	0 unreachable 2 acknowledged	0 pending 0 unknown	144 ok	Nagios	319 up	49 down 0 acknowledged	41 acknowledged 49 critical	0 unreachable 41 acknowledged	0 pending 0 unknown	326 ok
	z warnings	z acknowieugeu	z Gitical	z acknowieuged	o unknown	144 UK	answa!	0 warnings	o acknowledged	49 CHUCAI	41 acknowledged	o unknown	320 OK
	25	1 4	4 malumanula d = - 4	O warran abable	0 ========			70		a salasania i s	0	0	
4	35 up 6 warnings	1 down 4 acknowledged	1 acknowledged 7 critical	0 unreachable 6 acknowledged	0 pending 1 unknown		Nagios	79 up 8 warnings	4 down 6 acknowledged	1 acknowledged	0 unreachable 5 acknowledged	0 pending 8 unknown	354 ok
	o warmings	+ acknowledged	7 CHUCH	o acknowledged	1 UIKIOWI	07 OK		o warmings	o acknowledged	To Chucai	3 acknowledged	O UIIKIIOWII	334 UK



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>"
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"
```



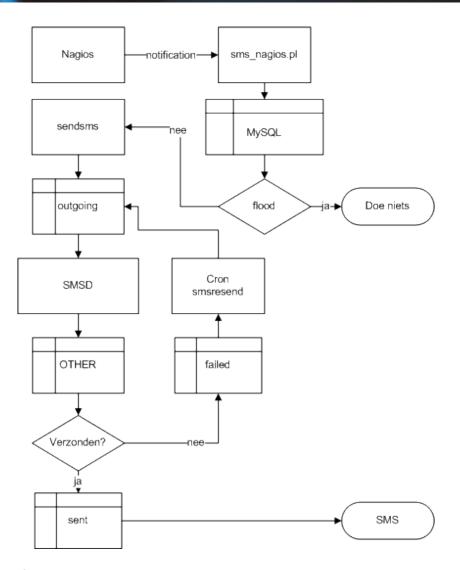
Notifications using Nagios

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.

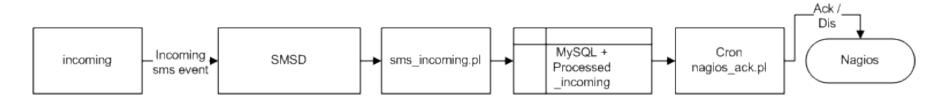


SMS text alerting





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 an writes a file
- A cronjob looks in the directory for new files
- The MySQL database is altered and the file is processed and deleted



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.





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



```
#!/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"
```



<u>Nagios</u>[®]

Central server

Changing contacts.cfg

Altering MySQL database

Restart Nagios

Start scripts on remote Nagios servers

<u>Nagios</u>[®]

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 simultaneous

```
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$day.txt
mput db nagiosql v2$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

Rob Hassing

rob.hassing@deltics.nl

Nagios World Conference 2014