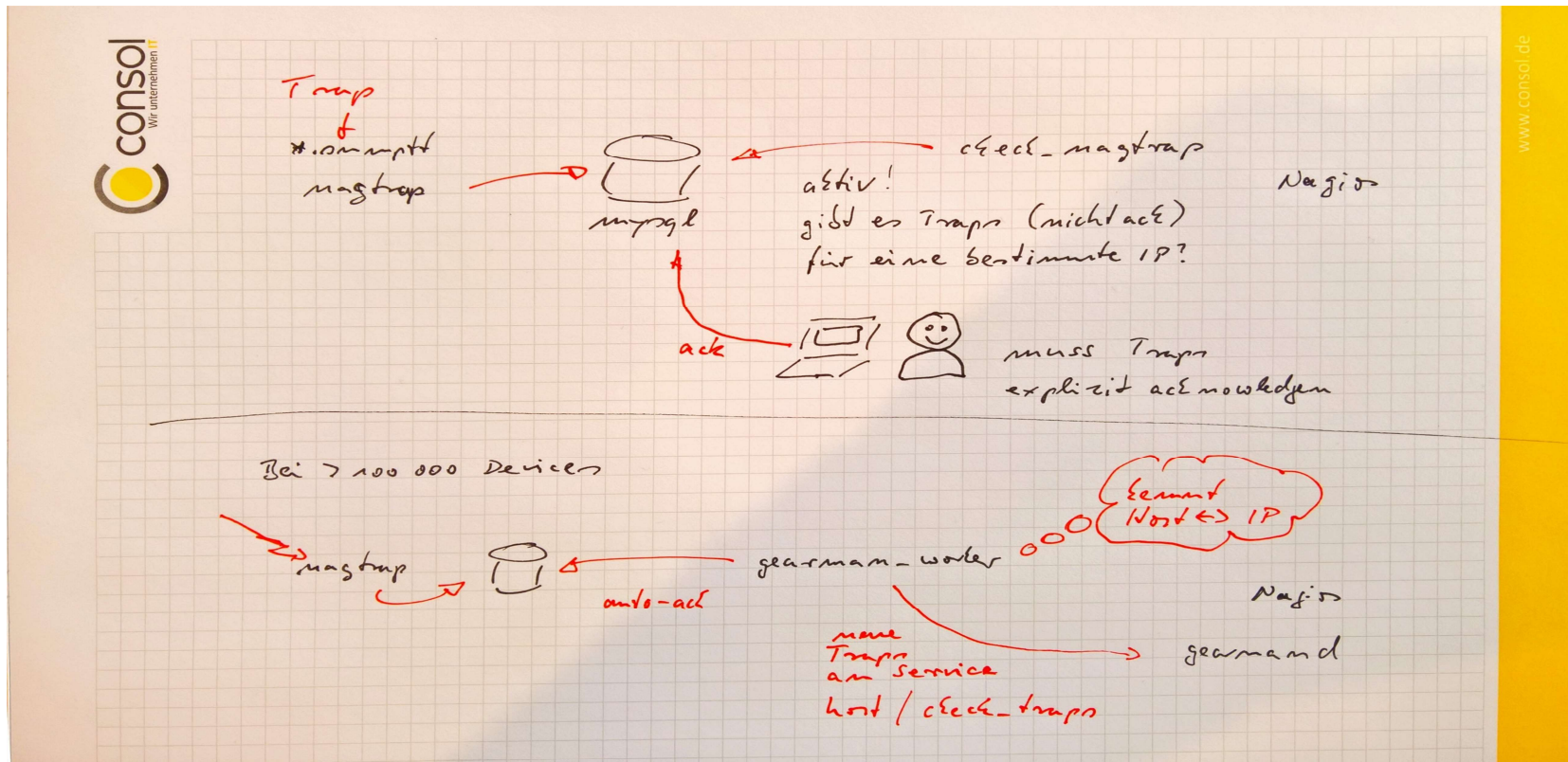


SNMP-Trap-Verarbeitung ohne Datenbank

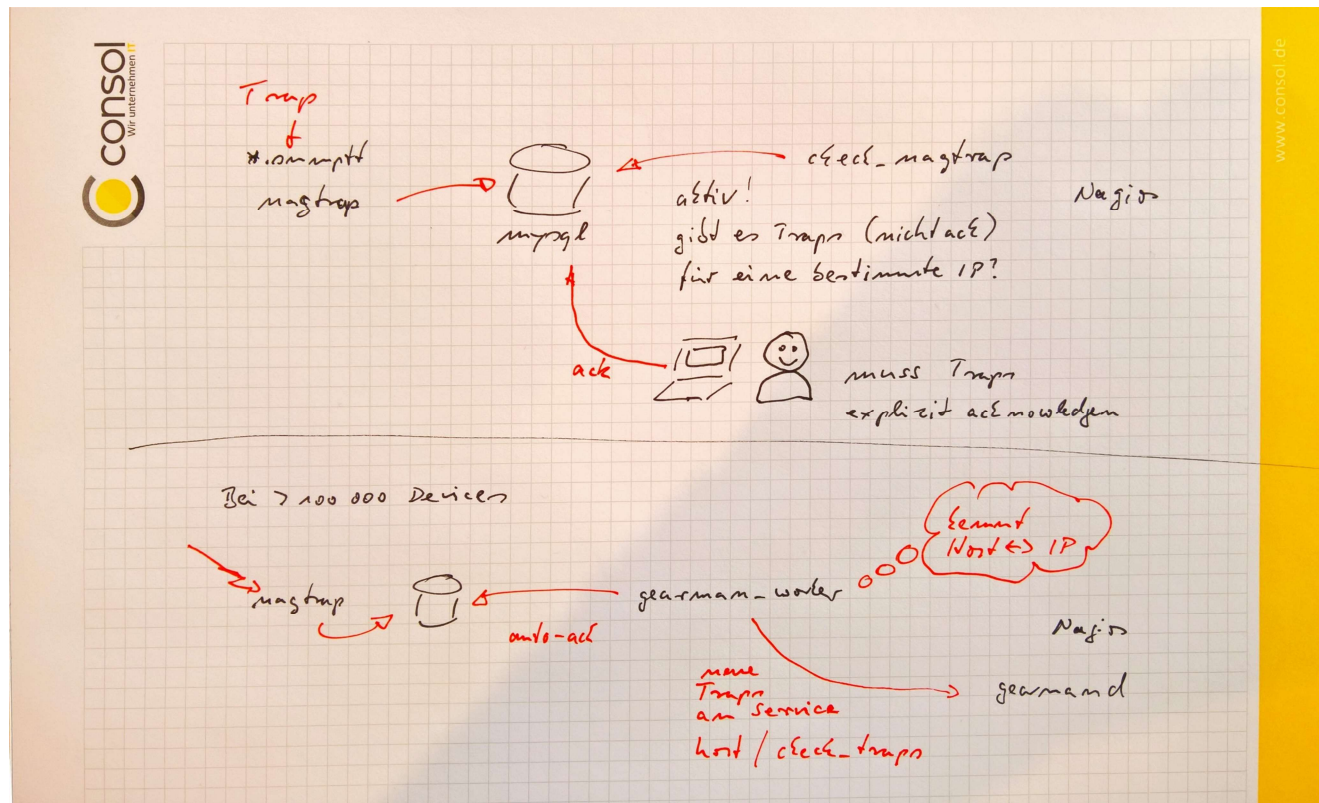
Düsseldorf, 12.9.2017

Bisherige/bekannte Methoden

Snmptt/Nagtrap, Check_mk SNMP Trap Server



Bisherige/bekannte Methoden



Neuer Ansatz

Traps landen in einem Logfile statt in einer DB

Jeder einzelne Traptyp ist als Service hinterlegt

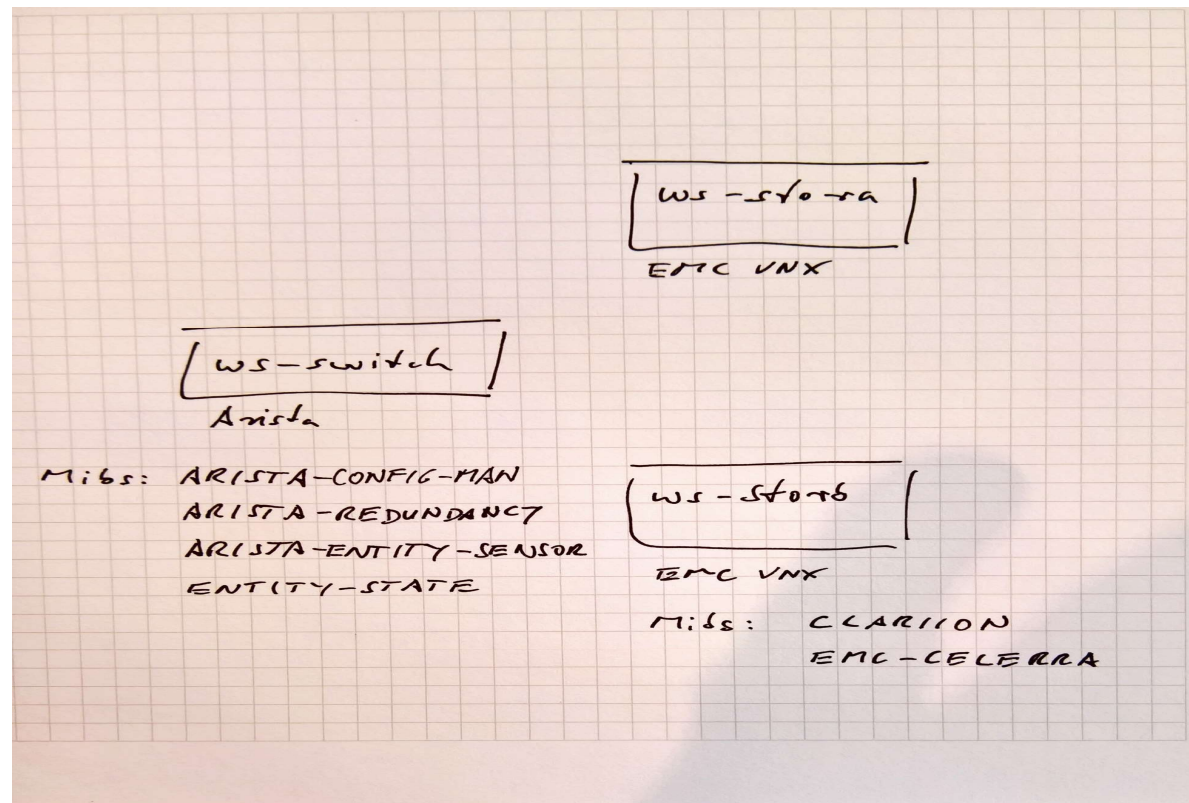
Weil bei der Installation mit dieser Anforderung coshsh im Einsatz ist:

Neue Mib einbinden soll einfach sein.

Bestimmte Traps sollen in Downtime geschickt werden können

Traps sollen ggf. nach Message text/numerischer ID bewertet (o,w,c,u) werden können

Beispielszenario – 2 Storages und 1 Switch



Grundgerüst coshsh – Mini-CMDB

```
OMD[ws2017]:~/etc/coshsh/data$ cat storagelab_hosts.csv
```

```
host_name,address,type,os,hardware,virtual,notification_period,location,department
```

```
ws-switch,10.0.100.11,switch,arista,7500E,,24x7,D,workshop
```

```
ws-stora,10.0.100.12,storage,vnx filer,e3200,,24x7,D,workshop
```

```
ws-storb,10.0.100.13,storage,vnx filer,e3200,,24x7,D,workshop
```

```
OMD[ws2017]:~/etc/coshsh/data$ cat storagelab_applications.csv
```

```
host_name,name,type,component,version,check_period
```

```
ws-switch,os,arista,,10,24x7
```

```
ws-stora,os,vnx filer,,5.2,24x7
```

```
ws-storb,os,vnx filer,,5.2,24x7
```

```
OMD[ws2017]:~/etc/coshsh/data$ cat storagelab_applicationdetails.csv
```

```
host_name,name,type,monitoring_type,monitoring_0,monitoring_1,monitoring_2,monitoring_3,monitoring_4,monitoring_5
```

```
ws-switch,,,CUSTOMMACRO,COMMUNITY,ws2017/arista
```

```
ws-stora,,,CUSTOMMACRO,COMMUNITY,ws2017/stora
```

```
ws-storb,,,CUSTOMMACRO,COMMUNITY,ws2017/storb
```

Grundgerüst coshsh – Konfig

```
OMD[ws2017]:~/etc/coshsh/conf.d$ cat ws2017.cfg
[datasource_storagelab]
type = csv
dir = %OMD_ROOT%/etc/coshsh/data

[datasource_snmpdt]
type = snmpdt
dir = %OMD_ROOT%/etc/coshsh/data/snmpdt

[datarecipient_checklogfiles_mibs]
# Schreibt die check_logfiles-cfgs fuer die einzelnen Mibs in einer atomaren Weise,
# damit z.b. laufende check_logfiles-Aufrufe nicht gestoert werden.
type = atomic
items = mibconfigs
objects_dir = %OMD_ROOT%/etc/check_logfiles/snmpdt

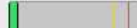
[datarecipient_hostinfo_traps]
type = atomic
items = infos
objects_dir = %OMD_ROOT%/local/lib/perl5/lib/perl5/Monitoring/Trap

[recipe_ws2017]
datasources = storagelab
objects_dir = %OMD_ROOT%/var/coshsh/configs/ws2017
classes_dir = %OMD_ROOT%/etc/coshsh/recipes/ws2017/classes
templates_dir = %OMD_ROOT%/etc/coshsh/recipes/ws2017/templates
```

Grundgerüst coshsh – Generierung

```
OMD[ws2017]:~$ coshsh-cook \  
  --cookbook ~/etc/coshsh/conf.d/ws2017.cfg \  
  --recipe ws2017
```

resultiert in...

Host ▲▼	Service ▲▼	Status ▲▼	Last Check ▲▼	Duration ▲▼	Attempt ▲▼	Status Information ▲▼
ws-stora	os_vnx_default_check_uptime	OK	10:36:36	0d 18h 49m 57s	1/20	OK - device is up since 172d 5h 48m 25s, VNX5300 - Flare 5.32.0.0.5.218
ws-storb	os_vnx_default_check_uptime	OK	10:33:23	0d 18h 49m 38s	1/20	OK - device is up since 172d 5h 28m 27s, VNX5300 - Flare 5.32.0.0.5.218
ws-switch	os_arista_default_check_cpu	 OK	10:33:31	0d 18h 50m 33s	1/3	OK - cpu 0 is 5.00%, cpu 1 is 4.00%, cpu 2 is 6.00%, cpu 3 is 5.00%, cpu 4 is 4.00% 
	os_arista_default_check_hw	 OK	10:29:28	0d 20h 50m 1s	1/3	OK - environmental hardware working fine 
	os_arista_default_check_mem	 OK	10:36:50	0d 18h 49m 49s	1/3	OK - memory 1 (RAM) usage is 89.07%, memory 2 (RAM (Buffers)) usage is 5.03... 
	os_arista_default_check_uptime	OK	10:33:23	0d 19h 25m 24s	1/20	OK - device is up since 216d 0h 6m 38s, Arista Networks EOS version 4.16.6M running on an Arist...

Grundgerüst coshsh – Konfig

```
OMD[ws2017]:~/etc/coshsh/conf.d$ cat ws2017.cfg
[datasource_storagelab]
type = csv
dir = %OMD_ROOT%/etc/coshsh/data

[datasource_snmpdt]
type = snmpdt
dir = %OMD_ROOT%/etc/coshsh/data/snmpdt

[datarecipient_checklogfiles_mibs]
# Schreibt die check_logfiles-cfgs fuer die einzelnen Mibs in einer atomaren Weise,
# damit z.b. laufende check_logfiles-Aufrufe nicht gestoert werden.
type = atomic
items = mibconfigs
objects_dir = %OMD_ROOT%/etc/check_logfiles/snmpdt

[datarecipient_hostinfo_traps]
type = atomic
items = infos
objects_dir = %OMD_ROOT%/local/lib/perl5/lib/perl5/Monitoring/Trap

[recipe_ws2017]
datasources = storagelab,snmpdt
datarecipients = >>>,checklogfiles_mibs,hostinfo_traps
objects_dir = %OMD_ROOT%/var/coshsh/configs/ws2017
classes_dir = %OMD_ROOT%/etc/coshsh/recipes/ws2017/classes
templates_dir = %OMD_ROOT%/etc/coshsh/recipes/ws2017/templates
```

Grundgerüst coshsh – Arista-Klasse

```
OMD[ws2017]:~$ cat etc/coshsh/recipes/ws2017/classes/os_arista.py
```

```
import coshsh
from coshsh.application import Application
from coshsh.templaterule import TemplateRule
from coshsh.util import compare_attr

def __mi_ident__(params={}):
    if coshsh.util.is_attr("name", params, "os") and compare_attr("type", params, ".*arista.*"):
        return AristaSwitch
```

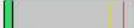
```
class AristaSwitch(coshsh.application.Application):
    template_rules = [
        coshsh.templaterule.TemplateRule(needsattr=None,
            template="os_arista_default",
        ),
        coshsh.templaterule.TemplateRule(needsattr='trap_events',
            template="os_arista_traps"
        ),
    ]
    implements_mibs = ['ARISTA-REDUNDANCY-MIB', 'ARISTA-ENTITY-SENSOR-MIB', 'ARISTA-CONFIG-MAN-MIB', 'ENTITY-STATE-MIB']
```

```
OMD[ws2017]:~$ cat etc/coshsh/recipes/ws2017/templates/os_arista_traps.tpl
{% include "common_traps.tpl" %}
```

Grundgerüst coshsh+Traps – Generierung

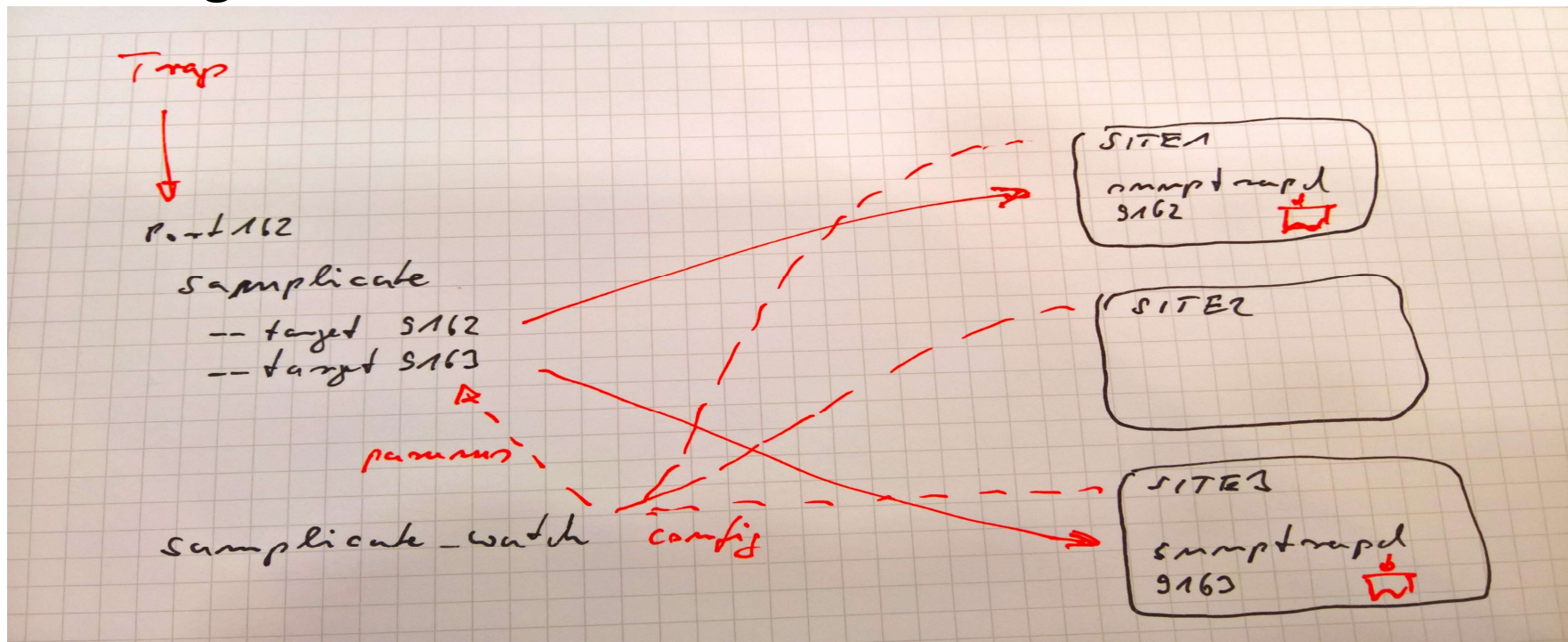
```
OMD[ws2017]:~$ coshsh-cook \  
  --cookbook ~/etc/coshsh/conf.d/ws2017.cfg \  
  --recipe ws2017
```

resultiert in...

Host ▲▼	Service ▲▼		Status ▲▼	Last Check ▲▼	Duration ▲▼	Attempt ▲▼	Status Information ▲▼
ws-switch	os_arista_default_check_cpu	📶	OK	13:36:31	0d 19h 13m 28s	1/3	OK - cpu 0 is 5.00%, cpu 1 is 4.0... 
	os_arista_default_check_hw	📶	OK	13:37:28	0d 21h 12m 56s	1/3	OK - environmental hardware w... 
	os_arista_default_check_mem	📶	OK	13:34:50	0d 19h 12m 44s	1/3	OK - memory 1 (RAM) usage is ... 
	os_arista_default_check_uptime		OK	13:36:23	0d 19h 48m 19s	1/20	OK - device is up since 216d 0h 6m 38s, Arista N...
	os_arista_traps_ARISTA-CONFIG-MAN-MIB_aristaConfigManEvent	❌	PENDING	never	0d 0h 0m 10s+	1/1	Service is not scheduled to be checked...
	os_arista_traps_ARISTA-ENTITY-SENSOR-MIB_aristaEntSensorAlarm	❌	PENDING	never	0d 0h 0m 10s+	1/1	Service is not scheduled to be checked...
	os_arista_traps_ARISTA-REDUNDANCY-MIB_aristaRedundancySwitchOverNotif	❌	PENDING	never	0d 0h 0m 10s+	1/1	Service is not scheduled to be checked...
	os_arista_traps_ENTITY-STATE-MIB_entStateOperDisabled	❌	PENDING	never	0d 0h 0m 10s+	1/1	Service is not scheduled to be checked...
	os_arista_traps_ENTITY-STATE-MIB_entStateOperEnabled	❌	PENDING	never	0d 0h 0m 10s+	1/1	Service is not scheduled to be checked...

Vorarbeiten für SNMP-Traps als root

Ziel: Port 162/udp wird zu site-lokalen snmptrapd weitergeleitet



Vorarbeiten für SNMP-Traps als root

```
# /bin/cp \  
/omd/versions/default/share/samplicate/*.service \  
    /etc/systemd/system  
# systemctl enable samplicate_watch  
# systemctl enable samplicate  
# systemctl start samplicate_watch  
# apt-get install snmptrapd
```

siehe

<https://labs.consol.de/monitoring/2017/02/25/omd-snmp-traps-teil1.html>

Vorarbeiten für SNMP-Traps als site-User

```
OMD[ws2017]:~ omd config set SNMPTRAPD on
OMD[ws2017]:~ mkdir etc/coshsh/data/{mibs,snmptt}
```

```
# dadurch wird erreicht, daß eingehende Traps
# in $OMD_ROOT/var/log/snmp/traps.log landen
```

```
...
[Mon Sep 11 09:44:20 CEST 2017] <UNKNOWN>
[Mon Sep 11 09:44:20 CEST 2017] UDP: [10.0.100.11]:44061->[127.0.0.1]:9162
[Mon Sep 11 09:44:20 CEST 2017] .1.3.6.1.2.1.1.3.0 6128966
[Mon Sep 11 09:44:20 CEST 2017] .1.3.6.1.6.3.1.1.4.1.0 .1.3.6.1.4.1.30065.3.12.0.1
[Mon Sep 11 09:44:20 CEST 2017] .1.3.6.1.2.1.47.1.1.1.1.2.100301213 "DOM RX Power Sensor for Ethernet1"
[Mon Sep 11 09:44:20 CEST 2017] .1.3.6.1.2.1.99.1.1.1.4.100301213 13
[Mon Sep 11 09:44:20 CEST 2017] .1.3.6.1.2.1.131.1.1.1.5.100301213 " "
[Mon Sep 11 09:44:20 CEST 2017] summary:_____<UNKNOWN>_____UDP: [10.0.100.11]:44061-
>[127.0.0.1]:9162_____1.3.6.1.2.1.1.3.0 6128966_____1.3.6.1.6.3.1.1.4.1.0
.1.3.6.1.4.1.30065.3.12.0.1_____1.3.6.1.2.1.47.1.1.1.1.2.100301213 "DOM RX Power Sensor for
Ethernet1"_____1.3.6.1.2.1.99.1.1.1.4.100301213 13_____1.3.6.1.2.1.131.1.1.1.5.100301213 " "
```

os_arista und os_vnx-Templates anlegen

```
OMD[ws2017]:~$ coshsh-create-template-tree \  
  --cookbook ~/etc/coshsh/conf.d/ws2017.cfg \  
  --recipe ws2017 --template os_vnx_default
```

```
OMD[ws2017]:~$ coshsh-create-template-tree \  
  --cookbook ~/etc/coshsh/conf.d/ws2017.cfg \  
  --recipe ws2017 --template os_arista_default
```

```
use_regexp_matching=1 >> etc/nagios/nagios.cfg
```

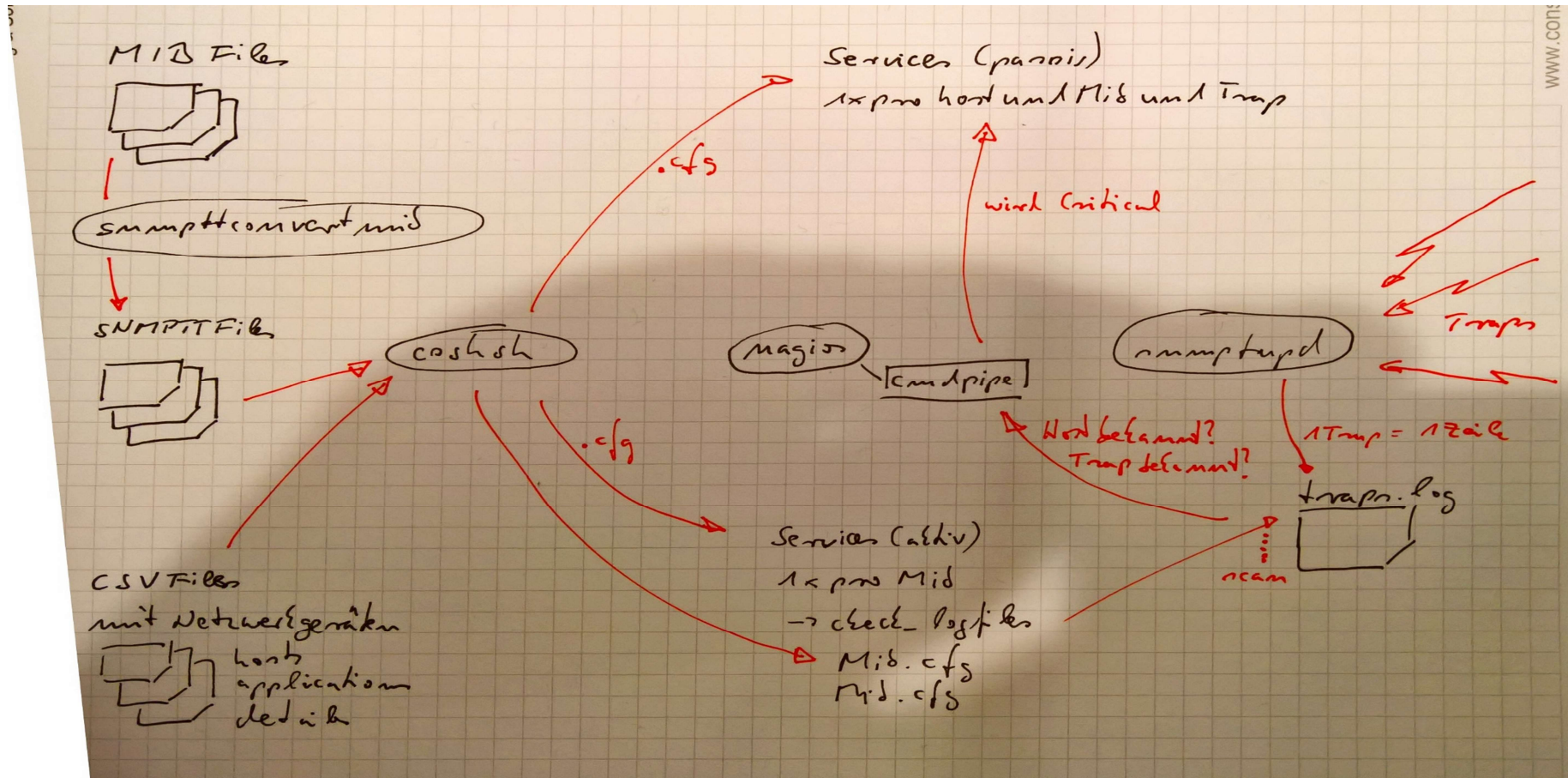
```
OMD[ws2017]:~$ share/coshsh/contrib/coshsh-prepare-landscape
```

```
OMD[ws2017]:~$ cd var/coshsh/configs/ws2017/dynamic
```

```
OMD[ws2017]:~/var/coshsh/configs/ws2017/dynamic$ git init .
```

** coshsh-spezifisch, am besten mich nachher ansprechen.*

Schematischer Ablauf



SNMPTT besorgen

```
OMD[ws2017]:/tmp$ wget ht  
tps://sourceforge.net/projects/snmptt/files/latest  
OMD[ws2017]:/tmp$ tar zxvf latest  
snmptt_1.4/  
snmptt_1.4/snmptthandler  
snmptt_1.4/snmptt-eventlog.mc  
...
```

Mibs ins snmptt-Format umwandeln

```
OMD[ws2017]:~$ export
MIBDIRS=$HOME/etc/coshsh/data/mibs:/usr/share/snmp/mibs:/var/lib/snmp/mib
s/ietf
OMD[ws2017]:~$ cd etc/coshsh/data/
OMD[ws2017]:~/etc/coshsh/data$
OMD[ws2017]:~/etc/coshsh/data$ /tmp/snmptt_1.4/snmpttconvertmib \
-in=mibs/ENTITY-STATE-MIB.mib \
-out=snmptt/ENTITY-STATE-MIB.snmptt

...
***** Processing MIB file *****
...
Total translations:          2
Successful translations:    2
Failed translations:        0
```

Debian Stretch – Mibs nachinstallieren

Möglicherweise braucht man viele Mibs...

```
# apt-get install git-core devscripts  
# cd /tmp  
# git clone git://git.debian.org/collab-maint/snmp-mibs-downloader.git  
# cd snmp-mibs-downloader  
# dpkg-buildpackage -us -uc  
# debi
```

ARISTA-ENTITY-SENSOR-MIB.snmpptt

EVENT aristaEntSensorAlarm .1.3.6.1.4.1.30065.3.12.0.1 "Status Events" Normal
FORMAT \$*

SDESC

This notification is generated under 2 conditions:

- a) When the value of the sensor value crosses a supported low or high threshold into warning or critical status.
- b) If previously the sensor value was in a warning or critical status but returns back to a normal status.

Variables:

- 1: entPhysicalDescr
- 2: entPhySensorValue
- 3: entStateAlarm

EDESC

ARISTA-ENTITY-SENSOR-MIB: Trap kommt!

```
OMD[ws2017]:~$ tail -f var/log/snmp/traps.log
[Mon Sep 11 09:44:20 CEST 2017] <UNKNOWN>
[Mon Sep 11 09:44:20 CEST 2017] UDP: [10.0.100.11]:44061->[127.0.0.1]:9162
[Mon Sep 11 09:44:20 CEST 2017] .1.3.6.1.2.1.1.3.0 6128966
[Mon Sep 11 09:44:20 CEST 2017] .1.3.6.1.6.3.1.1.4.1.0 .1.3.6.1.4.1.30065.3.12.0.1
[Mon Sep 11 09:44:20 CEST 2017] .1.3.6.1.2.1.47.1.1.1.1.2.100301213 "DOM RX Power Sensor for
Ethernet1"
[Mon Sep 11 09:44:20 CEST 2017] .1.3.6.1.2.1.99.1.1.1.4.100301213 13
[Mon Sep 11 09:44:20 CEST 2017] .1.3.6.1.2.1.131.1.1.1.5.100301213 " "
[Mon Sep 11 09:44:20 CEST 2017] summary: _____<UNKNOWN>_____UDP: [10.0.100.11]:44061-
>[127.0.0.1]:9162_____1.3.6.1.2.1.1.3.0 6128966_____1.3.6.1.6.3.1.1.4.1.0
.1.3.6.1.4.1.30065.3.12.0.1_____1.3.6.1.2.1.47.1.1.1.1.2.100301213 "DOM RX Power Sensor for
Ethernet1"_____1.3.6.1.2.1.99.1.1.1.4.100301213 13_____1.3.6.1.2.1.131.1.1.1.5.100301213 " "
```

ARISTA-ENTITY-SENSOR-MIB.snmpptt

EVENT aristaEntSensorAlarm .1.3.6.1.4.1.30065.3.12.0.1 "Status Events" Normal

FORMAT \$*

SDESC

This notification is generated under 2 conditions:

- a) When the value of the sensor value crosses a supported low or high threshold into warning or critical status.
- b) If previously the sensor value was in a warning or critical status but returns back to a normal status.

Variables:

- 1: entPhysicalDescr
- 2: entPhySensorValue
- 3: entStateAlarm

EDESC

Coshsh erstellt eine Konfigdatei ARISTA-ENTITY-SENSOR-MIB.cfg und innerhalb dieser einen Search, welcher nach einer summary-Zeile mit dieser Trap-OID sucht.
„Normal“ bedeutet OK, d.h. es passiert zunächst nichts mit dem Trap, außer daß er von check_logfiles gefunden wird. Die Trefferzeile wird durch den Text von FORMAT ersetzt.

ARISTA-ENTITY-SENSOR-MIB.snmpptt

EVENT aristaEntSensorAlarm .1.3.6.1.4.1.30065.3.12.0.1 "Status Events"

Warning

FORMAT \$* (type=\$1) (severity=MEDIUM)

SDESC

This notification is generated under 2 conditions:

- a) When the value of the sensor value crosses a supported low or high threshold into warning or critical status.
- b) If previously the sensor value was in a warning or critical status but returns back to a normal status.

Variables:

- 1: entPhysicalDescr
- 2: entPhySensorValue
- 3: entStateAlarm

EDESC

Damit wird eine wird der Search für diesen speziellen Trap im check_logfiles-Konfigfile so generiert, daß ein Treffer als Warning in Nagios erscheint.

Die Trefferzeile kann nahezu beliebig formuliert werden, um z.b. Hinweise für das Notificationscript (Ticket-Severity) mitzugeben.

EMC-CELERRA-MIB.snmpptt, Traps entschärfen

```
EVENT celWebCUI .1.3.6.1.4.1.1139.2.0.10 "Status Events" OK
FORMAT Event Facility = $1 Event ID = $2. $* (severity=INFO)
MATCH MODE=and
MATCH $1: 154
MATCH $2: 25
```

Manuell nachtragen

```
EVENT celWebCUI .1.3.6.1.4.1.1139.2.0.10 "Status Events" CRITICAL
FORMAT Event Facility = $1 Event ID = $2. $* (severity=HIGH)
SDESC
Trap message will be sent in the event of WebCUI.
Variables:
  1: celEventFacility
  2: celEventID
  3: celEventSeverity
  4: celEventDescr
EDESC
```

ARISTA-ENTITY-SENSOR-MIB: Trefferzeile

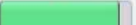
```
OMD[ws2017]:~$ tail -f var/log/snmp/traps.log
[Mon Sep 11 09:44:20 CEST 2017] <UNKNOWN>
[Mon Sep 11 09:44:20 CEST 2017] UDP: [10.0.100.11]:44061->[127.0.0.1]:9162
[Mon Sep 11 09:44:20 CEST 2017] .1.3.6.1.2.1.1.3.0 6128966
[Mon Sep 11 09:44:20 CEST 2017] .1.3.6.1.6.3.1.1.4.1.0 .1.3.6.1.4.1.30065.3.12.0.1
[Mon Sep 11 09:44:20 CEST 2017] .1.3.6.1.2.1.47.1.1.1.1.2.100301213 "DOM RX Power Sensor for
Ethernet1"
[Mon Sep 11 09:44:20 CEST 2017] .1.3.6.1.2.1.99.1.1.1.4.100301213 13
[Mon Sep 11 09:44:20 CEST 2017] .1.3.6.1.2.1.131.1.1.1.5.100301213 " "
[Mon Sep 11 09:44:20 CEST 2017] summary: ____<UNKNOWN>____UDP: [10.0.100.11]:44061-
>[127.0.0.1]:9162____.1.3.6.1.2.1.1.3.0 6128966____.1.3.6.1.6.3.1.1.4.1.0
.1.3.6.1.4.1.30065.3.12.0.1____.1.3.6.1.2.1.47.1.1.1.1.2.100301213 "DOM RX Power Sensor for
Ethernet1"____.1.3.6.1.2.1.99.1.1.1.4.100301213 13____.1.3.6.1.2.1.131.1.1.1.5.100301213 " "
```

check_logfiles schaut nach, ob die Absenderadresse bekannt ist und schickt dann ein passives Checkergebnis an den zugehörigen Host bzw. dessen Service

Was erzeugt coshsh pro Host? Z.b. Arista

Die aktiven 08/15-Services laut coshsh-tpl-Files

Einen passiven Check pro MIB (implements_mib) und Trap

ws-switch	os_arista_default_check_cpu		OK	15:22:01	0d 15h 48m 6s	1/3	OK - cpu 0 is 5.00%, cpu 1 is 4.0...	
	os_arista_default_check_hw		OK	15:17:58	0d 17h 47m 34s	1/3	OK - environmental hardware w...	
	os_arista_default_check_mem		OK	15:20:20	0d 15h 47m 22s	1/3	OK - memory 1 (RAM) usage is ...	
	os_arista_default_check_uptime		OK	15:21:18	0d 16h 22m 57s	1/20	OK - device is up since 216d 0h 6m 38s, Arista N...	
	os_arista_traps_ARISTA-CONFIG-MAN-MIB_aristaConfigManEvent		PENDING	never	0d 0h 59m 28s+	1/1	Service is not scheduled to be checked...	
	os_arista_traps_ARISTA-ENTITY-SENSOR-MIB_aristaEntSensorAlarm		WARNING	09:44:24	0d 5h 38m 44s	1/1	"DOM RX Power Sensor for Ethernet1", 13, " " (typ...	
	os_arista_traps_ARISTA-REDUNDANCY-MIB_aristaRedundancySwitchOverNotif		PENDING	never	0d 0h 59m 28s+	1/1	Service is not scheduled to be checked...	
	os_arista_traps_ENTITY-STATE-MIB_entStateOperDisabled		OK	09:28:17	0d 5h 57m 1s	1/1	An entStateOperDisabled notification signifies th...	
	os_arista_traps_ENTITY-STATE-MIB_entStateOperEnabled		PENDING	never	0d 0h 59m 28s+	1/1	Service is not scheduled to be checked...	

Was erzeugt coshsh an Infrastruktur?

Einen Host namens trapdest

check_logfiles-Service für jede bekannte MIB (snmptt-File)

check_proc-Service für den snmptrapd

Einen Service, der alarmiert, wenn gar keine Traps mehr kommen

Host ▲▼	Service ▲▼		Status ▲▼	Last Check ▲▼	Duration ▲▼	Attempt ▲▼	Status Information ▲▼
trapdest	app_snmptrapdlog_default_check_snmptrapd	~	OK	15:17:37	0d 20h 31m 37s	1/3	PROCS OK: 1 process with args '/usr/sbin/snmpt...
	app_snmptrapdlog_default_check_traplog_alive	✖ ~	CRITICAL	15:15:35	0d 5h 25m 4s	3/3	CRITICAL - received no traps for 300s
	app_snmptrapdlog_traps_ARISTA-CONFIG-MAN-MIB_scan_logs	✖ ✖	OK	15:17:32	0d 5h 59m 15s	1/1	OK - found no new traps
	app_snmptrapdlog_traps_ARISTA-ENTITY-SENSOR-MIB_scan_logs	✖ ✖	OK	15:17:30	0d 5h 58m 26s	1/1	OK - found no new traps
	app_snmptrapdlog_traps_ARISTA-REDUNDANCY-MIB_scan_logs	✖ ✖	OK	15:16:51	0d 5h 57m 28s	1/1	OK - found no new traps
	app_snmptrapdlog_traps_CLARIION-MIB_scan_logs	✖ ✖	OK	15:17:49	0d 5h 56m 31s	1/1	OK - found no new traps
	app_snmptrapdlog_traps EMC-CELERRA-MIB_scan_logs	✖ ✖	OK	15:17:47	0d 5h 55m 33s	1/1	OK - found no new traps
	app_snmptrapdlog_traps_ENTITY-STATE-MIB_scan_logs	✖ ✖	OK	15:17:44	0d 16h 23m 34s	1/1	OK - found no new traps

Einsatz in der Praxis

Ablösung eines proprietären Monitoring-Produkts,
2000 Storage-Systeme (VNX, Isilon, ECS,...), Brocades, Arista
an weltweit verteilten Standorten eines Automobilkonzerns.
(in der traps.log landen ca. 300 Traps/Sekunde)

Monitoring der Videokonferenz-Infrastruktur eines global agierenden
Beratungsunternehmens.