Evergreen Availability Monitoring

with a focus on Nagios

An introduction to monitoring the availability of your Evergreen installation.
Scope of presentation

- What is Availability Monitoring?
- What to monitor & why to monitor it.
- When to alert.
What is Availability Monitoring?
Availability Monitoring is the process of collecting data on critical system processes and providing notice upon deviation from set norms. (usually using a software tool or set of tools)
Why would you want to?

- Recognize small events before they become critical.
- Decrease your reaction time to critical events within your Evergreen system.
- Have confidence in your systems are operating normally.
Where would you run the tool?

- Stand-alone server (Virtual or Physical)
- Existing server
  - Utility server
  - Load balancer
  - Logging server
What to monitor?
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Single-Server-Brick

- Apache (SIP)
- (Z39.50)
- EG Logic
- Utility
- Memcache
- Reporter
- Postgres
- Syslog

External NFS Server

NFS Mount from the NFS server:/data/backup on Server:/var/backup
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Single-Server-Brick, Multi-Brick Cluster

- Load Balancer
- Apache EG Logic
- Apache EG Logic
- Apache EG Logic
- Apache SIP (z30.50) EG Logic
- Utility EG Logic
- Reporter
- Memcache
- Syslog
- Postgres Primary
- Postgres Secondary
- NFS Server

NFS Mount from the NFS server/data/reporter on Bricks:/openls/var/reporter

NFS Mount from the NFS server/data/backup on Primary-Database:/var/backup
Multi-Server-Brick, Multi-Brick Cluster
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Application Tiers
Presentation Tier

Load Balancer

- Apache2: HTTP & HTTPS
- SIP
- z39.50
Presentation Tier

- Is Load Balancer process running?
  
  *Ldirectord*

  ```
  loadbalancer$ /usr/lib/nagios/plugins/check_procs -w 1:1 -c 1:1 -C ldirectord
  PROCS OK: 1 process with command name 'ldirectord'
  ```

  *pound proxy*

  ```
  loadbalancer$ /usr/lib/nagios/plugins/check_procs -w 1:1 -c 1:1 -C pound
  PROCS OK: 1 process with command name 'pound'
  ```
Presentation Tier

- Is Apache process running, and is the port available?

```
brickhead1$ /usr/lib/nagios/plugins/check_procs -w 1:90 -c 1:99 -C apache2
PROCS OK: 22 processes with command name 'apache2'

brickhead1$ /usr/lib/nagios/plugins/check_tcp -p 80
TCP OK - 0.004 second response time on port 80|time=0.004000s;;;0.000000;10.000000

brickhead1$ /usr/lib/nagios/plugins/check_tcp -p 443
TCP OK - 0.000 second response time on port 443|time=0.000000s;;;0.000000;10.000000```
Presentation Tier

- Are there any processes consuming excess resources?

```
brickhead1$ /usr/lib/nagios/plugins/check_apache_cpu
OK: Highest CPU process 1%
```
Presentation Tier

- Is brick in rotation?  
  
  *Ldirectord*

```
nagios$ /usr/lib/nagios/plugins/check_http -H brickhead1 -u /ping.txt -r pong
HTTP OK: HTTP/1.1 200 OK - 328 bytes in 0.002 second response
  time |
    time=0.001908s;;0.000000 size=328B;;0
```

*pound proxy*

```
loadbalancer$ /usr/lib/nagios/plugins/check_pound_rotation
OK: 0 Services disabled.
```
Presentation Tier

- Is the SIP service running, and is the port available?

```bash
sipserv$ /usr/lib/nagios/plugins/check_procs -w 1:20 -c 1:25 -a SIPServer.pm
PROCS OK: 14 processes with args 'SIPServer.pm'

sipserv$ /usr/lib/nagios/plugins/check_tcp -p 6001
TCP OK - 0.002 second response time on port 6001
|time=0.001714s;;;0.000000;10.000000
```
Presentation Tier

- Is the z39.50 service running, and is the port available?

```
z3950server$ /usr/lib/nagios/plugins/check_procs -w 1:20 -c 1:25 -a simple2zoom
PROCS OK: 2 processes with args 'simple2zoom'

z3950server$ /usr/lib/nagios/plugins/check_tcp -p 210
TCP OK - 0.000 second response time on port 210
```

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Logic Tier

- OpenSRF
- Utility Scripts
- clark_kent.pl
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Logic Tier

- Does every brick have the proper number of OpenSRF drones?

```
syslog:~$ /usr/lib/nagios/plugins/pars...COLLECTOR STATUS: OK!
```

(Assumes eg-stats-collector-remote.pl is setup)

WARN at 80% Listener usage
CRIT at 90% Listener usage; lost Listener
Logic Tier

- Is clark_kent.pl running and is the LOCK file in place?

```
reporter:~$ /usr/lib/nagios/plugins/check_procs -w 1:50 -c 1:75 -a "Clark Kent"
PROCS OK: 1 process with args 'Clark Kent'
```

```
check_lock
```

```
reporter:~$ /usr/lib/nagios/plugins/check_lock /tmp/reporter-LOCK
Clark
OK: /tmp/reporter-LOCK exists and Clark running
```
Are there Action Trigger Events pending?

```
check_at_pending

db:~$ /usr/lib/nagios/plugins/check_at_pending
OK: 3312 AT events pending
```

evergreen=# select count(*) from action_trigger.event where state = 'pending';
count
------
  3312
(1 row)
Logic Tier

- Does /tmp/action-trigger-LOCK* exist?
- If the file exists, is the process running?
- If the process is running, how long has it been running?

utility$ /usr/lib/nagios/plugins/check_lock /tmp/action-trigger-LOCK* action-trigger-runner.pl
OK: /tmp/action-trigger-LOCK exists and action-trigger-runner.pl running

utility$ /usr/lib/nagios/plugins/check_file_age -w 3600 -c 5400 -f /tmp/generate_fines-LOCK
FILE_AGE OK: /tmp/action-trigger-LOCK is 264 seconds old and 4 bytes
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Logic Tier

- Does /tmp/hold_targeter-LOCK exist?
- If the file exists, is the process running?
- If the process is running, how long has it been running?

```bash
utility$ /usr/lib/nagios/plugins/check_lock /tmp/hold_targeter-LOCK
  hold_targeter.pl
OK: /tmp/hold_targeter-LOCK exists and hold_targeter.pl running

utility$ /usr/lib/nagios/plugins/check_file_age -w 10800 -c 14400 /tmp/hold_targeter-LOCK
FILE_AGE OK: /tmp/hold_targeter-LOCK is 84 seconds old and 5 bytes
```
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Logic Tier

- Does /tmp/generate_fines-LOCK exist?
- If the file exists, is the process running?
- If the process is running, how long has it been running?

utility$ /usr/lib/nagios/plugins/check_lock /tmp/generate_fines-LOCK fine_generator.pl
OK: /tmp/generate_fines-LOCK exists and fine_generator.pl running

utility$ /usr/lib/nagios/plugins/check_file_age -w 3600 -c 5400 -f /tmp/generate_fines-LOCK
FILE_AGE OK: /tmp/generate_fines-LOCK is 156 seconds old and 4 bytes
- check_file_age

Note: stock check_file_age presents CRIT for missing file, evergreen processes on Utility needs OK for missing file.

...# Check that file exists (can be directory or link)
unless (-e $opt_f) {
  print "FILE_AGE OK: File not found - $opt_f
  exit $ERRORS{'OK'};
}
...
Data Tier

- Postgres
- pgpool
- slony
Is postgres running, and is it responding on its port?

```
db$ /usr/lib/nagios/plugins/check_procs -w1:700 -c1:800 -a postgres
PROCS OK: 422 processes with args 'postgres'

db$ /usr/lib/nagios/plugins/check_tcp -p 5432
TCP OK - 0.000 second response time on port 5432
```

Is pgpool running, and is it responding on its port?

```bash
db$ /usr/lib/nagios/plugins/check_procs -w1:900 -c1:1000 -a pgpool
PROCS OK: 802 processes with args 'pgpool'

db$ /usr/lib/nagios/plugins/check_tcp -p 9999
TCP OK - 0.000 second response time on port 9999
```
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Data Tier

- How many database back-ends are available?

  `postgres`

```bash
$db$ /usr/lib/nagios/plugins/check_backends2
OK: postgresql backends = 387
```

**How did we get here?**

```bash
$db$ grep max_connections /etc/postgresql/9.1/main/postgresql.conf
max_connections = 800

$db$ ps ax|grep -v grep | grep -c postgres
387
```
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Data Tier

- How many database back-ends are available?
  
  *pgpool*

```
    db$ /usr/lib/nagios/plugins/check_backends2 600 pool
    OK: pgpool backends = 282
```

*How did we get here?*

```
    db$ grep num_init_children /etc/pgpool-II/pgpool.conf
    num_init_children = 800

    db$ ps ax|grep -v "wait\|grep" | grep -c pgpool
    282
```
Data Tier

- Is slony running, and is there any replication lag?

```
db1$ /usr/lib64/nagios/plugins/check_procs -c2:2 -C slon
PROCS OK: 2 processes with command name 'slon'

db2$ /usr/lib64/nagios/plugins/check_procs -c2:2 -C slon
PROCS OK: 2 processes with command name 'slon'

db2$ /usr/lib64/nagios/plugins/check_slon
OK: Slony Replication In Sync: st_lag_num_events = 1
```
Data Tier

- Are the WAL archives current?
- Is the nightly database snapshot current?

```bash
db$ /usr/lib/nagios/plugins/check_file_age -w 3600 -c 7200 -f /var/backup/wal
FILE_AGE OK: /var/backup/wal is 123 seconds old and 475136 bytes

db$ /usr/lib/nagios/plugins/check_file_age -w 90000 -c 180000 -f /var/backup/snapshot/
FILE_AGE OK: /var/backup/snapshot/ is 35060 seconds old and 4096 bytes
```
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Data Tier

- Are there any long running queries?

```
db$ /usr/lib/nagios/plugins/check_dbquery
OK: Longest query running for over (0 rows) hours
```
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Meta Tiers

- memcache
- ejabberd
Meta Tiers

- Is Memcache running, and is the port available?

```bash
memcache$ /usr/lib/nagios/plugins/check_procs -w1:5 -c1:5 -C memcached
PROCS OK: 1 process with command name 'memcached'

memcache$ /usr/lib/nagios/plugins/check_tcp -p 11211
TCP OK - 0.000 second response time on port 11211|time=0.000000s;;;0.000000;10.000000
```
Meta Tiers

- Is ejabberd running, and is the port available?

```bash
{bricks|utility|sip}$ /usr/lib/nagios/plugins/check_procs -w1:5 -c1:5 -a ejabberd
PROCS OK: 1 process with args 'ejabberd'

{bricks|utility|sip}$ /usr/lib/nagios/plugins/check_tcp -p 5222
TCP OK - 0.004 second response time on port 5222
```
Meta Tiers

- Are there any "NOT CONNECTED TO THE NETWORK" errors in the logs?

```
syslog$ /usr/lib/nagios/plugins/check_notconnected
OK: 0 NOT CONNECTEDs returned this hour.
```
Meta Tiers

- Are there an excessive number of NULLS in the logs?

```bash
syslog$ /usr/lib/nagios/plugins/check_null sc
OK: 0 NULLs returned in the past 15 minutes (Top server this hour: )
```
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Platform Tier

- syslog
- NFS
- cron
- OS
Platform Tier

- Are all the NFS mounts in place?
- Are any of them stale?

```shell
app$ /usr/lib/nagios/plugins/check_mountpoints
/openils/var/web/reporter
OK: all mounts were found ( /openils/var/web/reporter)

app$ /usr/lib/nagios/plugins/check_nfs_mounts.pl
NFS OK: All mounts available.
```
Platform Tier

- How is the system load?

```
{all-servers}:@~$ /usr/lib/nagios/plugins/check_load -w 3 -c 4
OK - load average: 0.00, 0.00, 0.00|load1=0.000;3.000;4.000;0; load5=0.000;3.000;4.000;0; load15=0.000;3.000;4.000;0;
```

Simple load calculation:

- **CRIT** = [number of cores]
- **WARN** = [number of cores * 0.8]
Platform Tier

- How much swap is in use?

```
{all-servers}$ /usr/lib/nagios/plugins/check_swap -w75% -c50%
SWAP OK - 100% free (2047 MB out of 2047 MB)
|swap=2047MB;1535;1023;0;2047
```
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Platform Tier

- How much free space is available on the local filesystems?

```bash
{all-servers}$ /usr/lib/nagios/plugins/check_disk -w 20% -c 10% -p /
DISK OK - free space: / 16087 MB (84% inode=92%); |
/=3040MB;16121;18136;0;20152

db$ /usr/lib/nagios/plugins/check_disk -w 20% -c 10% -p /
/var/lib/postgresql
DISK OK - free space: /var/lib/postgresql 58917 MB (57% inode=99%); |
/var/lib/postgresql=43428MB;81876;92111;0;102346
```
Platform Tier

- Are there any "Out of Memory, xxxx Process killed" errors in the logs?

```bash
syslog$ :/usr/lib/nagios/plugins/check_prockill
OK: 0 'Killed process' errors this hour
```
When to monitor?
False Positives

- Thresholds set too high/low
- Known events:
  - db snapshots
  - log housekeeping
  - intensive reports
  - SIP restarts
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Monitoring vs. alerting

- **check_period**
  - defined in the service checks
  - defines when to monitor

- **notification_period**
  - also defined in the service checks
  - defines when to alert
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Q & A
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Thank You!

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