Post Mortem Analysis

Group E - 14. november 2017

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Nov 14 08:18:06 Ubuntu-1604-xenial-64-minimal node_exporter[5093]: time="2017-11-14T08:18:05+01:00" level=error msg="Error on statfs() system call for \"/var/lib/docker/overlay2/8e7f9184e003b3fe3ce17d1d3d
2b06dda8da0eb9f22ee90368d1fdfdaa2f72d8/merged\": permission denied" source="filesystem_linux.go:57"
Nov 14 08:18:08 Ubuntu-1604-xenial-64-minimal node_exporter[5093]: time="2017-11-14T08:18:07+01:00" level=error msg="Error on statfs() system call for \"/var/lib/docker/containers/867e2c1f19e5f158c782c934
f56498e159d4a80f54d65228d01b749c707fc779/shm\": permission denied" source="filesystem_linux.go:57"
Nov 14 08:18:08 Ubuntu-1604-xenial-64-minimal node_exporter[5093]: time="2017-11-14T08:18:08+01:00" level=error msg="Error on statfs() system call for \"/run/docker/netns/34ae10e7e865\": permission denied
" source="filesystem_linux.go:57"
Nov 14 08:18:13 Ubuntu-1604-xenial-64-minimal dockerd[15141]: time="2017-11-14T08:18:13.395869501+01:00" level=info msg="libcontainerd: new containerd process, pid: 24701"
Nov 14 08:18:21 Ubuntu-1604-xenial-64-minimal dockerd[15141]: time="2017-11-14T08:18:21.027310523+01:00" level=info msg="libcontainerd: new containerd process, pid: 24710"
Nov 14 08:18:28 Ubuntu-1604-xenial-64-minimal dockerd[15141]: time="2017-11-14T08:18:27.689965211+01:00" level=info msg="libcontainerd: new containerd process, pid: 24718"
Nov 14 08:18:33 Ubuntu-1604-xenial-64-minimal dockerd[15141]: time="2017-11-14T08:18:32.479763937+01:00" level=info msg="libcontainerd: new containerd process, pid: 24725"
Nov 14 08:18:38 Ubuntu-1604-xenial-64-minimal node_exporter[5093]: time="2017-11-14T08:18:35+01:00" level=error msg="Error on statfs() system call for \"/var/lib/docker/overlay2/8e7f9184e003b3fe3ce17d1d3d
2b06dda8da0eb9f22ee90368d1fdfdaa2f72d8/merged\": permission denied" source="filesystem_linux.go:57"
Nov 14 08:18:38 Ubuntu-1604-xenial-64-minimal node_exporter[5093]: time="2017-11-14T08:18:37+01:00" level=error msg="Error on statfs() system call for \"/var/lib/docker/containers/867e2c1f19e5f158c782c934
f56498e159d4a80f54d65228d01b749c707fc779/shm\": permission denied" source="filesystem_linux.go:57"
Nov 14 08:18:38 Ubuntu-1604-xenial-64-minimal node_exporter[5093]: time="2017-11-14T08:18:37+01:00" level=error msg="Error on statfs() system call for \"/run/docker/netns/34ae10e7e865\": permission denied
" source="filesystem_linux.go:57"
Nov 14 08:18:38 Ubuntu-1604-xenial-64-minimal dockerd[15141]: time="2017-11-14T08:18:38.270473450+01:00" level=info msg="libcontainerd: new containerd process, pid: 24731"
Nov 14 08:18:45 Ubuntu-1604-xenial-64-minimal dockerd[15141]: time="2017-11-14T08:18:44.398537859+01:00" level=info msg="libcontainerd: new containerd process, pid: 24740"
Nov 14 08:18:51 Ubuntu-1604-xenial-64-minimal node_exporter[5093]: time="2017-11-14T08:18:49+01:00" level=error msg="Error on statfs() system call for \"/var/lib/docker/overlay2/8e7f9184e003b3fe3ce17d1d3d
2b06dda8da0eb9f22ee90368d1fdfdaa2f72d8/merged\": permission denied" source="filesystem_linux.go:57"
Nov 14 08:18:53 Ubuntu-1604-xenial-64-minimal node_exporter[5093]: time="2017-11-14T08:18:52+01:00" level=error msg="Error on statfs() system call for \"/var/lib/docker/containers/867e2c1f19e5f158c782c934
f56498e159d4a80f54d65228d01b749c707fc779/shm\": permission denied" source="filesystem_linux.go:57"
Nov 14 08:18:53 Ubuntu-1604-xenial-64-minimal dockerd[15141]: time="2017-11-14T08:18:52.963718689+01:00" level=info msg="libcontainerd: new containerd process, pid: 24746"
Nov 14 08:18:54 Ubuntu-1604-xenial-64-minimal node_exporter[5093]: time="2017-11-14T08:18:53+01:00" level=error msg="Error on statfs() system call for \"/run/docker/netns/34ae10e7e865\": permission denied
" source="filesystem_linux.go:57"
Nov 14 08:18:58 Ubuntu-1604-xenial-64-minimal prometheus[13637]: time="2017-11-14T08:18:55+01:00" level=info msg="Checkpointing in-memory metrics and chunks..." source="persistence.go:633"
Nov 14 08:19:02 Ubuntu-1604-xenial-64-minimal dockerd[15141]: time="2017-11-14T08:19:02.406802115+01:00" level=info msg="libcontainerd: new containerd process, pid: 24754"
Nov 14 08:19:08 Ubuntu-1604-xenial-64-minimal dockerd[15141]: time="2017-11-14T08:19:08.282589394+01:00" level=info msg="libcontainerd: new containerd process, pid: 24762"
Nov 14 08:19:10 Ubuntu-1604-xenial-64-minimal prometheus[13637]: time="2017-11-14T08:19:09+01:00" level=info msg="Done checkpointing in-memory metrics and chunks in 8.52428768s." source="persistence.go:6
65"
Nov 14 08:19:16 Ubuntu-1604-xenial-64-minimal node_exporter[5093]: time="2017-11-14T08:19:15+01:00" level=error msg="Error on statfs() system call for \"/var/lib/docker/overlay2/8e7f9184e003b3fe3ce17d1d3d
2b06dda8da0eb9f22ee90368d1fdfdaa2f72d8/merged\": permission denied" source="filesystem_linux.go:57"
Nov 14 08:19:16 Ubuntu-1604-xenial-64-minimal node_exporter[5093]: time="2017-11-14T08:19:16+01:00" level=error msg="Error on statfs() system call for \"/var/lib/docker/containers/867e2c1f19e5f158c782c934
f56498e159d4a80f54d65228d01b749c707fc779/shm\": permission denied" source="filesystem_linux.go:57"
Nov 14 08:19:16 Ubuntu-1604-xenial-64-minimal node_exporter[5093]: time="2017-11-14T08:19:16+01:00" level=error msg="Error on statfs() system call for \"/run/docker/netns/34ae10e7e865\": permission denied
" source="filesystem_linux.go:57"
Nov 14 08:19:18 Ubuntu-1604-xenial-64-minimal dockerd[15141]: time="2017-11-14T08:19:17.916546678+01:00" level=info msg="libcontainerd: new containerd process, pid: 24770"
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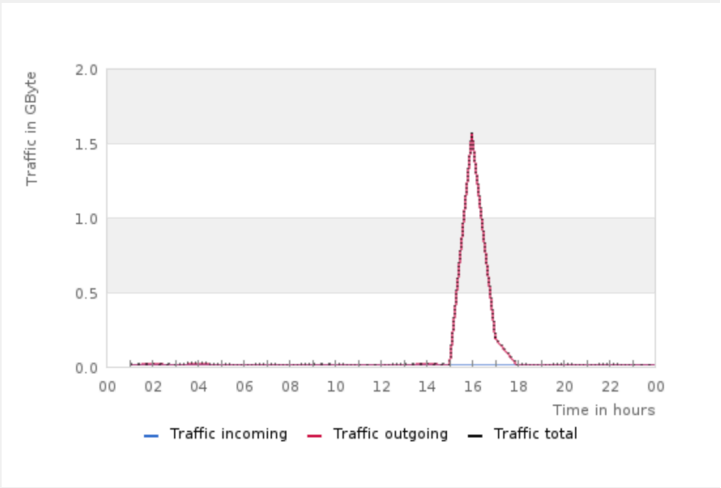
Introduction

Between the 13th and 14th of november 2017, timezone CEST, the Hetzner-server, which hosts the Hackernews application made no responses to requests, were slow, and was ineligible to remote connect to.

All users, administrators, and operators were affected by this.

Detailed description

As you can see on the picture below, it is showing a huge peak on the 13th of november at 14.30 - 18.00PM. We first thought that this was the main issue. That because of lots of requests and it had to respond to all of it, the bandwidth were closed to being used up for the month.



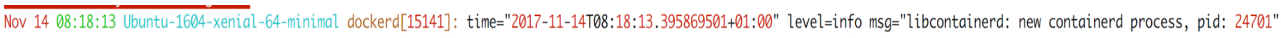
This was not the case. Hetzner has stated that there is unlimited amount of traffic to use, so we should not worry about this.

We then took a deeper look into the syslog on the server and then we find a lot of failure logging from the 14th of november in the morning. Here we can see our Node_Exporter, which is a part of the Prometheus monitoring, trying to connect to a docker container, which, first of all, doesn't exist, and secondly it gets permission denied.

We suspect that this has been eating the CPU and created a big block on the server, which made it unworkable.

Root Cause

We don't have a specific root cause yet. We suspect that the amount of errors from Node_Exporter has created a gigantic block and slammed the system to the ground.
We also think that Docker had its own life and spawned a new process every time the request happened. You can see on the image below that a new container process was created constantly:



This is due to bad setup of Prometheus and Node_Exporter. We will go through the whole setup and make sure it is setup as it should. This is an open issue that has to be fixed.

Another issue that suddenly became persistence was the generation of war file from Jenkins. After everything was shutdown we were trying to push a new version of the application out to the server via Jenkins. There were few bug fixes, logging, API description, and monitoring of HTTP Requests included in this version.
But when Jenkins tried to compile the project into a war file it looped infinite creation of new folders called "hackernews", which at the end landed a war file at 8.5gb, which apparently was the max.

The fix

Since this is a virtual machine hosted at Hetzner, we went to Web-UI and from the system we send a "Reset" command, which makes a Stop succession by a Start. This seems to had cleared the CPU usage and all the locks that might've been hanging.

As of now the server is running fine again. Apparently the database also has been wiped, so we've lost most of our data as it is. We are looking to recover the last data.

The present war file on the Glassfish Application Server was removed from the server. Then a "mvn clean install" command was added as an "shell command execution" in Jenkins before the Jenkins build pulled the GitHub project and compiled the new war file. This made sure the new war file didn't append to the old war file and created one big chunk.

Lessons learned

We've learned that we should have used more time on our Monitoring setup. If this was setup correctly from start, we might have been able to get an alarm before the issue and the fix it before it happened.

We also learned that logging on the application would have been helpful to see if we retrieved any errors during timeframe as stated above.
The logging have though been implemented as the document is written and it was ongoing, but not deployed. This is just sad, but a great lesson to be learned.

We've learned that we need to "mvn clean install " before we compile our war project through jenkins. This makes sure the file get recompile every time and doesn't append to the existing file as it did previously.

At last it is not ideal that our operators don't have the needed setup to operate the system and it had to be found out by not getting a request from the server from an Internet Browser.

Most of the things have been updated now and the monitoring part is being fixing as this document is published.