

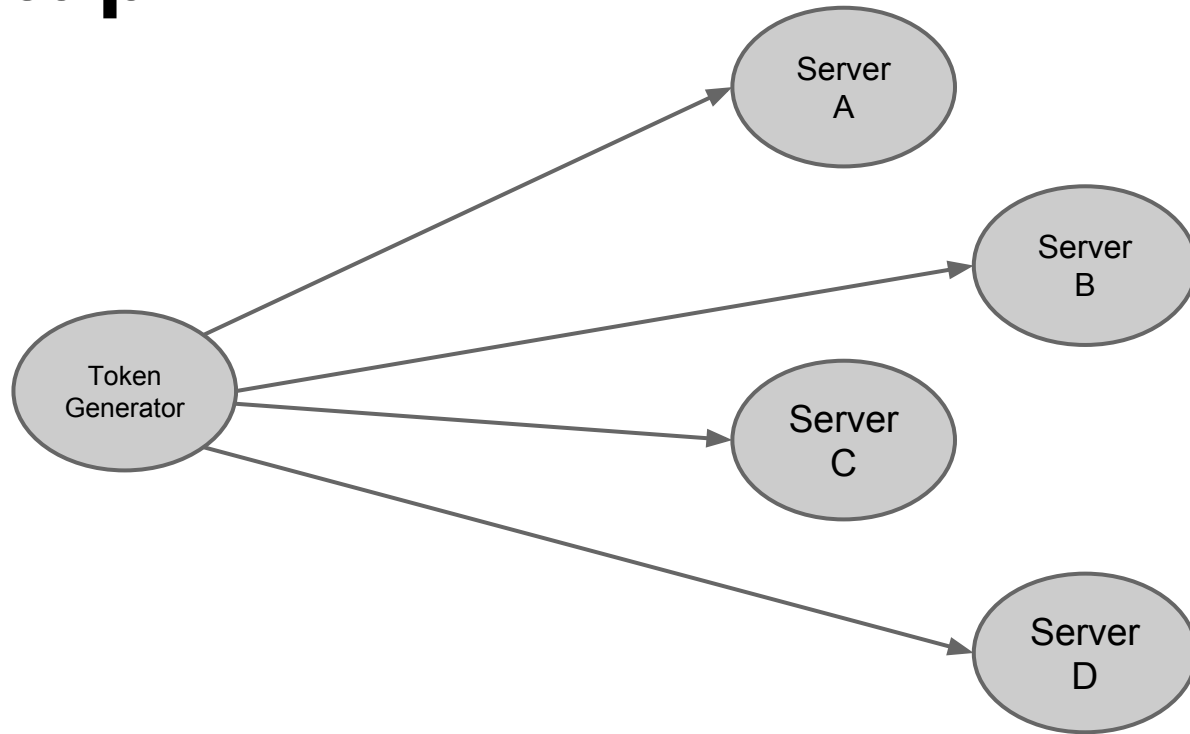
*Performance and Availability of  
Application Servers in Nornet*

Sune Jakobsson  
NTNU

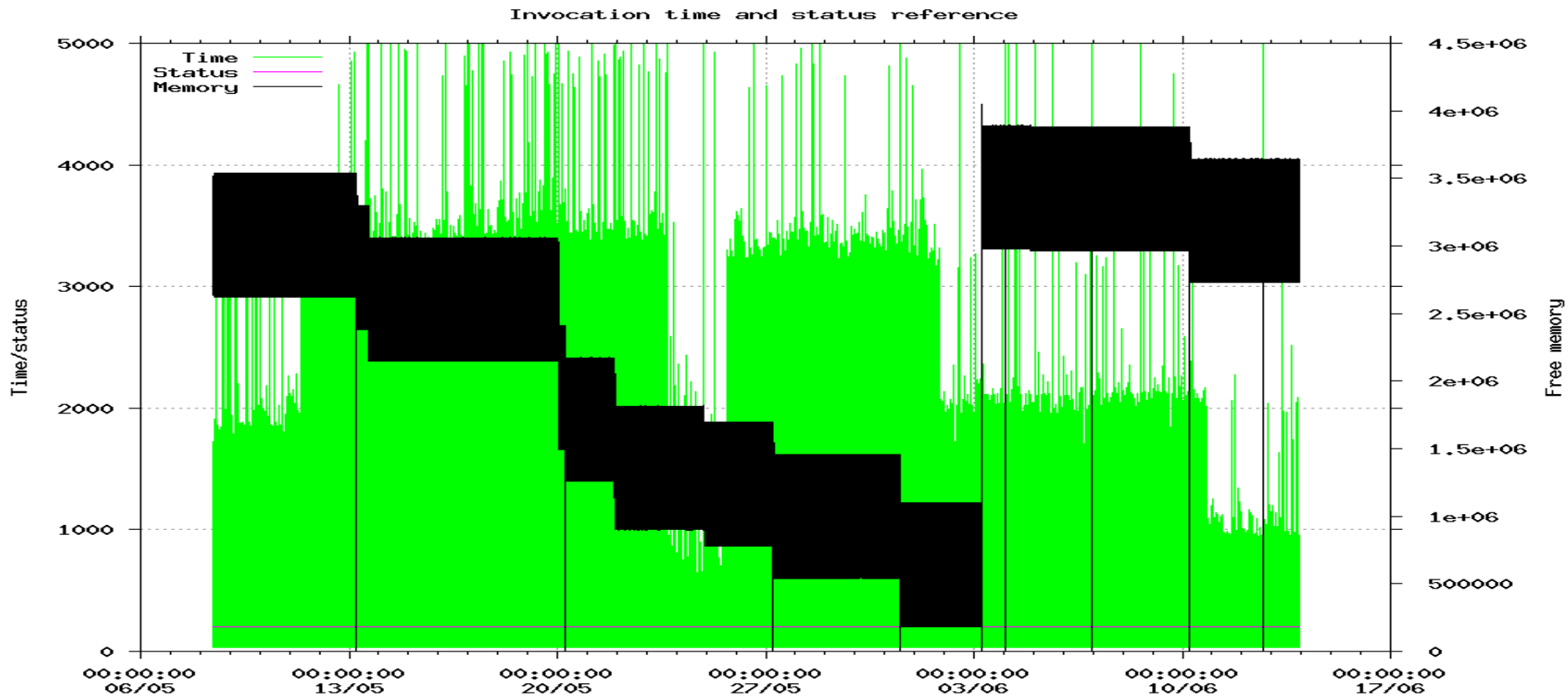
# Outline

- Previous experiments
- Nornet setup
- Preliminary data
- Quirks

# Setup



# Internet raw data



# Motivation

Previous papers focussed on Internet

- Ideal network
- No control over node

Nornet

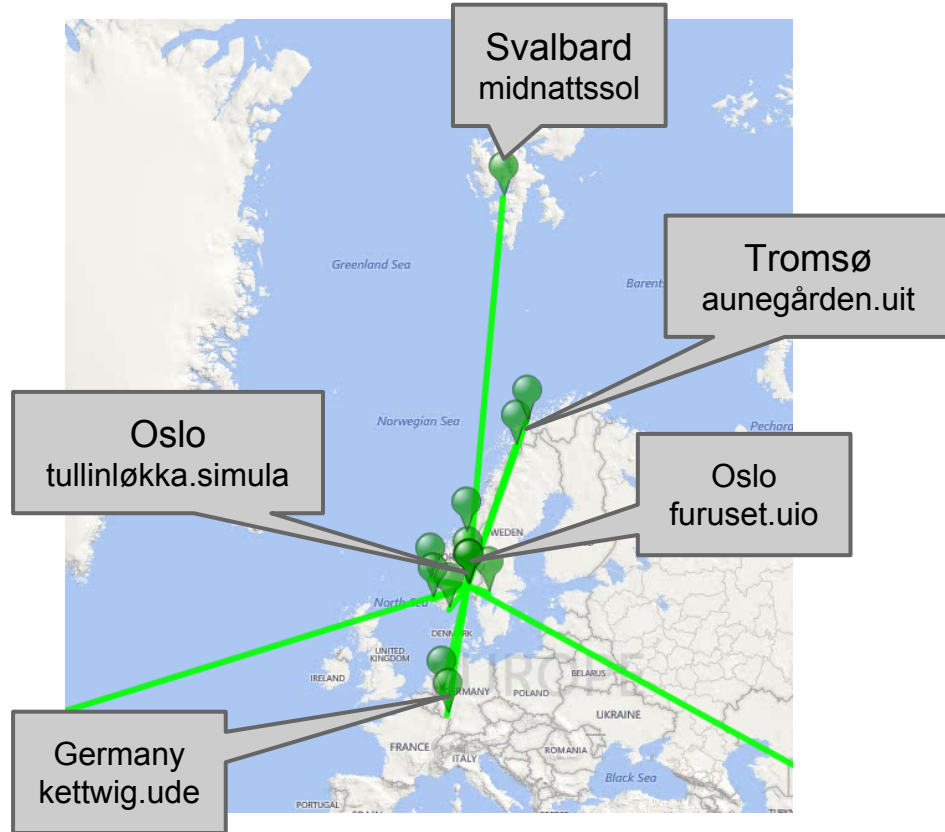
- Tunnels over Internet
- Full control over “identical” nodes

Investigate “Application availability” by recording invocation time, and available memory

# States used in experiment

1. Invocation succeeded (**Ok**).
2. Invocation succeeded, but the invocation took more than 5 seconds (**Slow**).
3. Invocation failed, and connection was established, but a timeout occurred when reading or writing the data to the client (**Timeout**).
4. Invocation failed due to lack of connectivity, no route to server was available (**No connection**).
5. Invocation of server was not started since there are currently more than five outstanding unanswered requests in a row (**Unanswered**).
6. Skipped requests due to several errors in a row (**Skip**).

# Site map



# Sites as of Aug 2014

No.	Site	ISP 1	ISP 2	ISP 3	ISP 4
1	<a href="#">Simula Research Laboratory (1)</a>	<a href="#">Uninett (1)</a>	<a href="#">Hafslund (2)</a>	<a href="#">Telenor (4)</a> (IPv4 only)	<a href="#">PowerTech (9)</a>
2	<a href="#">Universitetet i Oslo (2)</a>	<a href="#">Uninett (1)</a>	<a href="#">Broadnet (10)</a> (IPv4 only)	<a href="#">PowerTech (9)</a>	-
3	<a href="#">Høgskolen i Gjøvik (3)</a>	<a href="#">Uninett (1)</a>	<a href="#">PowerTech (9)</a>	-	-
4	<a href="#">Universitetet i Tromsø (4)</a>	<a href="#">Uninett (1)</a> (IPv4 only)	<a href="#">Telenor (4)</a> (IPv4 only)	<a href="#">PowerTech (9)</a>	-
5	<a href="#">Universitetet i Stavanger (5)</a>	<a href="#">Uninett (1)</a> (IPv4 only)	<a href="#">Altibox (11)</a>	<a href="#">PowerTech (9)</a>	-
6	<a href="#">Universitetet i Bergen (6)</a>	<a href="#">Uninett (1)</a>	<a href="#">Bergenshalvøens Kommunale Kraftselskap (8)</a>	-	-
7	<a href="#">Universitetet i Agder (7)</a>	<a href="#">Uninett (1)</a>	<a href="#">PowerTech (9)</a>	-	-
8	<a href="#">Universitetet på Svalbard (8)</a>	<a href="#">Uninett (1)</a> (IPv4 only)	<a href="#">Telenor (4)</a> (IPv4 only)	-	-
9	<a href="#">Universitetet i Trondheim (9)</a>	<a href="#">Uninett (1)</a>	<a href="#">PowerTech (9)</a>	-	-
10	<a href="#">Høgskolen i Narvik (10)</a>	<a href="#">Uninett (1)</a>	<a href="#">Broadnet (10)</a> (IPv4 only)	<a href="#">PowerTech (9)</a>	-
11	<a href="#">Høgskolen i Oslo og Akershus (11)</a>	<a href="#">Uninett (1)</a>	-	-	-
12	<a href="#">Karlstads Universitet (30)</a>	<a href="#">SUNET (20)</a> (IPv4 only)	-	-	-
13	<a href="#">Universität Kaiserslautern (40)</a>	<a href="#">Deutsches Forschungsnetz (30)</a>	-	-	-
14	<a href="#">Universität Duisburg-Essen (42)</a>	<a href="#">Deutsches Forschungsnetz (30)</a>	<a href="#">Versatel (31)</a> (IPv4 only)	-	-
15	<a href="#">Hainan University (88)</a>	<a href="#">China Education and Research Network (80)</a> (IPv4 only)	<a href="#">China Unicom (81)</a> (IPv4 only)	-	-
16	<a href="#">University of Kansas (100)</a>	<a href="#">Kansas Research and Education Network (90)</a>	-	-	-



# Choose some sites

kettwig.ude.nor-net (2 IF)

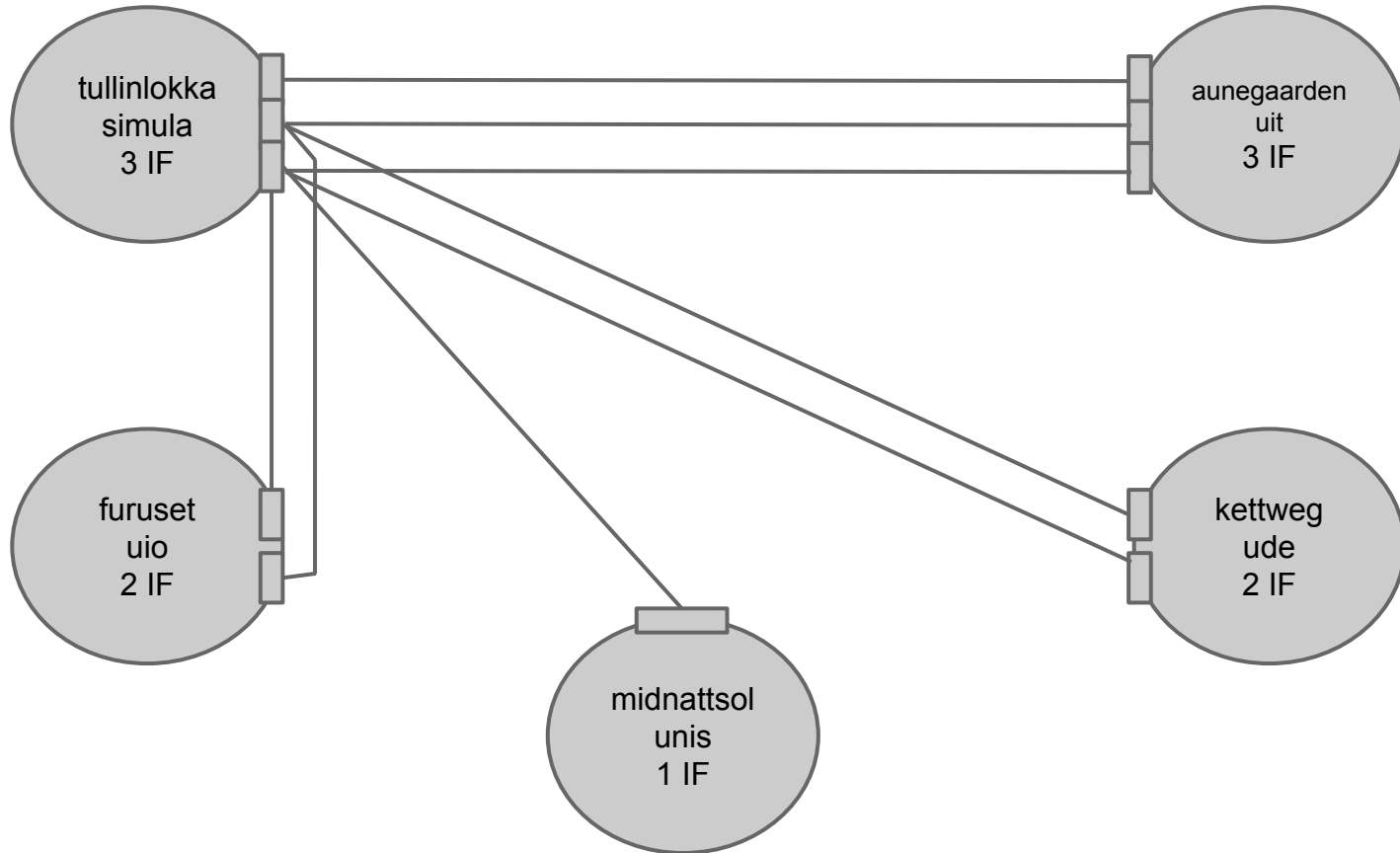
furuset.uio.nor-net (2 IF)

tullinloekka.simula.nor-net (3 IF)

aunegaarden.uit,nor-net (3 IF)

midnattssol.unis.nor-net (1 IF)

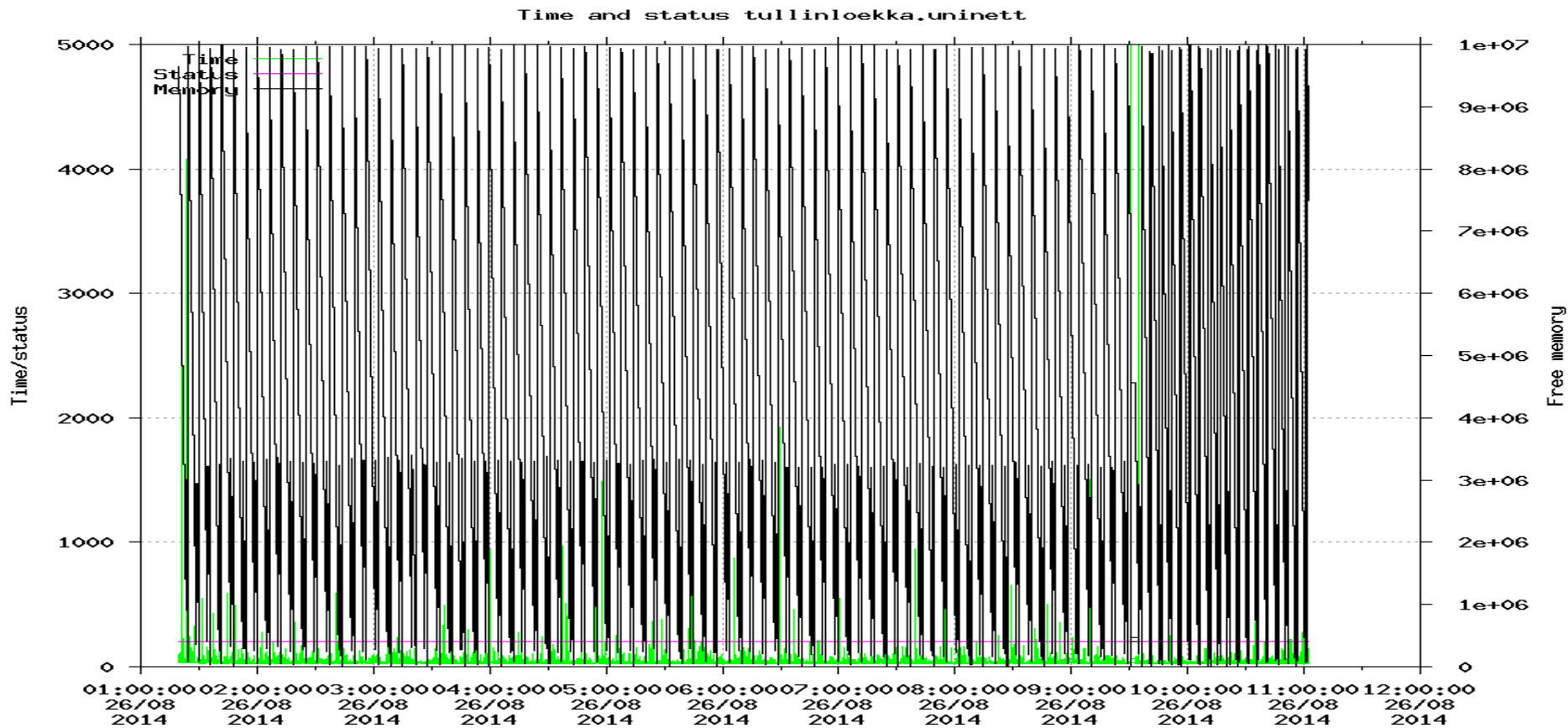
# 1 of 5



# Invocations from tullinloekka.simula (13127)

furuset.powertech	13074	7 E	1 T
furuset.uninett	13078	10 E	1 T
midnattssol.uninett	13063	7 E	3 T
aunegaarden.powertech	13075	6 E	1 T
aunegaarden.telenor	13071	6 E	65 T
aunegaarden.uninett	13065	4 E	2 T
kettwig.dfn	12814	27 E	5 T
kettwig.versatel	13081	4 E	1 T

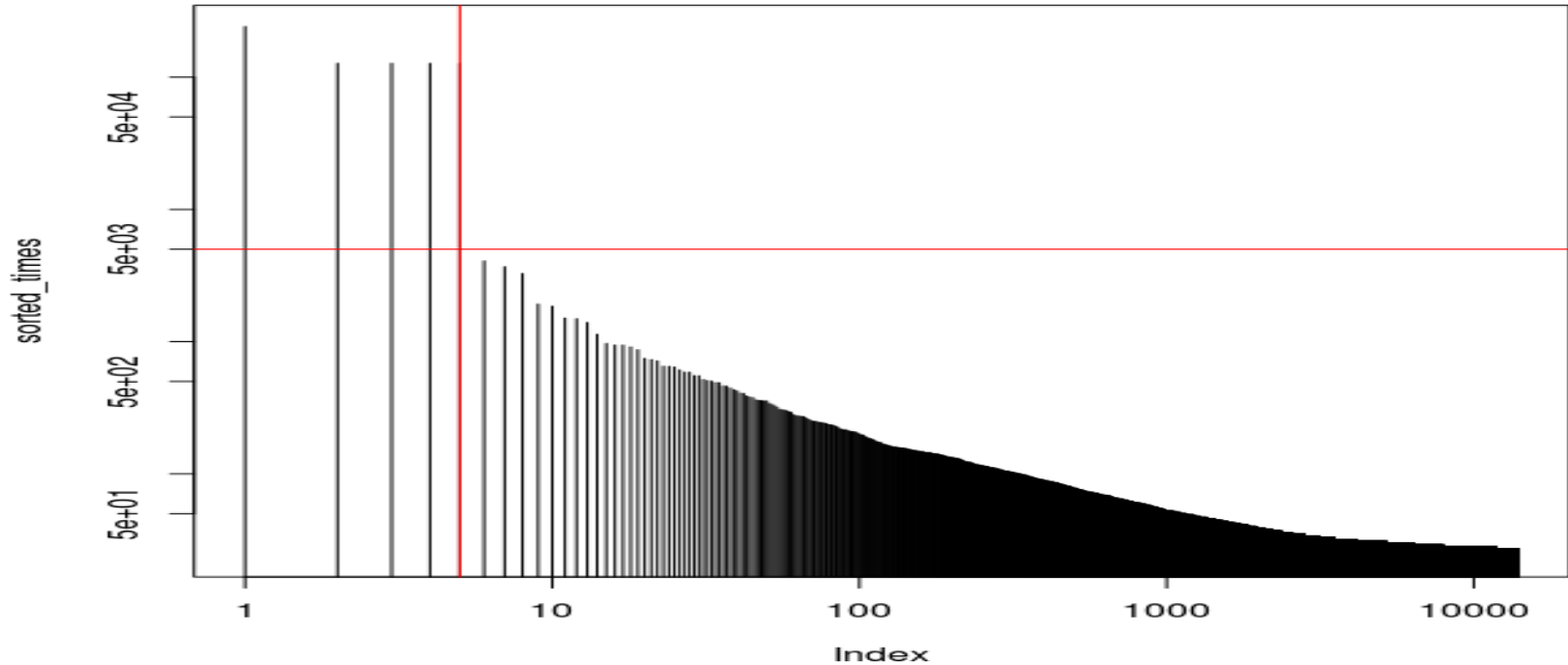
# Visualize the data



# Sorted invocation times (24h)

R Graphics: Device 2 (ACTIVE)

All time samples from tullinloekka.uninett

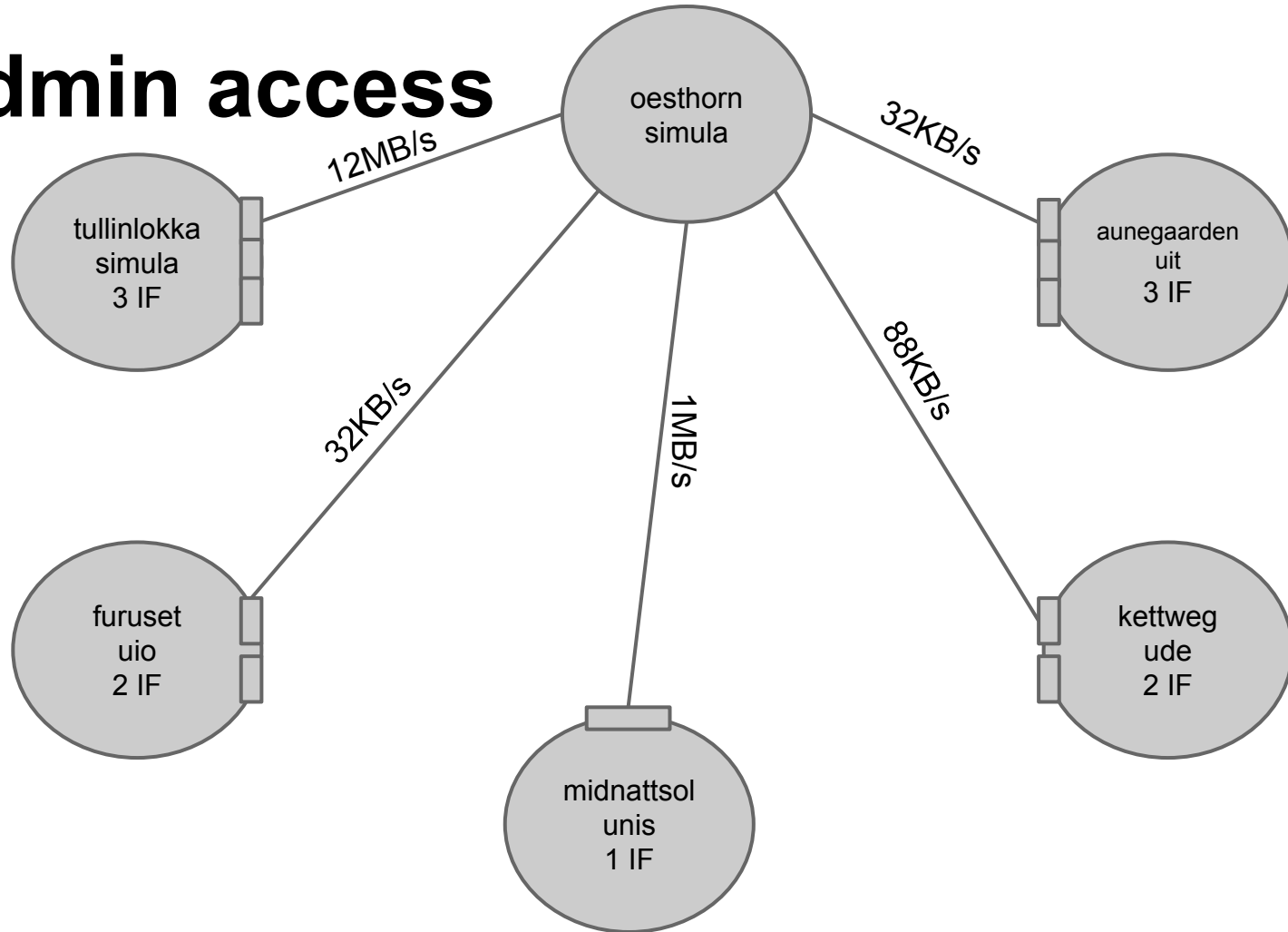


# SW to the nodes...

- Internet access
- Java
- Jetty
- Github

Creative usage of ssh

# Admin access



# Questions



# Invocations from aunegaarden.uit (13994)

furuset.powertech	13995	all ok
furuset.uninett	13995	all ok
midnattssol.uninett	13992	all ok
tullinloekka.hafslund	13936	4 Exception 1 Time_I
tullinloekka.telenor	13944	4 Exception 2 Time_I
tullinloekka.uninett	13936	4 Exception 1 Time_I
kettwig.dfn	13699	23 Exception 4 Time_I
kettwig.versatel	13994	all ok

# Invocations from furuset.uio (14024)

midnattssol.uninett	14022	0 E	1 T
aunegaarden.powertech	14025	8 E	0 T
aunegaarden.telenor	14021	0 E	75 T
aunegaarden.uninett	14025	all ok	
kettwig.dfn	13729	23 E	4 T
kettwig.versatel	14024	0 E	1 T
tullinloekka.hafslund	14025	12008 E	0 T
tullinloekka.telenor	14025	12008 E	0 T
tullinloekka.uninett	14025	12008 E	0 T