

Measuring Mobile Broadband Availability in Norway

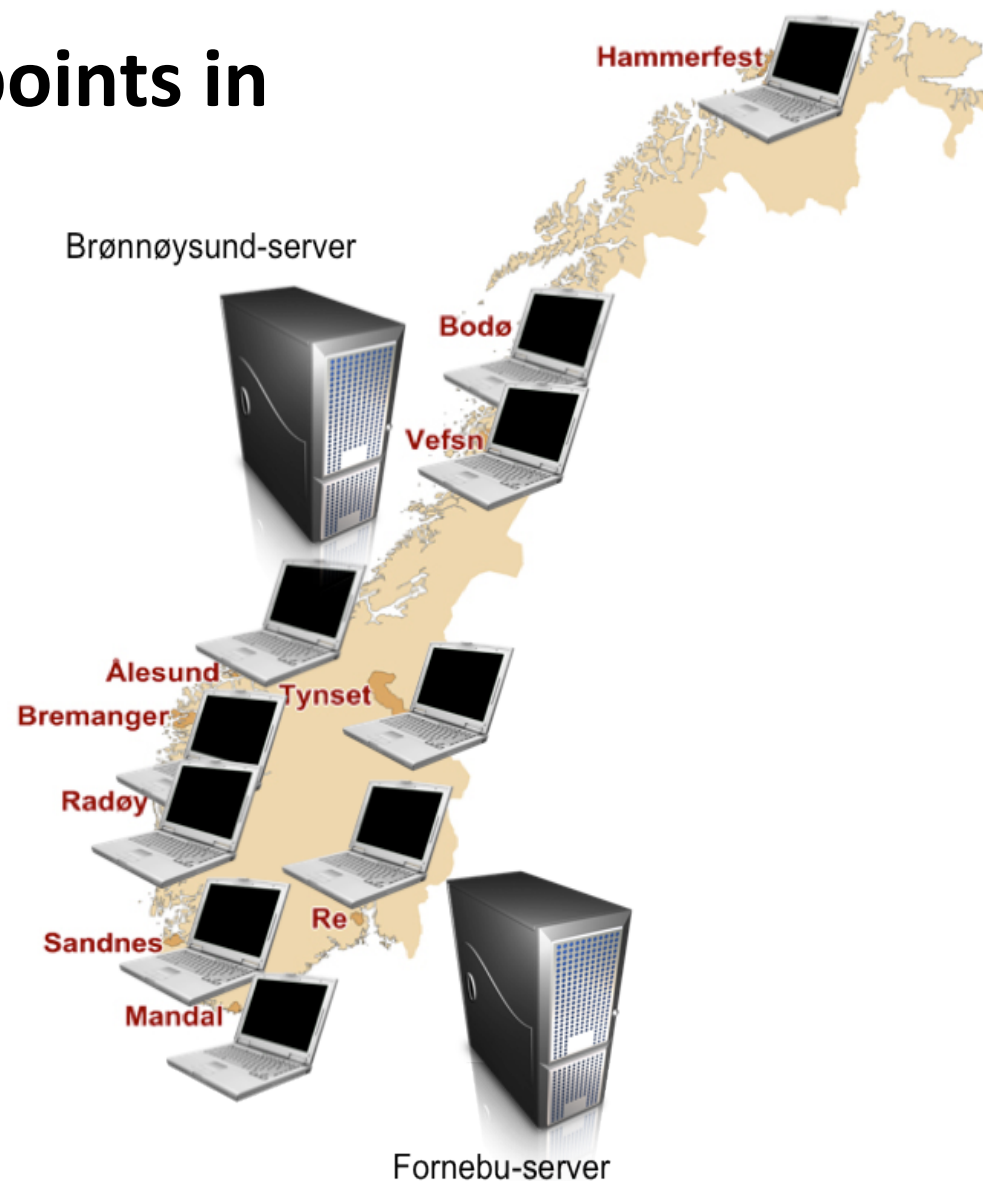
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Simula Research Laboratory AS

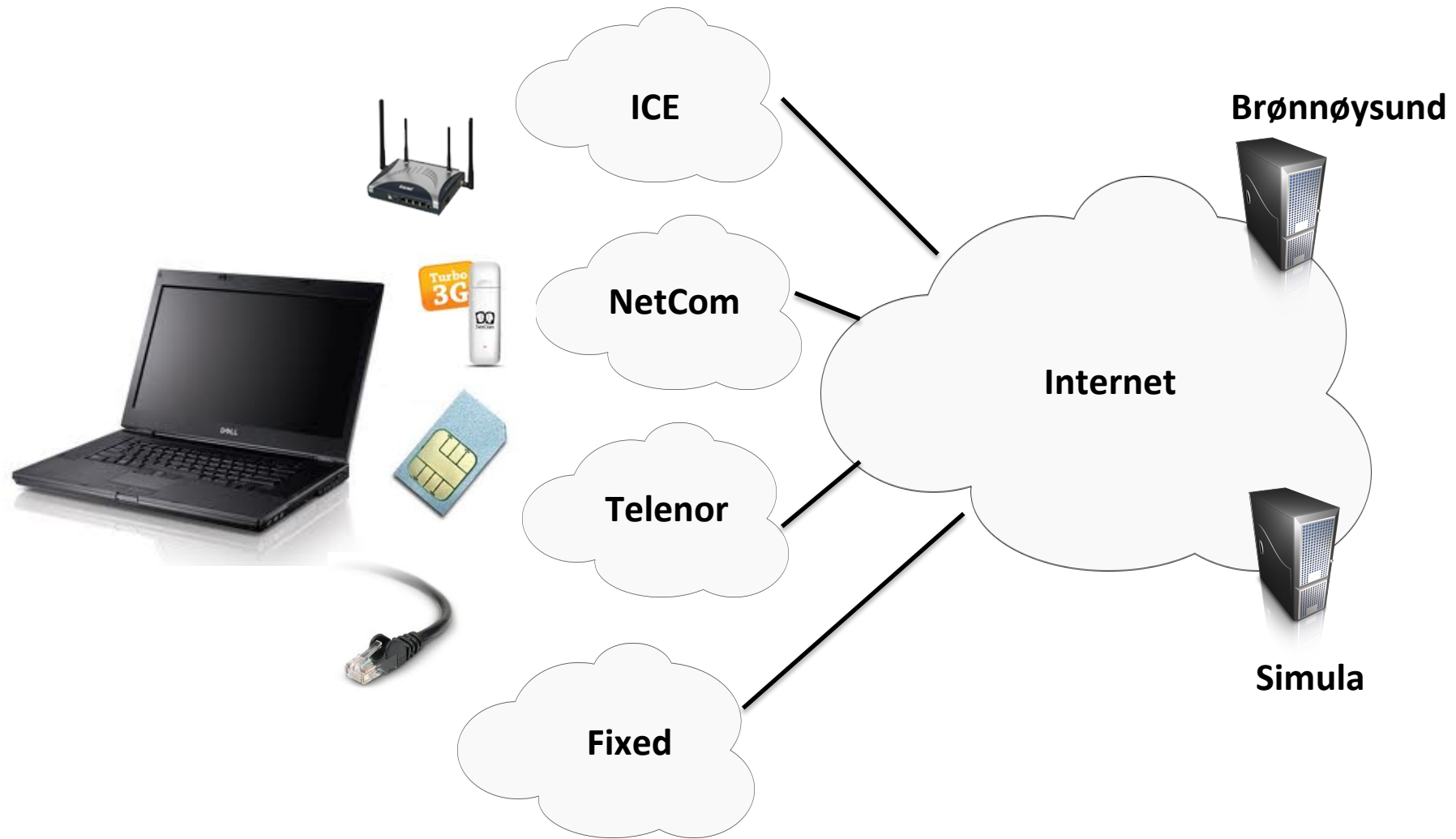


**Over 100 measurement points in
10 municipalities**

**Measure the availability
and quality of multiple
operators**



Each measurement node is multihomed to four ISPs



For more information: <http://nevada.simula.no/>

May 23, 2011

12:00 - 24:00

Telenor



May 23, 2011

12:00 - 24:00

Netcom

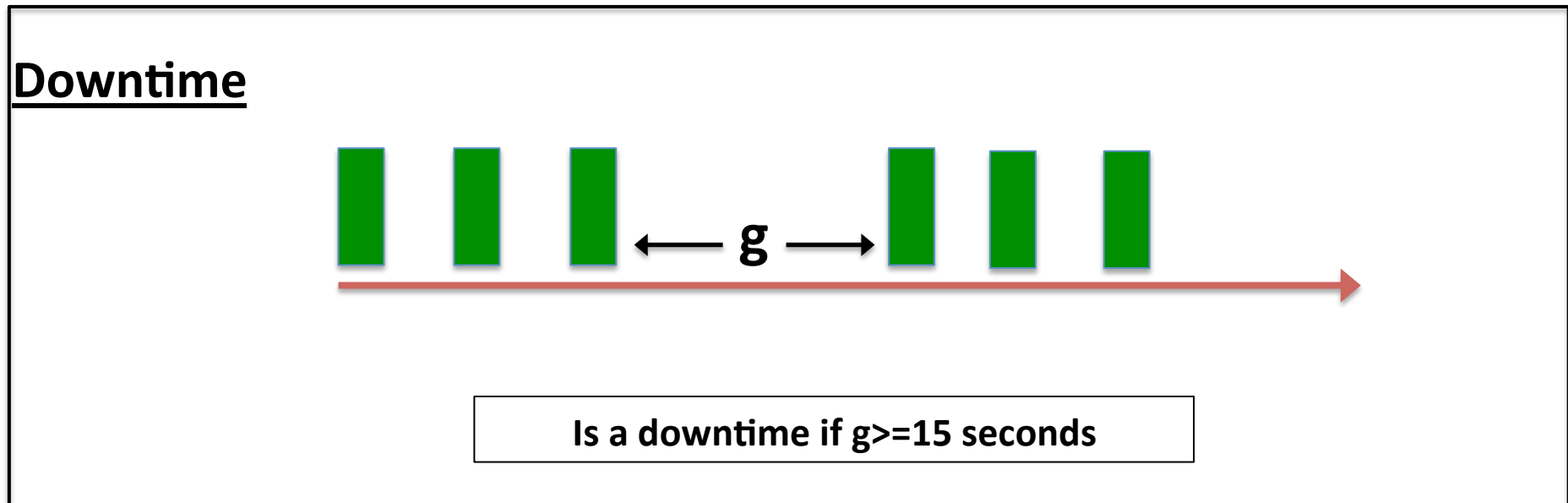


We measure the gaps in monitors ping time series

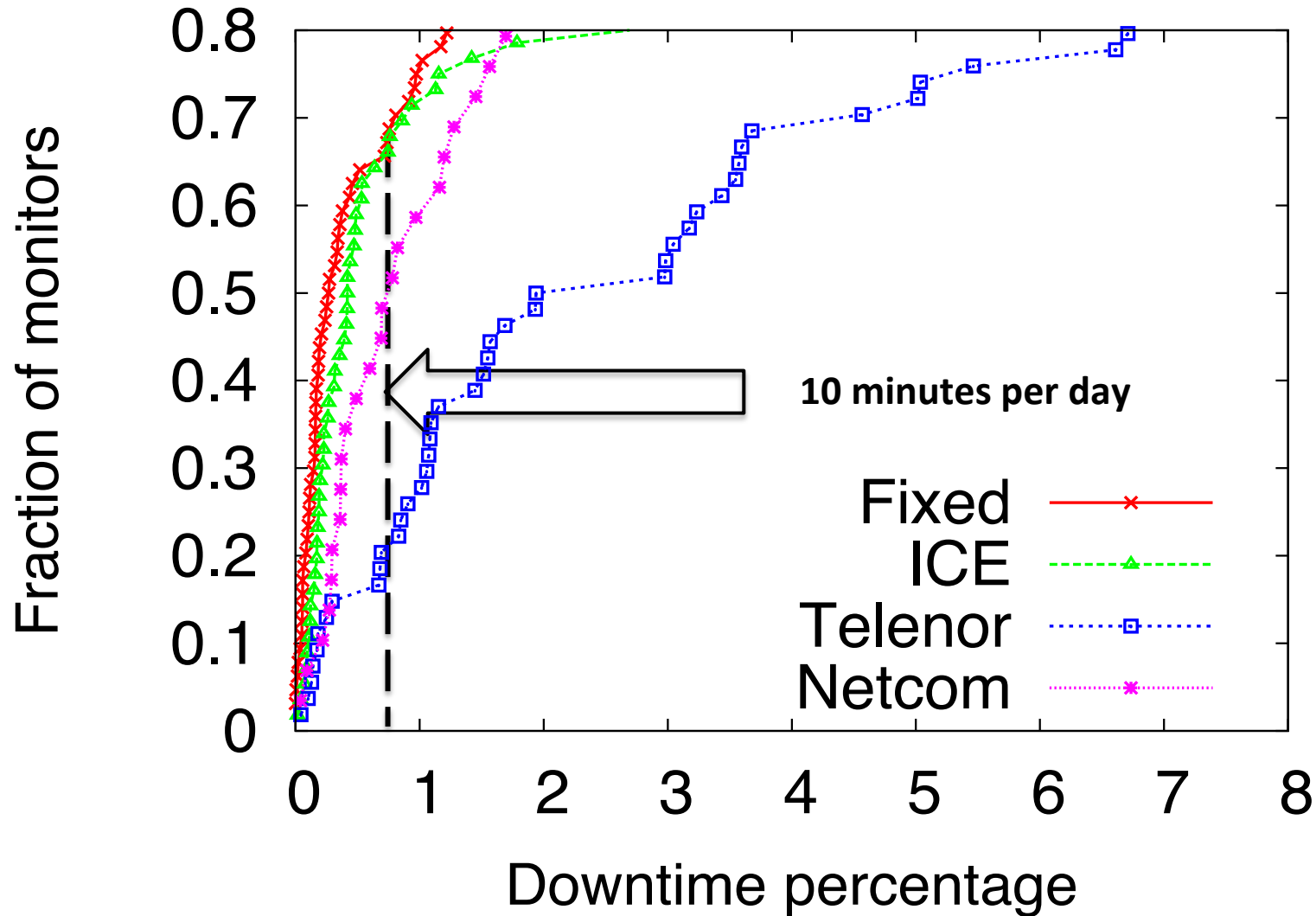
203 interfaces

- 64 fixed, 56 ICE, 54 Telenor, 29 Netcom

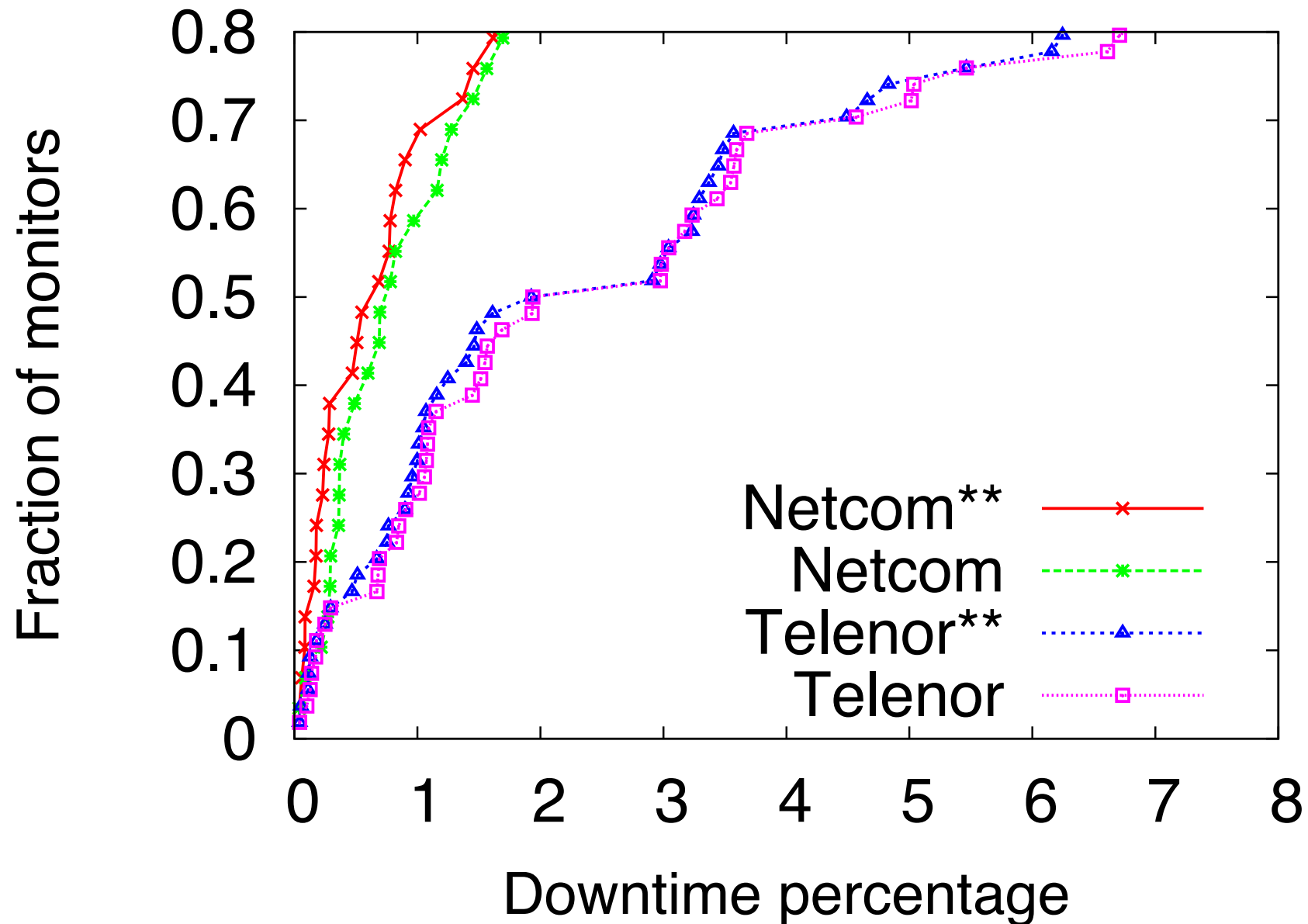
Three months duration (May '11-July '11)



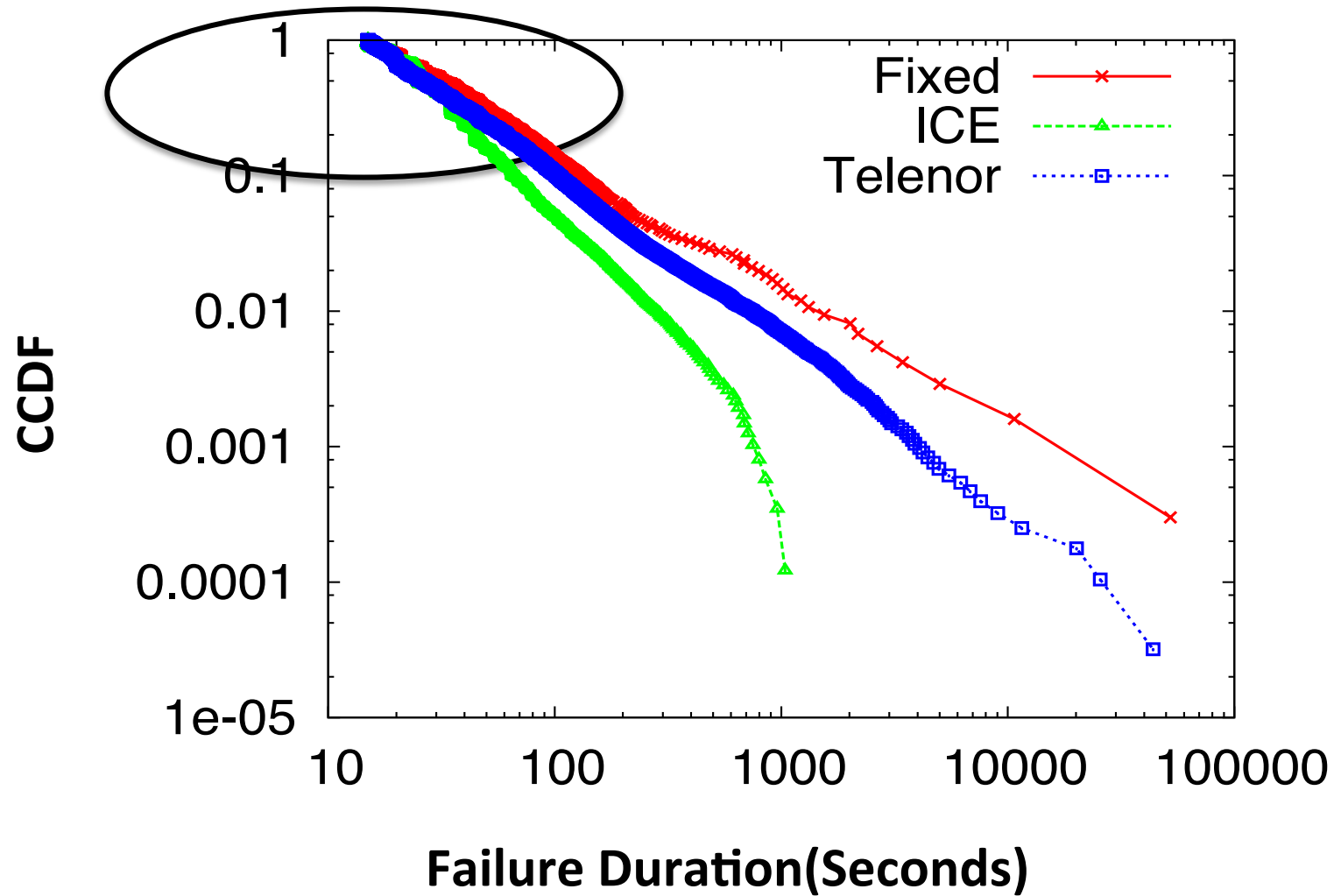
There are large differences in stability between operators and between monitors in the same operator



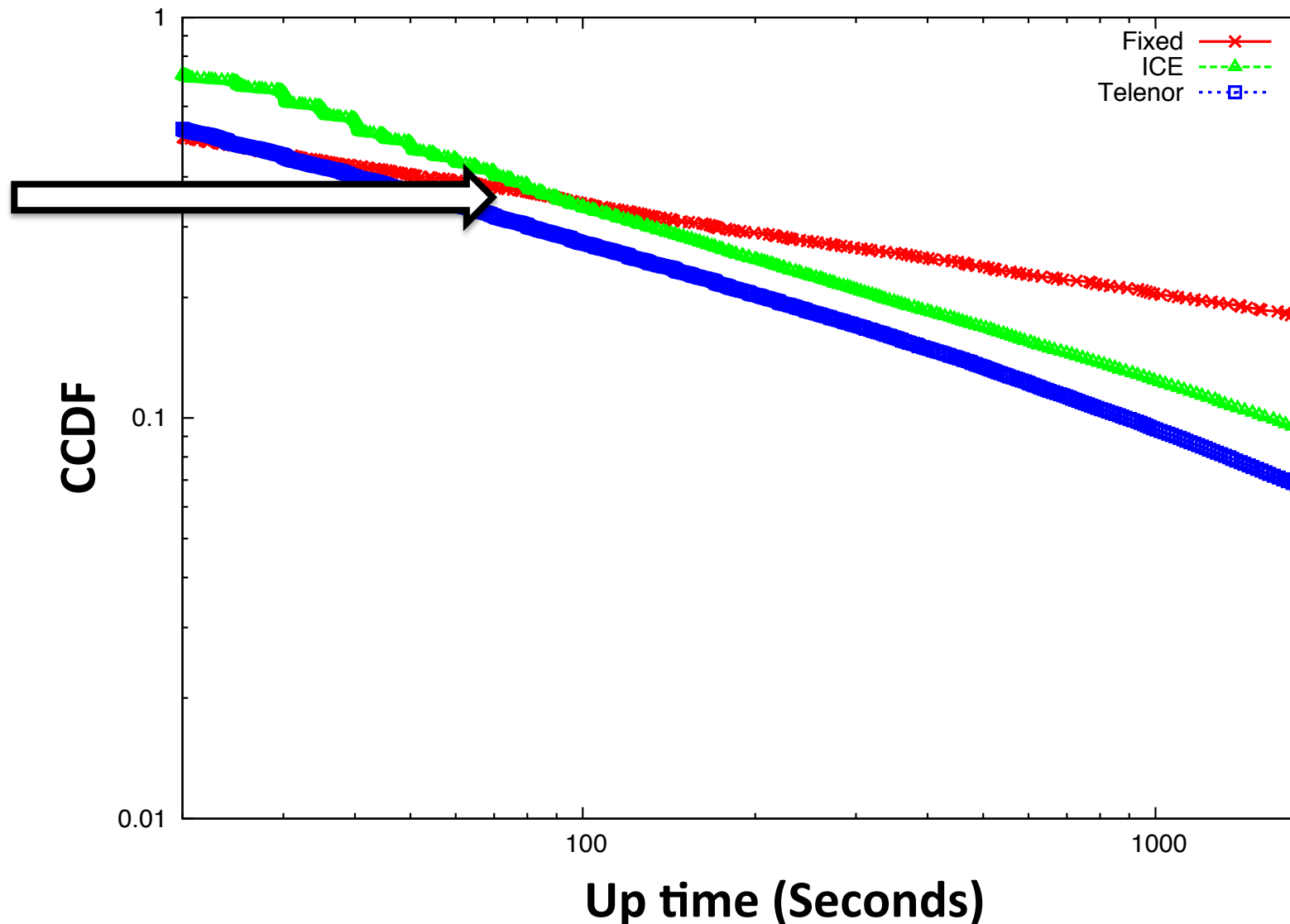
Major failure events have only a slight impact on the measured downtime



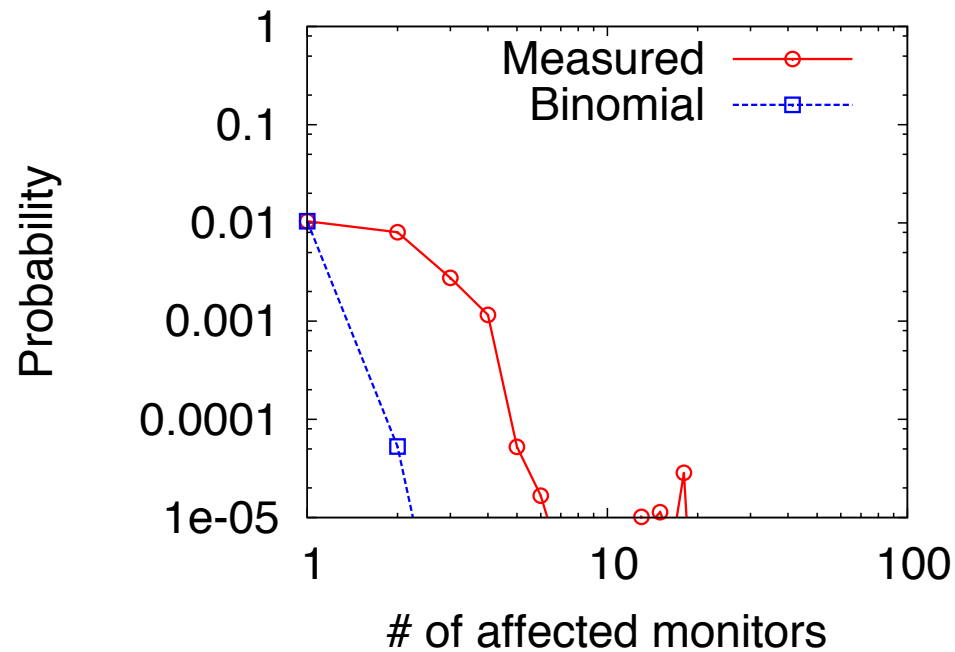
Most outages are short-lived lasting less than 3 minutes



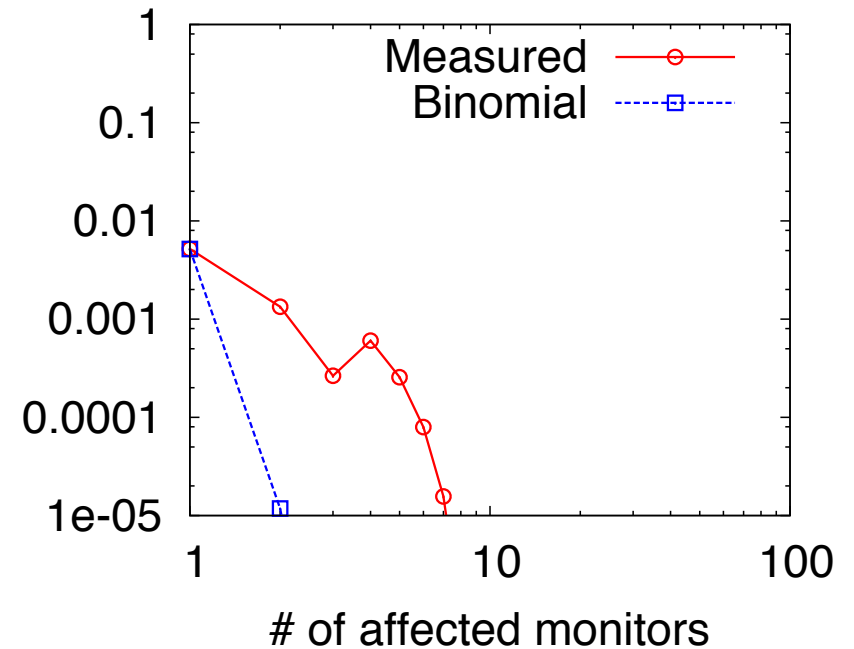
Failures tend to be clustered. About 70% of all failures are spaced by less than 100 seconds



Monitors do not fail independently

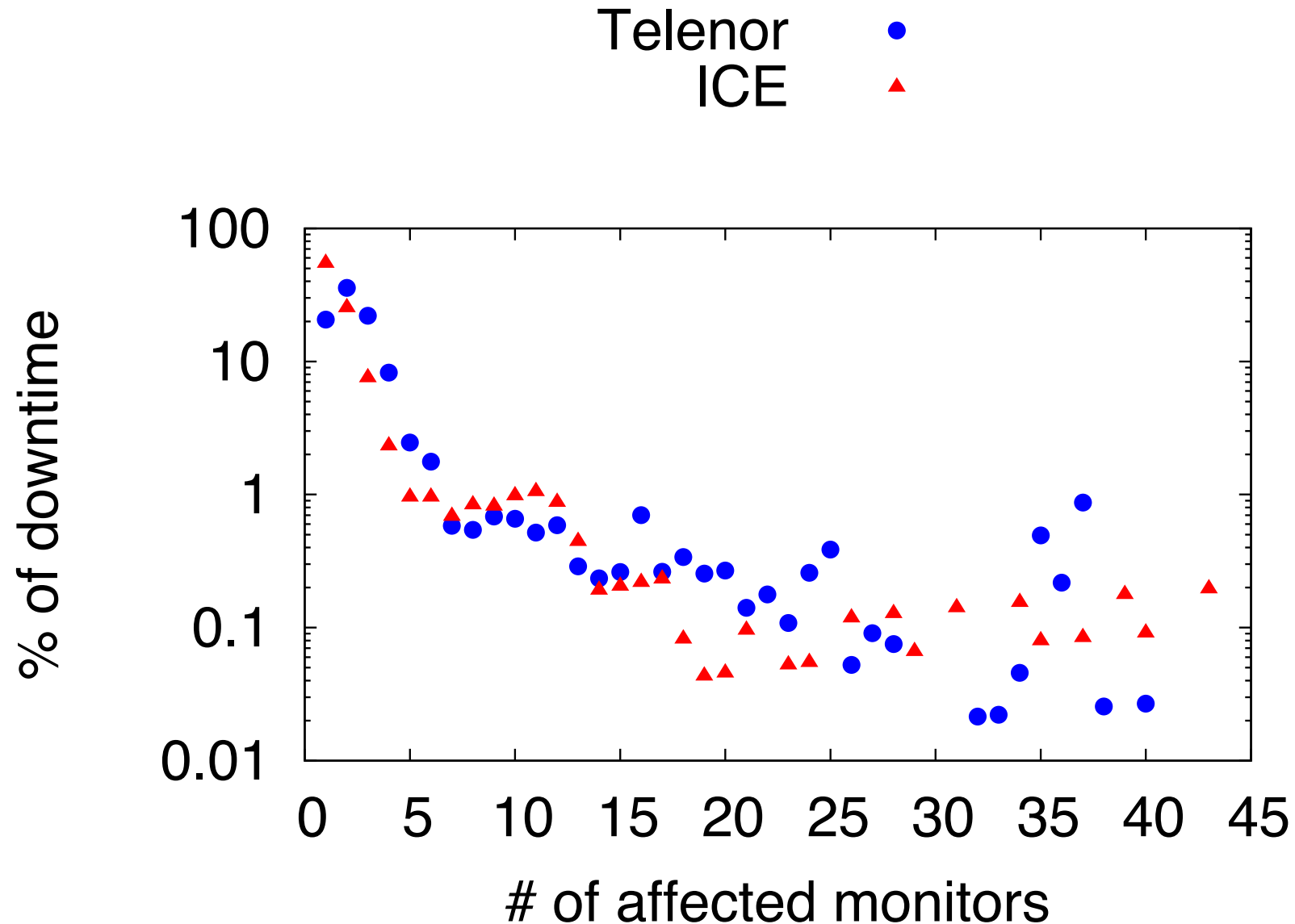


Telenor

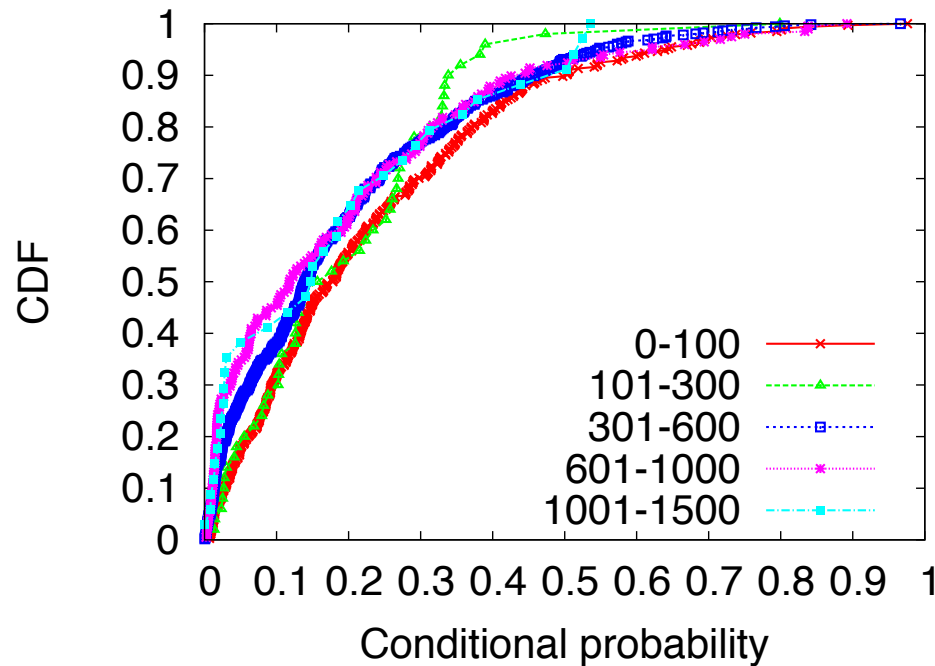


ICE

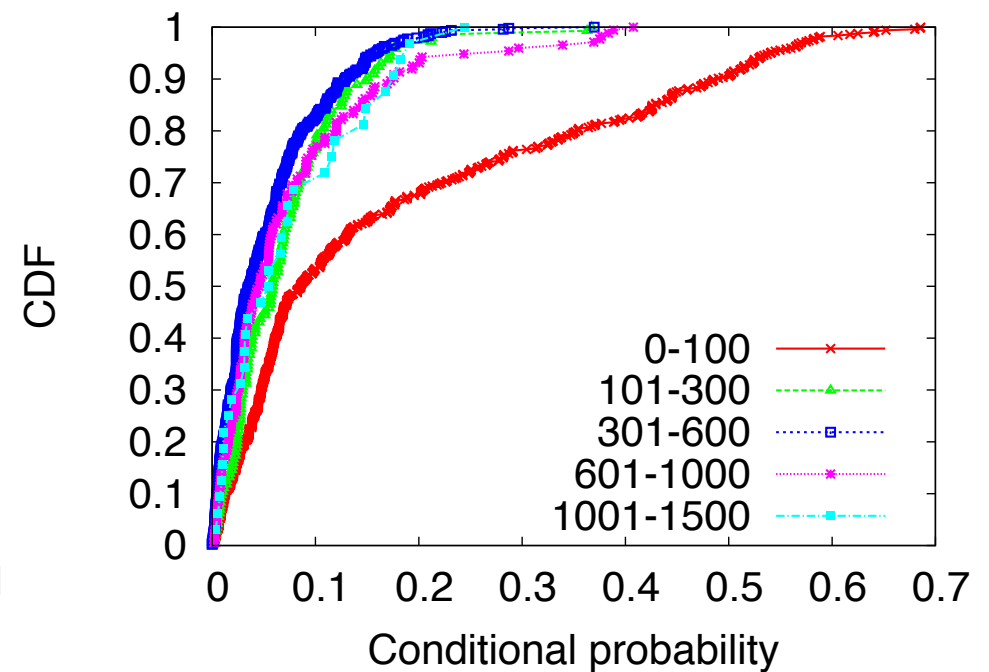
Failures affecting multiple monitors simultaneously contribute significantly to the overall downtime



In ICE, geographically close monitors are more likely to fail simultaneously



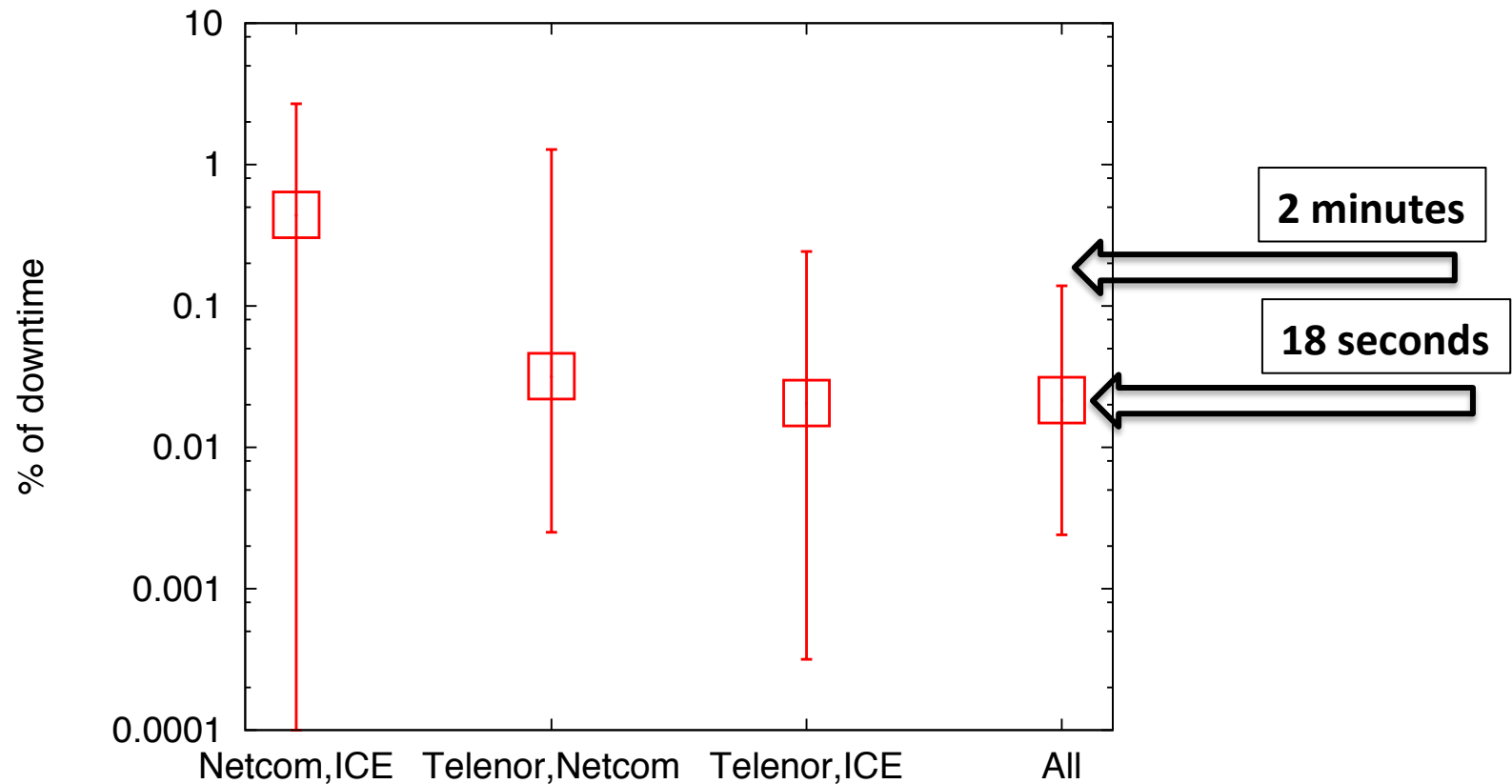
Telenor



ICE

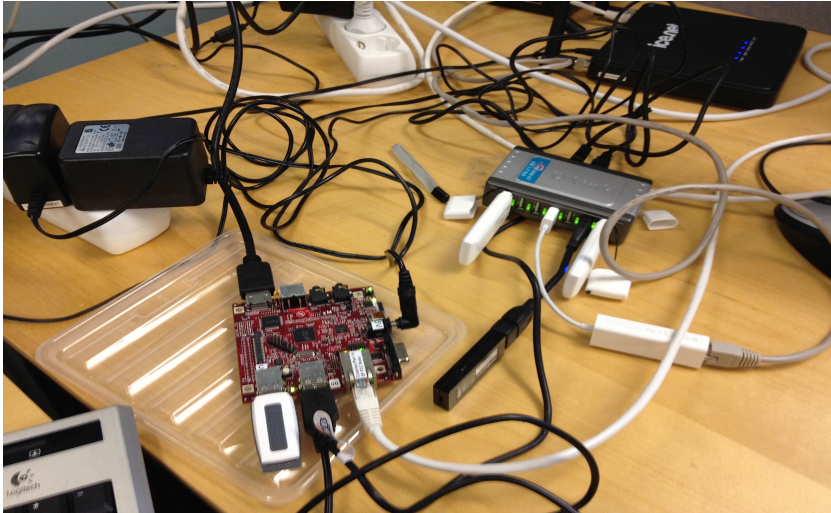
An ICE base station covers a larger geographical area

Combining all three MBB operators increases the overall availability to 99.98%

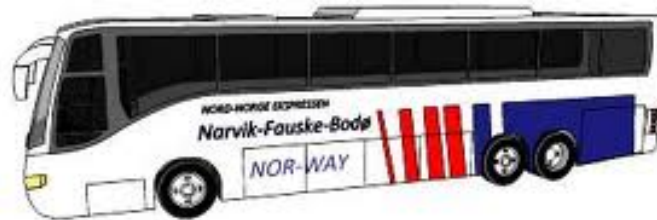


Telenor	Netcom	ICE
99.51%	99.83%	99.73%

What's next?



New measurement nodes



External data sources



Mobile Apps