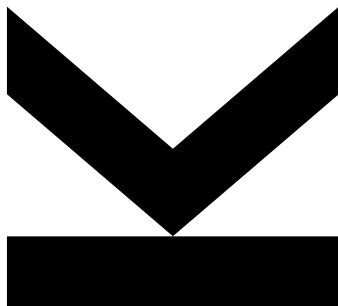


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Lab Protocol

Wireless Link Performance



Mobile Computing Lecture 2018/19

Measuring Latency and Throughput

1. Task Description

The aim of this task is to perform network speed tests (RRT and throughput) in 3 scenarios where at least one of the following factors differs:

- Location
- Device
- Internet connection (WLAN, LTE,...)
- Network speed test (www.speedtest.net or www.tarife.at/speedtest)

2. Experiment Setup

The measurements were performed at the following location using the following networking technologies:

	Device	Location	Network connection
Scenario 1	Laptop	HS 19	eduroam
Scenario 2	OnePlus 6T	S2 044	4G
Scenario 3	OnePlus 6T	HS 19	eduroam

All three setups used the network speed test **www.speedtest.net**.

3. Experiment Result

- Latency / Round Trip Time
- Throughput / Data Rate

Szenario 1	Laptop	HS 19	eduroam
	RRT [ms]	Download [Mb/s]	Upload [Mb/s]
1	11	111,8	109,07
2	10	113,06	99,34
3	10	116,94	104,44
4	10	115,23	91,59
5	10	138,96	111,99
6	10	126,99	115,77
7	10	100,34	112,58
8	9	119,75	108,39
9	10	119,5	107,66
10	10	98,57	102,78
Mittelwert	10	116,114	106,361
Median	10	116,085	108,025
	0,47140452	11,789472	7,11824331

Szenario 2	OnePlus 6T	S2 044	4G
	RRT [ms]	Download [Mb/s]	Upload [Mb/s]
1	18	65,55	14,98
2	20	86,73	14,15
3	27	97,98	12,91
4	27	95,4	14,04
5	20	99,81	17,05
6	19	102,52	11,88
7	20	88,99	10,25
8	24	93,15	13,16
9	24	80,61	14,35
10	19	70,8	13,05
Mittelwert	21,8	88,154	13,582
Median	20	91,07	13,6
	3,39280284	12,4186233	1,82620919

Szenario 3	OnePlus 6T	HS 19	eduroam
	RRT [ms]	Download [Mb/s]	Upload [Mb/s]
1	10	167,96	194,57
2	11	189,31	192,91
3	12	200,03	210,71
4	12	178,47	198,2
5	12	151,48	187,95
6	12	176,56	217,44
7	12	187,98	191,66
8	12	176,47	192,69
9	13	201,87	193,72
10	11	173,66	210,35
Mittelwert	11,7	180,379	199,02
Median	12	177,515	194,145
	0,8232726	15,1055578	10,0388235

4. Conclusions

The first test was during the lecture, but since many students used the speed test during that time, the result varied from 1 Mb/s to 100 Mb/s. As these values were very inconsistent, we decided that these values were not useful and removed them.

We were surprised to find out that 4G has a much higher RRT than the University network. It can also be seen that the network card from the OnePlus 6T has a higher throughput than the tested laptop, since the download is about 63 Mb/s faster in the same network and the same location.