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# Measuring Latency and Throughput

Mobile Computing Lecture 2018/19

Lab Protocol

**Wireless Link Performance**

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)

1. **Experiment Setup**

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

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Device** | **Location** | **Network connection** |
| **Scenario 1** | Laptop | HS 19 | edurom |
| **Scenario 2** | OnePlus 6T | S2 044 | 4G |
| **Scenario 3** | OnePlus 6T | HS 19 | edurom |

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

1. **Experiment Result**
   1. **Latency / Round Trip Time**
   2. **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 | edurom |
|  | 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 |

1. **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 vary 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 throughout than the tested laptop, since the download is about 63 Mb/s faster in the same network and the same location.