Iowa State University

Lab 01: 4G LTE Network Emulation and Throughput Testing Utilizing ARA

**Name:**  
**Net-ID:**  
**Date:**

Lab Report Template:

1. Lease details screenshots
   1. eNBLease:
   2. UELease:
2. Container overview screenshots
   1. eNBContainer:
   2. UEContainer:

How do the specifications (e.g., CPU, memory) of the eNB and UE containers influence network performance? What security considerations should be kept in mind when configuring these resources?

1. Screenshot of ping 172.16.0.1 results

Why is it crucial to start the EPC before the eNB? How does the interaction between these components affect the overall network functionality?

1. Console trace screenshots
   1. eNBContainer:
   2. UEContainer:

Analyze and discuss what you see in the console trace for the 2 containers.

1. Define the options used by the UEContainer iperf command provided in the lab manual. The [iperf man page](https://linux.die.net/man/1/iperf) can be used.
2. Define the brate metric given seen on the console trace.
3. Console trace screenshots with different -b value
   1. New -b value:
   2. eNBContainer:
   3. UEContainer:

How does adjusting the bandwidth allocation affect throughput and latency? Discuss the implications of this in real-world scenarios, such as managing network congestion and ensuring fair resource allocation among users. Analyze and discuss anything else that you see on the console trace worth mentioning.

1. Discuss the effect distance has on throughput in a 4G network. Provide screenshots to back your discussion.
2. Empty lease page screenshot
3. Summary and Conclusions: