Analysis Data Draft

a. Identify all outside systems with which this system interfaces.

**Internet, virtual machine, server**

b. Identify all input data and the source(s) of these input data.

**source IP address, destination IP address, destination port**

c. Identify all output data and the destinations of these data.

**packet size ratio of sent/received packets displayed in GUI**

d. Identify the data processing function of this system:

**this system receives source IP address, destination IP address, and destination port input from the user via a GUI. Then it constructs UDP packets and IP packet headers; combines IP packet headers and UDP packet payloads; calculates complete packet size; transmits packets to selected Open Arena server upon user initiation; receive packets from the Open Arena server; calculate size of received packets; and calculates the ratio of the sent/received packet sizes to be output to the GUI.**

e. Based on the data processing step, break the system into sub-systems, each dedicated to a single task (specify the task that each subsystem does). These subsystems together show the data processing function that converts the input data into output data.

**User – determines the source and destination IP addresses and the destination port;**

**Input Subsystem (GUI) – records the source and destination IP addresses and the destination port;**

**UDP Packet Constructor – constructs UDP packet;**

**IP Header Constructor – constructs the IP packet header;**

**IP/UDP Combiner – combines the IP packet with the UDP packet;**

**Packet Size Calculator – calculates the total size of a packet;**

**Open Arena Server – receives and sends packets;**

**Ratio Calculator – calculates a ratio.**

f. Identify interface data between each subsystem (and which subsystem processes the inputs, which subsystem does the output).

**User => GUI**

**GUI => UDP Packet Constructor, IP Header Constructor, IP/UDP Combiner, Open Arena Server**

**UDP Packet Constructor,**

**IP Header Constructor,**

**IP/UDP Combiner => Packet Size Calculator**

**Packet Size Calculator => Ratio Calculator**

**Open Arena Server => Packet Size Calculator**

**Ratio Calculator => GUI**

g. Check the solution against the requirements.

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| --- | --- |
| **Requirement** | **Description** |
| 1 | **nonfunctional requirement** |
| 2 | **nonfunctional requirement** |
| 3 | **Input Subsystem (GUI)** |
| 4 | **nonfunctional requirement** |
| 5 | **Input Subsystem (GUI)** |
| 6 | **Input Subsystem (GUI)** |
| 7 | **Input Subsystem (GUI)** |
| 8 | **UDP Packet Constructor** |
| 9 | **IP Header Constructor** |
| 10 | **IP/UDP Combiner** |
| 11 | **Packet Size Calculator** |
| 12 | **Open Arena Server** |
| 13 | **Open Arena Server** |
| 14 | **Ratio Calculator** |
| 15 | **Ratio Calculator** |
| 16 | **Input Subsystem (GUI)** |
| 17 | **nonfunctional requirement** |
| 18 | **nonfunctional requirement** |
| 19 | **nonfunctional requirement** |

h. Identify risks in your design and possible ways for mitigate those risks

**The application could possibly cause a Denial-Of-Service “attack” on the host machine when using the host IP address as the source IP address.**

i. Identify possible enhancements (new features) to your design; this is a way to get future work.

**Add the ability to add multiple destination IP addresses to demonstrate a Distributed Denial-of-Service attack.**

**Add the ability to exploit additional Open Arena server vulnerabilities.**

j. For this course, you should update to the Project Plan by listing each sub-system in the Design and the Implementation and Test sections (together with specified dates and personnel).