

CN Problem Sheet #6

Problem 6.1: *domain name system*

(1+1+1+2+1+2 = 8 points)

- a) Explain in your own words the difference between recursive and iterative DNS queries.
- b) Explain how the fully qualified domain name `grader.eecs.jacobs-university.de.` is resolved to an IPv4 address.
- c) Is it possible to resolve a name to both an IPv4 address and an IPv6 address using a single DNS query message? Explain why or why not.
- d) The `SRV` record was introduced in the mid 1990s. What exactly is the function of the `SRV` record and where is it defined? What is the difference between priority and weight and how are these fields used together?
- e) Does it make sense to use the `SRV` record for HTTP? Provide arguments in favor of using `SRV` records for HTTP and arguments against using `SRV` records for HTTP.
- f) Read about EDNS0. Which problem is EDNS0 solving and where is EDNS0 defined? What is the meaning of the `CLASS` field and the `TTL` field in an `OPT` resource record?

Problem 6.2: *multicast DNS (mDNS) and DNS Service Discovery (DNS-SD)*

(1+1 = 2 points)

- a) What is multicast DNS (mDNS) and where is it defined? How does mDNS depart from regular DNS protocol semantics?
- b) What is DNS-based service discovery (DNS-SD) and where is it defined? Provide an overview how different DNS records are used to provide service discovery functionality.