

DHCP Client and Server using Java

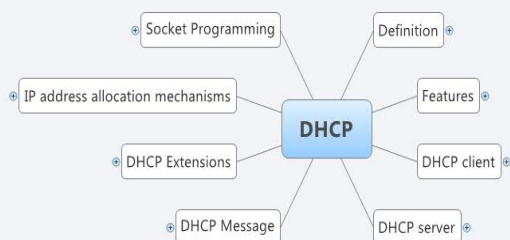
Assignment 2
Computer Networks (2015-2016)

General Goals

- Understand the basics of distributed programming
- Learn socket programming
- Develop the skill to design and implement a network protocol
- Get hands-on experience

(2)

Assignment Overview



DHCP – Dynamic Host Configuration Protocol

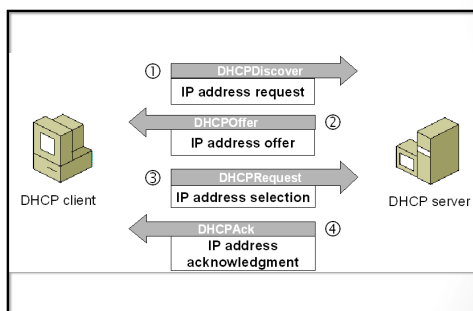
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Assignment Overview

- Part I
 - ❖ Implementation of UDP Server and Client
 - ❖ Using Java
 - ❖ Use DatagramSocket, DatagramPacket and MulticastSocket
- Part II
 - ❖ Extension of Part I
 - ❖ Implementation of DHCP Client
 - ❖ Implementation of DHCP Server

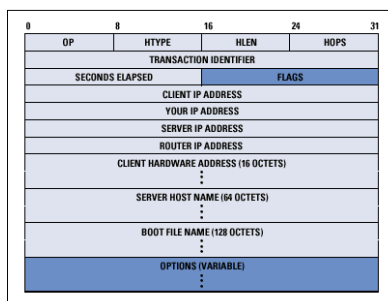
4

DHCP Transactions



5

DHCP Message Format



6

DHCP Transactions

- DHCPDISCOVER
 - Client requests address
- DHCPOFFER
 - Server responds with an offer
- DHCPREQUEST
 - Client accepts the offer, and may request additional information
- DHCPACK
 - Server leases the address
- DHCPNAK
 - Server rejects the request
- DHCPRELEASE
 - Client releases the address

[7]

Design Choices

- Configuration details of DHCP server
- Address maintenance in DHCP server
- Lease management
- Error handling in client and server
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[8]

Testing

- DHCP Client
 - Test server will be provided
- DHCP Server
 - Test using your client

[9]

General Guidelines

- Use DatagramSocket, DatagramPacket and MulticastSocket
 - For other packages: consult with the supervisor!
- Document your code
 - Checked during the evaluation
- You should know the protocol specifications
 - Explain the design and implementation details
 - Design choices
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10

Practical Information

Weeks	Dates	Purpose
First Week	29-02-2016 to 04-03-2016	Coding
Second Week	07-03-2016 to 11-03-2016	Coding
Third Week	14-03-2016 to 18-03-2016	Coding*
Fourth Week	21-03-2016 to 25-03-2016	Evaluation

* - Self-study week

11

Practical Information

- Work alone or groups of two
 - Email the group details to (gowrisankar.ramachandran@cs.kuleuven.be)
 - Include names and student numbers
 - Subject: **CN:Assignment2**
 - No later than 06-03-2016
- Both the students in group should be prepared to do the demonstration

12

Practical Information

- You have three weeks to complete the assignment
- Grading will be based on your performance in the demonstration
- The fourth session is only meant for grading and you will be marked in your assigned session
- Use the computers in the lab

13

Grading Specifications – Client

Mark	Expected Functionality
Below 4 (D)	Not functional or sufficiently demonstrated.
4-5 (C)	Works partially.
5-7 (B)	Works correctly and all design choices are motivated.
8 (A)	As (B) with elegant and documented code.

14

Grading Specifications - Server

Mark	Expected Functionality
Below 5 (D)	Not functional or sufficiently demonstrated.
5-9 (C)	All transactions are working, but with leasing problems.
9-11 (B)	As above, without leasing problems and good design choices.
12 (A)	As (B) with elegant and documented code.

15

References

- Dynamic Host Configuration Protocol (RFC 2131).
 - <https://www.ietf.org/rfc/rfc2131.txt>
- DHCP Options and BOOTP vendor extensions (RFC 2132).
 - <https://www.ietf.org/rfc/rfc2132.txt>
- Bootstrap protocol (RFC 951).
 - <https://tools.ietf.org/html/rfc951>
- Host configuration protocols.
 - http://www.tcpipguide.com/free/t_HostConfigurationandTCPIPHostConfigurationProtocol.htm

16

If you have questions, contact:
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17