
Redes e Telecomunicações

Introdução

PEDRO MARTINS

April 1, 2018

Contents

1	Redes e Telecomunicações	3
1.1	Docentes	3
1.2	Programa	3
1.3	Avaliação	4

1 Redes e Telecomunicações

1.1 Docentes

- Rui Aguiar
 - ruilaa@ua.pt
- Susana Sargento
 - susana@ua.pt

1.2 Programa

1. Introduction:

- Notion of telecommunications networks;
- Circuit switching and packet switching networks;
- Access, metropolitan and core networks;
- Organization of the telecommunications functionalities in protocol layers: the OSI and TCP/IP models.

2. Data link layer:

- Redes Ethernet.
- Virtual LAN;
- Access control to shared media;
- Spanning-tree based routing.
- Continuous and discrete time Markov chains;
- Queuing systems.

3. Network layer, basic notions of IPv4 and IPv6:

- IP protocol;
- ICMP (Internet Control Message Protocol).
- Public and private addressing;
- ARP (Address Resolution Protocol).
- Address allocation: DHCP and autoconfiguration
- Name resolution;

4. Routing (routing protocols).

- distance vector and link state (algorithms Dijkstra and Bellman Ford).
- RIP, OSPF and BGP
- Routing in packet switching networks: Kleinrock approximation.

5. Transport layer:

- Notion of port;
- Transport based on datagrams (UDP);

- Session management, flow control and congestion control (TCP).

6. Application layer:

- Client-server model;
- TFTP, FTP, email and HTTP services;
- Dynamic allocation of network information: DNS, NAT and NAPT.

7. Basic quality of service mechanisms for packet switching networks:

- Scheduling algorithms;
- Integrated Services and Differentiated Services architectures;
- Traffic regulation.
- RSVP
- Circuit blocking probability (Erlang B)

8. Wireless networks

9. Physical Layer

- Digital representation of information, communication channels
- Modulation, detection and error correction

10. Security

- Basic concepts
- Symmetrical and Asymmetrical cryptography

1.3 Avaliação

- Teórica (65%)
 - 1 Exame (final)
 - OU 2 exames:
 - * 1º teste (45%): 3 Abril
 - * 2º teste (65%): Época de Exames
 - * Nota mínima em cada teste: 7.0
- Prática (35%)
 - Guia prático 1: sem nota
 - Guia prático 2: mini-teste individual de escolha múltipla (25%): semana de 27 de Março (29 Março)
 - Guia prático 3 e 4: mini-teste individual de escolha múltipla (35%): semana de 22 de Maio (24 Maio)
 - Guia prático 5: Raltório Final do Mini-projeto (40%): Época de Exames

Nota mínima em ambas as componentes: 6.5