

CM0636 Applied Computer Networks 2 (Advanced IP)

Applied Computer Networks 2 Image

This (part of the) module is designed to introduce advanced IP concepts, including NAT, DHCP, Mobile IP, IPv6 and QoS. The module uses a well-equipped network laboratory containing industry-standard routers and switches. It emphasises practical aspects of building and maintaining Local Area Networks.

The main ideas are communicated in a series of 6 lectures. The laboratory sessions are used by students to put these ideas into practice in a variety of networking exercises. By the end of the module, students should be able to design, configure, document and maintain a small LAN employing NAT and DHCP.

The principles and techniques taught in this module build upon the module CM0635 Applied Computer Networks 1.

1. Module Team

Module Tutor

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2. Teaching Plan

The following is a *provisional* guide to the organisation of this part of the module for this year. These arrangements are subject to change during the course of the module.

Week	W/c	Slides	Practical
7	01-Mar	Introduction: Shortage of IPv4 addresses; Private IP addresses; NAT [Slides]	WAN practical with GF
8	08-Mar	Dynamic NAT and Port Address Translation (PAT), Advantages and disadvantages of NAT and PAT. The 'end-to-end' argument. [Slides]	NAT and PAT configuration [Lab]

9	15-Mar	Network administration and Dynamic Host Configuration Protocol [Slides]	WAN practical with GF
10	22-Mar	Mobile IP [Slides]	DHCP configuration [Lab]
11	29-Mar	IPv6. [Slides]	WAN practical with GF
12	26-Apr	New demands on IP. Quality of Service. [Slides]	Network Practical 12 [Lab]

3. Recommended Reading

You are strongly advised to obtain either of the first two texts from the list below for your personal use. The CCNA exam certification guide is useful for Cisco-specific information and for preparation for vendor-certification should you choose to undertake it. Try the [Northumbria University campus bookshop](#).

- Kurose, J., Ross, K. *Computer Networking: A Top-down Approach Featuring the Internet* (3rd Edition), Addison Wesley, 2004 [[Amazon](#)] [[Student Resources](#)]
- Tanenbaum, A., *Computer Networks* (4th edition), Prentice Hall, 2002 [[Amazon](#)]
- Odom, W, *Cisco CCNA Official Exam Certification Library*, Cisco Press, 2006 [[Amazon](#)]

Selected articles from the technical literature, as directed by your tutors, e.g.

- IEEE/ACM Transactions on Networking
- IEEE Transactions on Communications
- RFCs, IEEE & IETF standards
- Industry white papers and technical documentation

4. Other resources

- The Cisco Networking Academy curriculum is a valuable resource. There are local copies of the curriculum:
 - [CCNA Exploration 1](#)
 - [CCNA Exploration 2](#)
 - [CCNA Exploration 3](#)
 - [CCNA Exploration 4](#)
- NAT RFCs [[RFC3022](#), [RFC1631](#)]
- [Cisco IOS Network Address Translation Overview](#)
- [End-to-End Arguments in System Design](#)
- DHCP RFCs [[RFC2131](#)]

- [Cisco DHCP Configuration](#)
- IPv6 RFCs [[RFC2460](#), [RFC4213](#), [RFC2373](#),]
- [IPv6](#)
- [Use IPv6](#)
- [go6](#)
- [IPv6.org](#)
- [RFC search](#)
- [Packet Tracer 5.1 \(Windows\)](#)