

Content delivery networks

Academic Year: (2019 / 2020)

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Department assigned to the subject:

Coordinating teacher: GARCIA REINOSO, JAIME JOSE

Type: Electives ECTS Credits : 3.0

Year : 1 Semester : 2

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

The student must have previous knowledge of basic principles on networked distributed system and deep knowledge in TCP/IP networking.

OBJECTIVES

With respect to competences, after the course the students will be able to:

- Know the current problematic related with content distribution in the Internet.
- Know architectures that improve the user experience when accessing different types of content.
- Know and get into details in the techniques related with content distribution that use overlay networks.
- Analyze real study cases of content distribution networks (Akamai)
- Know the proposals and standards for content distribution in next generation networks.
- Know the techniques employed for multimedia transmission over mobile networks.

DESCRIPTION OF CONTENTS: PROGRAMME

The detailed program of the course is the following:

- Introduction to architectures for content distribution: client-server, P2P, CDN
- Overlay networks for file distribution: DHT, swarming
- Overlay networks for multimedia content distribution: Live streaming, Video on Demand
- CDN architectures: Design, Study cases (Akamai, Limelight), CDN for Social Networks (Twitter, Facebook)
- Information Centric Networking: Content-Centric Networking (CCN) y Publish/Subscribe Internetworking (PSI).
- Content distribution in Next Generation Networks (NGN), IP Multimedia Subsystem (IMS), Value-added services in the IMS (MBMS, IPTV, VoD).

LEARNING ACTIVITIES AND METHODOLOGY

The teaching methodology will include:

- Theoretical lectures. The teacher will present the main concepts, as a summary, so that the student can acquire the general context of the subject with the adequate detail level that corresponds to a scientific master degree. These sessions will foster interactivity and discussion of the different proposed problems, in order to interconnect the presented concepts.
- Individual read and analysis of state of the art research work. This work will be done by the students after the presentation in the theoretical lectures of the main concepts behind this research work.
- Debates and discussion classes about research works. These sessions include the joint analysis of selected works that are relevant for the research topics covered in this course.

ASSESSMENT SYSTEM

% end-of-term-examination/test:	50
% of continuous assessment (assignments, laboratory, practicals...):	50

The evaluation comprises:

- 50% of continuous evaluation: the assessment will comprise the preparation, presentation and defense of an individual research work related with the topics covered in the course. In this work, the student must demonstrate an appropriate knowledge to answer the questions asked by the audience during or after the presentation. Each student will be assigned an advisor for his/her work, who will guide the student in the analysis of the different issues related with the research.
- 50% final exam

ADDITIONAL BIBLIOGRAPHY

- Ivan Vidal, Ignacio Soto, Albert Banchs, Jaime Garcia-Reinoso, Ivan Lozano, Gonzalo Camarillo Multimedia Networking Technologies, Protocols, and Architectures, Artech House, 2019