

## **T10 - [...in] Content-Delivery Networks**

Afonso Silva, Alfredo Gomes, and Axel Ferreira

University of Minho, Department of Informatics, 4710-057 Braga, Portugal  
e-mail: {a70387,a71655,a53064}@alunos.uminho.pt

# Table of Contents

T10 - [...] Content-Delivery Networks . . . . .	1
<i>Afonso Silva, Alfredo Gomes, and Axel Ferreira</i>	

**Abstract.** Resumo...

## 1 Introduction

The Internet has its origins in the early 1980's. And started to have an exponential growth when commercial companies started linking to the existing academic and military networks during the 90's. As the popularity of the Internet increased the number of devices connected started to see an exponential growth.

At the time (analogue) networks were unreliable and thus internet communication protocols were designed in a robust fashion. There are multiple RTTs (Round-trip Time) (30-50 per page). TCP is a reliable but slow starting protocol. Hypertext Transfer Protocol (HTTP) was designed to survive multiple packet losses and thus being very chatty, this causes a latency problem over long distance communication. Modern (digital) networks are faster and more reliable, but most of the core protocols above don't take advantage of the increased reliability.

@@@@@ (DUE TO Backwards compatibility ?????) @@@@@@

Another problem introduced with the ever growing popularity of the internet was caused as connection speeds started to grow when content increased in size. New technologies start to provide images, videos and other dynamic content. This caused a bottleneck problem at the origin (content providers). With the continuous Internet growth a response was necessary to solve the above problems and Content Delivery Networks started to emerge (in 95's)..

## 2 Âmbito de aplicação

Netflix FHD 5Mbit/seg UHD 25Mbit/seg  
According to Table 1...

(a) Delay and jitter	(b) Delay and loss
(c) Delay and throughput	(d) Jitter and loss
(e) Jitter and throughput	(f) Loss and throughput

**Fig. 1.** Tabela exemplo.

## 3 Desafios associados

## 4 Propostas relevantes na área

## 5 Lista de projetos atuais

Free CDNs BootStrap CDN  
CloudFlare

CCDN  
Incapsula  
...  
Telco CDN  
AT&T  
Verizon  
...  
Traditional CDNs  
Akamai  
Amazon  
Windows Azure  
HP Cloud  
CloudFlair  
...  
Commercial CDN P2P  
BitTorrent  
Internap  
...

## **6 Conclusion and Future Work**

CDN - Content-delivery Network DCDN - Distributed Content-delivery Network DNS - Domain Name System RTT - round-trip time PoP - Points of Presence ASP - Application Service Provider SaaS - Software as a Service Caching - Mirroring -

## **References**

1. Zadeh, L.: Fuzzy sets (1965)
2. Nguyen, H., Walker, E.: First course in fuzzy logic. Boca Raton: Chapman and Hall/CRC Press (1999)