Counter-Strike Traffic Analysis with Network Emulation

ARTHUR DE CASTRO CALLADO
SUZANA DE FRANÇA DANTAS
RODRIGO DOS SANTOS BACELAR GOUVEIA BARBOSA
PAULO GONÇALVES DE BARROS
VERONICA TEICHRIEB
JUDITH KELNER
DIAMEL FAWZI HADI SADOK

1 Centro de Informática – Universidade Federal de Pernambuco (UFPE)
Caixa Postal 7851, CEP 50732-970, Cidade Universitária, Recife – PE – Brazil
{acc2, sfd, rsbgb, pgb, vt, jk, jamel}@cin.ufpe.br

Abstract
Network action games face a number of problems which limit their efficiency. It is important to ensure that all players are at equal levels during a session, which is highly dependent on the information integrity available to a user. This work analyses problems such as the impact of delay and packet loss on the playability of the Counter-Strike game. An effort is made to relate such parameters to other qualitative parameters obtained from the analysis of user game perception.

Keywords: Models and Infrastructure for network games, Playability, Usability.

1 Introduction
Guaranteeing the well functioning of advanced applications, like action games and virtual reality environments over infrastructures as unreliable as the Internet is still an open problem and a challenge. Many research groups are involved on the arduous job of identifying the variables and resolve the problems that affect these applications.

Networked games are the latest sensation in the world of electronic games. They allow matches with dozens or sometimes hundreds of people interacting with each other on the same virtual environment. Nowadays, big companies will not put money on the development of a game if it doesn’t have on-line multiplayer characteristics; because these features can both increase the number of consumers the game is targeted to as well as enlarge its life period.

The access to the game environment in multiplayer games can be based on turns, where each player can take actions to the game at a time, like in chess. However, most interesting games are based on real-time actions, where players interact with each other and with the environment simultaneously. In this case, there are many obstacles in the development of a game, for one must guarantee that players perceive events at the right time and that such guarantee is restricted by the capacity of the network connecting the participants’ machines. So far, Quality of Service (QoS) metrics are not completely defined to comply with players’ needs, i.e. which network parameters should be managed and how they could be controlled to make the game fair to all players. These are are still open problems.

Many papers that present typical problems on networked games performance have been published and among them are [12], [1]. However, studies presenting quantitative and qualitative analysis are still to be seen. We made many tests using the action game Counter-Strike (CS) [5], one of the preferred games among those who like to improve their terrorist or counter-terrorists tactics. CS is one of the most played First Person Shooter (FPS) games