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Network Gaming: Performance and Traffic Modeling

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KTH, School of Information and Communication Technology (ICT),  
Communication Systems, CoS. (CCSlab)

2006 (English) Independent thesis Advanced level (degree of Master (Two Years)),  
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**Abstract [en]**

There are several different types of games that are played in multiplayer mode over networks. The type of network games that, from a network's perspective, are the most demanding is real-time based multiplayer games. Users of such games both assume and require that game play interaction happens in near real-time and these games often support a large number of simultaneous players. Most networks are specialized to either voice traffic (such as the first and second generation of mobile networks) or data traffic (such as wired data networks). It is not clear that the requirements for such real time games can always be met on either type of network. The core of this thesis investigates the performance requirements real-time multiplayer games place on packet switched data networks and the connection between network impairments and game quality degradation. Traffic generated by network games distinguishes itself from other traffic both regarding its general characteristics and the requirements it places on the network. Understanding these traffic characteristics, requirements, and what consequences failures to support such requirements entail are of great importance when designing new networks in order to guarantee suitable quality of service for such real-time games.

**Abstract [sv]**

Det finns idag en stor mängd datorspel som spelas i flerspelarläge över nätverk. De spel som från ett hårdvaru- och nätverksperspektiv ställer högst krav är realtidsbaserade flerspelarspel. Slut användare av dessa realtids spel bär de fysiska lasterna och tar själva givet att interaktionen sker i samma realtid som möjligt samtidigt som dessa spel ofta stödjer ett stort antal samtidiga användare. De flesta nätverk är i första hand anpassade för rösttrafik (som första och andra generationens mobilnät) eller datatrafik (som tråddade datanätverk). Det står inte klart hurvida någon av dessa nätverk kan garantera tillräcklig prestanda för att en acceptabel spelkvalitet skall uppnås för slut användaren. Kärnan i denna rapport utreder vilka krav som dagens mest krävande realtidsbaserade flerspelarspel ställer på nätverken de spelas över samt kopplingen mellan brister i dessa nätverk och den upplevda spelkvaliteten för användarna. Trafik genererad av realtidsbaserade flerspelarspel skiljer sig från annan trafik både när det gäller generell karaktäristik och när det gäller de krav som de ställer på nätverken. Det är viktigt att ha en förstärkt kring den trafik som dessa spel skapar, kraven de ställer, samt de konsekvenser ett misslyckande av upprätthållande av sådana krav medför. Denna förstärkt är av yttersta vikt när man designar nya nätverk för att kunna erbjuda en passande Quality of Service för denna typ av interaktiva multimediatjänster.

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