An Application Developer's Perspective on Reliable Multicast for Distributed Interactive Media

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ABSTRACT

In this paper we investigate which characteristics reliable multicast services should have in order to be appropriate for use by distributed interactive media applications such as shared whiteboards, networked computer games, or distributed virtual environments. We take a close look at the communication requirements of these applications and at existing approaches to realize reliable multicast. Based on this information we deduce which reliable multicast transport protocols are appropriate for the different aspects of distributed interactive media. Furthermore we discuss how the application programming interface of a reliable multicast service should be designed in order to support the development of applications for distributed interactive media.

Keywords. Reliable Multicast, Distributed Interactive Media.

1. INTRODUCTION

Applications for distributed interactive media such as shared whiteboards, networked computer games, and distributed virtual environments have gained importance rapidly over the recent years. The main characteristic of a distributed interactive medium is that it involves user interactions with the medium itself. Applications for distributed interactive media frequently rely on multicast communication since a session involving such a medium is typically attended by a group of more than two users. These applications often need to exchange information in a reliable way. This is necessary to make sure that the shared state of the medium remains consistent for all participants of a session. Reliable multicast is therefore one key issue for the realization of many distributed interactive media.

In this paper we examine the specific needs that applications for distributed interactive media place on reliable multicast services. It is not the aim of this work to define a specific reliable multicast algorithm. Instead we focus on the issue of which existing approaches are appropriate for distributed interactive media. Moreover, we discuss how the application programming interface for a reliable multicast service should be designed in order to support the development of applications for this media class. The findings presented in this paper are based on our experiences with developing applications for diverse distributed interactive media. These include a shared whiteboard [6], a 3D telecollaboration application [12], and distributed Java simulations for teleteaching purposes [9].

The remainder of this paper is structured as follows: In Section Two we present our model of the distributed interactive media class. This model makes it possible to understand and discuss the communication needs of media belonging to this class independent of any specific medium. In Section Three we give a brief summary of existing approaches that can be employed to achieve reliable multicast. Based on this information and on the media model the fourth section contains a discussion of which reliable multicast approaches are appropriate to be used for the different aspects of distributed interactive media. In Section Five we take a brief look at congestion control for distributed interactive media. In Section Six we investigate the design of application pro-

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Distributed Interactive Media Book Review: Unveiling the Power of Words

In some sort of driven by information and connectivity, the power of words has be evident than ever. They have the ability to inspire, provoke, and ignite change. Such could be the essence of the book **Distributed Interactive Media**, a literary masterpiece that delves deep to the significance of words and their affect our lives. Published by a renowned author, this captivating work takes readers on a transformative journey, unraveling the secrets and potential behind every word. In this review, we will explore the book is key themes, examine its writing style, and analyze its overall impact on readers.

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