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Methods to Ensure Resilience in Communication Networks and P2P Overlay

Dorina Luminița COPACI, Constantin A. COPACI, Angelica BACIVAROV

Tribunalul București, București, România; ANCOM, București, România; Laboratorul EUROQUALROM, Universitatea „Politehnica" din București, România
lcopaci@yahoo.com, acopaci@yahoo.com, angelica@euroqual.pub.ro

Abstract
In the last few years, peer-to-peer networks have rapidly evolved and have become an important part of the existing Internet culture. Resilience to failures and deliberate attacks is becoming an essential requirement in most communication networks today. In this paper, we present a survey of strategies to improve resilience in communication networks as well as in P2P overlay networks. Furthermore, our intention is to point out differences and similarities in the resilience-enhancing measures for both types of networks. By using some basic concepts from graph theory, we show that many concepts for communication networks are based on well-known graph-theoretical problems. P2P overlay networks evidently benefit from resilience-enhancing strategies in the underlying communication infrastructure, but beyond that, their specific properties pose the need for more sophisticated mechanisms.

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