VIRTUALIZATION AS A MEANS TO ENSURE THE RESILIENCE OF PEER-TO-PEER COMMUNICATION SYSTEMS

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Rezumat. *Resilience to failures and deliberate attacks is becoming an essential requirement in most point-to-point communication networks today. The present paper presents a survey of strategies to ensure resilience in peer-to-peer communication networks by means of operating systems virtualization. Virtual machines can ensure the resiliency of the peer-to-peer communication network both by their very use and by providing service isolation. For hands-on research, OpenVZ as a Linux implementation of OS-level virtualization has been used.*

Keywords: virtualization, resilience, point-to-point communication systems

DOI https://doi.org/10.56082/annalsarscieng.2022.2.97

1. Introduction

P2p networks benefit from resilience-enhancing strategies in the underlying communication infrastructure, apart from the fact that their specific properties require sophisticated mechanisms. The dynamic nature of nodes requires taking certain precautions such as estimating node reliability, storing redundant information as well as provisioning reliable routing.

In this context, network resilience – the ability to provide and maintain an acceptable service level in the presence of failures – becomes increasingly important. A resilient network should be able to cope with a specific number of failures by remaining completely functional, providing connectivity to all of its components as well as providing enough capacity to fulfil its task.

Peer-to-peer networks enable such functionalities as the distributed searches. Each node in a point-to-point network performs both client and server functions, unlike client-server systems with asymmetric roles. The architecture of p2p networks is decentralized. They are built to handle choices, in the sense of adding or removing nodes. At the same time, the data stored in a p2p network are replicated

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