The Parallel Redundancy Protocol for industrial IP networks

By Authors

I. Introduction

In contrast to hot-standby switchover redundancy like the “Media Redundancy Protocol” (MRP) of IEC 62439–2 [1], the “High availability Seamless Redundancy” (HSR) and the “Parallel Redundancy Protocol” (PRP) of IEC 62439–3 [2] [3] are active redundancy approaches that work without reconfiguration timeouts when a single failure in one of its two redundant network structures occurs. For PRP, this is achieved by the dual attached node (DAN) approach, which connects each end node into both networks and sends duplicated packets in both networks. For this, each DAN must be capable of PRP and discard the duplicated packet when received. The development of PRP in recent years was mainly driven for applications like process bus in power utility automation [4]. The basic network structure for PRP is depicted in Figure 1. Fig. 1. Parallel Redundant Network