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CHALLENGES IN INTERWORKING OF MULTI-VENDOR 5G O-RAN NETWORKS

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ABSTRACT

The Open Radio Access Network (O-RAN) architecture promises to revolutionize 5G networks by fostering interoperability between multi-vendor solutions, lowering costs, and accelerating innovation. However, integrating diverse components from different vendors within this architecture presents significant challenges. One of the primary issues is the lack of standardized interfaces, which can lead to incompatibility between vendor products. Additionally, achieving consistent performance and ensuring seamless communication across dissimilar hardware and software systems is complex. Interworking across different radio units (RUs), distributed units (DUs), and centralized units (CUs) further complicates system integration. Vendor-specific implementations often hinder flexibility, while ensuring end-to-end security and reliability in an open and diverse ecosystem becomes a challenge. Addressing these technical issues requires collaboration across vendors, regulators, and standardization bodies to define universal protocols and testing frameworks. This paper explores these challenges and offers insights into potential solutions for creating a truly interoperable multi-vendor 5G O-RAN network.

KEYWORDS: *5G O-RAN, Multi-Vendor Interoperability, Network Integration, Standardized Interfaces, Radio Units, Distributed Units, Centralized Units, Performance Consistency, Security, Open Ecosystems, Interworking Challenges*