6G-RIC
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GEFÖRDERT VOM
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Next-Gen RAN: Leveraging Open-Source, Virtualization, and Telemetry

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How does the Virtualized GPU-Centric NVIDIA Aerial Platform enhance network performance in the context of 6G Open-RAN? What are the limitations of relying solely on telemetry data for diagnosing network issues, and how does integrating Key Performance Metrics (KPMs) from the O-RAN E2 interface provide a more comprehensive solution? How do xApps contribute to the detection and resolution of performance issues within the 6G Open-RAN architecture?

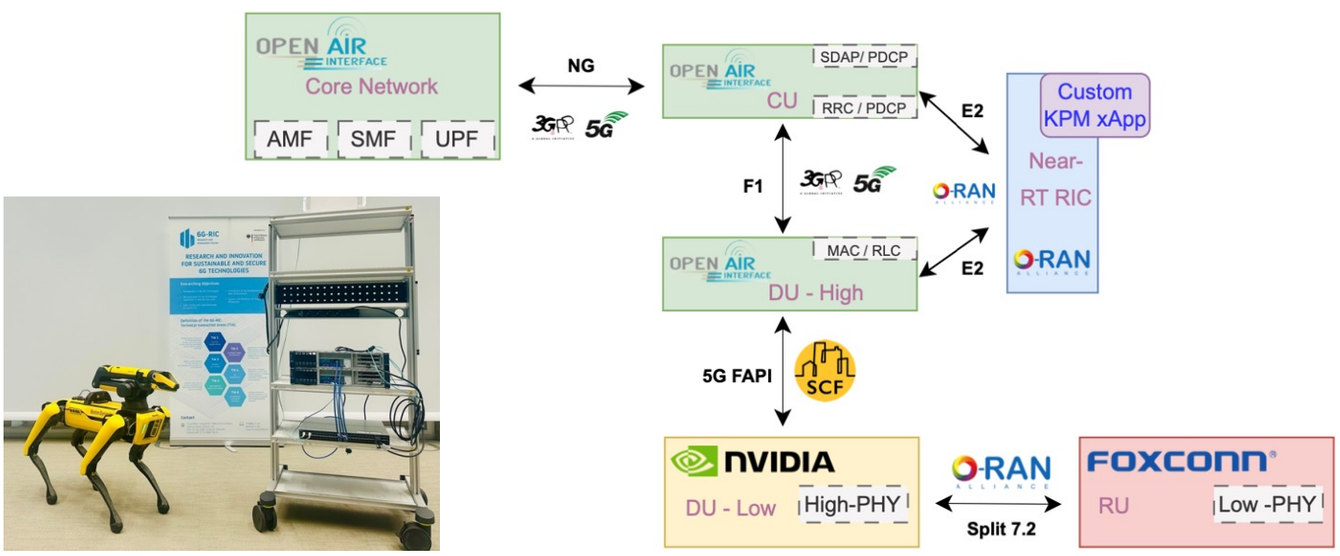

Figure provides an illustration of our testbed. Additionally, our framework includes a KPM monitoring tool via the O-RAN E2 interface, along with our custom KPM xApp, which enables more detailed and actionable network performance analysis. By collecting KPMs, we gain fine-grained insights into the network's state, facilitating the identification of root causes behind performance anomalies. This capability is vital for the timely execution of corrective actions, especially in dynamic 6G environments where network conditions can change rapidly. This demo is presented at the 6G Berlin Conference 2024.

KEY FINDINGS

In the context of 6G Open-RAN networks, the ability to promptly and accurately diagnose issues related to sudden changes in UE channels is critical. In our demo while telemetry data can highlight E2E latency, a detailed investigation using KPMs from O-RAN E2 interface and xApps is crucial solution. We are uncovering the root causes and implementing effective solution with Open-Source, Virtualized GPU-Centric NVIDIA Aerial Platform for high network performance.

Our proposed Next-Gen RAN demo represents a significant step forward in the evolution of wireless communication technologies, particularly as we transition toward 6G networks. By harnessing the GPU-accelerated capabilities of NVIDIA ARC and the Aerial SDK, this platform offers enhanced computational efficiency. The implementation of a computationally efficient PHY layer on the GPU, combined with the ability to run optimization algorithms (xApps) on the same hardware, sets this testbed apart. Furthermore, the integration of our xApp framework—which includes custom KPM, and a real-time monitoring user interface—introduces a robust solution for detailed network diagnostics and AI-powered, GPU-accelerated network performance optimization.