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A distributed control system for software defined wireless sensor networks through containerization

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ABSTRACT:

Software-Defined Networking and Network Function Virtualisation are gaining much prominence in the technological space. Major technologies are built on their principles. As their impact permeates, many architectural designs in networking, computing and storage have to be rethought because this affects the conventional way of running and deploying applications. The urge to save costs in this rapidly changing technological era, have operators continually searching for better methods. This paper extends the work previously conducted on Fragmentation-based distributed control system for Software-Defined Wireless Sensor Networks (SDWSN). The system entails a two-level architecture comprising local controllers and a global controller to overcome the geographical space between the infrastructure elements and the controller. This was in response for a better control system for SDWSNs, given their distinct nature. The paper explores different methods of infrastructure deployment for this model, contrasting virtual machines (VMs) and containers. The design of the Fragmentation model is such that the local controllers are lean and inexpensive. The evaluation shows that software containers are faster and more efficient as compared to the VMs and the infrastructure deployment method do contribute to the efficiency of the model.