Network Virtualization for Military Application: Review and Initial development of conceptual design

Jiradett Kerdsri*, Komwut Wipusitwarkun**

*Computer and Programming Laboratory, Defense Technology Institute, Thailand
**School of Information, Computer, and Communication Technology (ICT), Sirindhorn International Institute of Technology, Thailand
jiradett.k@dti.or.th, komwut@siit.tu.ac.th

Abstract— Networking Technology, undoubtedly, plays a vital role in modern warfare especially in Network Centric Operations (NCOs) and Global Information Grid (GIG) concept. However, the current popular network infrastructure, mainly TCP/IP architecture, is in fact unsuitable with advanced military communication especially in tactical operation networks. The key characteristics of military communications are classified as delay/disruption/disconnection tolerant networks (DTNs) which are long and variable delays, high error rates and greatly heterogeneous. As a result a call for new type of network architecture emerges to support such peculiar characteristics of military communication network. This paper reviews the current approaches in network technology of military communication and proposes the conceptual design of Virtualization Network (VN) for military communication to address the limitation of current network infrastructure. The implementation of Military Network Virtualization Environment (MVNE) introduces the crucial two new key features of military tactical network: information classification and movable nodes. These features along with essential research challenges must be analyzed to realize a viable virtualization network for military communications.

Keywords— Network Virtualization, GIG, Military, Tactical Network, Communication