PSM of Software Defined Protocol for Next Generation Mobile Networks

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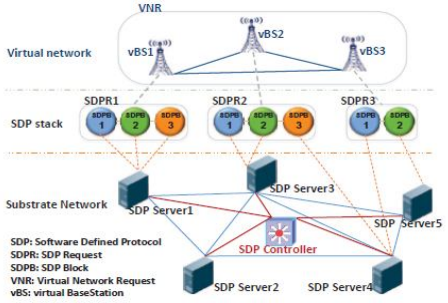
Abstract-*Recently, many research works have tried to redesign the traditional mobile network in order to deal with the challenges faced by mobile operators, such as the inflexibility, design, control and mobile traffic. This imposes challenges for the current cellular network architecture, such as high upgrade costs, complex operation, making it an innovative and effective approach to this problem. Hence, Software-defined protocol (SDP), Network function virtualization (NFV), Protocol stack mapping (PSM) techniques that provide features the programmable network and virtualization, which enables network infrastructure sharing and the "softwarization" of the network function. We will propose SDP mechanism and address the most important issues in Software defined protocol (SDP) and protocol stack mapping. This formulates the protocol stack mapping for selecting the optimal software defined protocol server to balance network load in 5G. We will use the legacy Long Term Evaluation (LTE) data planning process as benchmark for validating the scalability and integrity of Software defined protocol. Software defined protocol is the technology that aims to separate control and data planes clearly, The design objective of SDP is to provide high-throughput, low-latency and elastic mobile services by making data-plane protocol programmable Using software defined protocol, a service provider can adjust the settings of a network according to various requirements dynamically and in a timely fashion. This feature is especially suitable for a wireless scenario with dynamic and unstable changing situations. In this project, we will illustrate the framework for combining Software defined network (SDN).*

Keywords-LTE (Long term evolution), SDN(software defined networking), NFV (Network function virtualization), Protocol stack mapping

I. INTRODUCTION

We are able to count an additional boom of smart cellular devices and cell statistics visitors can have substantial impact on the following generation cell verbal exchange machine (5G). It's miles predicted that 5G will address the demanding situations coming from the notably different performance requirements in pretty diverse technical eventualities, which include seamless huge-vicinity insurance, hotspot high-capacity, and low electricity large connections. Consequently, in 5G, there is a need to push the envelope of overall performance to provide plenty extra throughput, decrease latency, ultra-excessive reliability, higher connectivity density, and higher mobility range.

Manifestly, technical innovations of 5G in both wifi technology and network technology are imperative to cope with the aforementioned application needs. In the subject of network technology, a new network architecture based totally on Network Function Virtualization (NFV) and Software defined Networking (SDN) turns into the prevailing view international.Currently, a lean protocol stack has been discussed as one key detail of 5G cell community structure. It's miles mentioned that with cloud-primarily based and C/U-aircraft cut up community architecture, a lean protocol stack can be achieved through elimination of redundant functionalities. As a generalization of "lean protocol stack" and an extension of SDN, in our project we will introduce a new technology called software defined Protocol (SDP). SDP allows bendy service-orientated records aircraft protocol stack deployment below centralized community control. It can be very appropriate for 5G structures because of the following functions: (1) the community detail protocol features are broken down and the topology can be custom designed to fit the quality-of-service (QoS) necessities of every community connection; (2) the protocol capabilities and topology can be replaced with a software improve at the community factors; (3) virtualized protocol functions or SDP blocks (SDPBs) and virtual hyperlinks can be easily remapped and then be migrated to other servers for load balancing beneath centralized control and (4) heterogeneous networks are inherently supported through SDP with programmable digital function blocks.



II. LITERATURE SURVEY

SDP Architecture

1. Network Model

We consider a sensor network composed of a large number of small sensor nodes. We further assume that the sensor nodes are deployed in high density, so that a stimulus can be detected by multiple sensors. Network consists of number of sensors which sends data to centre node and which after authentication send data to mobile node. This identifies that sensor node able to send data means travelling data through network.

2. Thread model

We assume that the attacker may know the basic approaches of the deployed security mechanisms, and may be able to either compromise a node through the radio communication channel, or installed in the node. However, we assume that attackers cannot subvert the data collection unit, i.e., the sink, because the protection at the sink is powerful enough to defeat such subversion efforts. Once compromised, a node can be used to inject false reports into the sensor network. Node and message authentication mechanisms prevent naive impersonation of a sensor node. However, they cannot block false injection of sensing reports by compromised nodes.

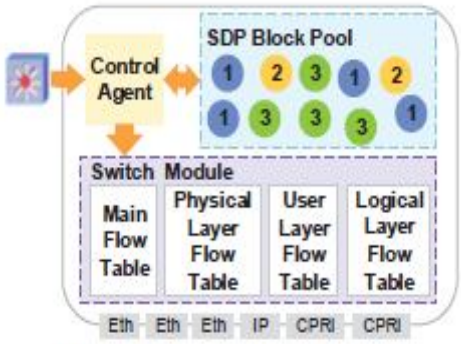


Fig. 2: The SDP server structure.

III. PROJECT LIFE CYCLE

The project is carried out by following the software development lifecycle phases. We have used agile methodology. Agile model believes that every project needs to be handled differently and the existing methods need to be tailored to best suit the project requirements. In agile the tasks are divided to time boxes (small time frames) to deliver specific features for a release. Iterative approach is taken and working software build is delivered after each iteration. Each build is incremental in terms of features; the final build holds all the features required by the customer.

Project will be implemented in the following phases: -

Requirement analysis and planning

In this phase the requirement document was finalized along with the planning to implement feasible requirements and deadlines were decided accordingly.

Design

We can expect that the further growth of smart mobile devices and mobile data traffic will have enormous impact on the next generation mobile communication system. We will propose Virtualization of network functions and centralized management are anticipated to provide 5G mobile networks with flexibility, lower end-to-end latency and reduced cost.

Implementation

Implementation explains the methodology identified for development of the application.

Testing

Testing is carried by implementing the techniques such as unit testing, UAT, SIT.

Deployment

The application will be finalized as per the requirements and the end results with future work related to project.

IV. CONCLUSION

In this paper, we have proposed SDP technology for mobile networks. By making data-plane protocol programmable, SDP technology can provide the mobile network with high throughput, low-latency and elastic mobile services. In the implementation of SDP technology by using SDP servers, the mapping algorithm between SN and SDPR is essential. To address this requirement, we have formulated the PSM problem as a 0-1 quadratic programming that simultaneously mapping the substrate nodes and links in a load-balanced way and proposed an SDP request maps framework. We have evaluated the performance of our proposed SDP in comparison with the decoupled data plane

protocol stack of legacy LTE Layer-2. Numerical results demonstrate that SDP outperforms LTE protocol stack in terms of processing delay, mapping cost and substrate resource utilization.

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