NUS
National University of Singapore

NUS Enterprise

Low cost, programmable bare-metal network virtualization

MARKET OPPORTUNITY

Network virtualization is an important aspect of today's cloud computing services and bare-metal services are in greater demand due to high computation needs. The current techniques of network virtualization using software (VM hypervisors) are unable to scale to meet high packet processing demands. Also, current cloud providers do not provide programmable networks to their tenants, due to unavailability of flexible provisioning mechanisms.

TECHNOLOGY

Our technology (Bare-metal Network Virtualization or BNV) acts as a controller to a set of SDN switches and provides a programmable slice of the network with maximum fidelity to the tenants. Our approach can support arbitrary topologies over the hardware switches without modifying the switch software and provides the ability to adapt tenant's topologies at demand using fine grained analytics on network traffic.
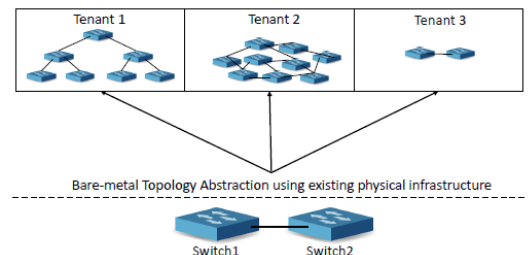
STAGE OF DEVELOPMENT

System prototype evaluated in a test platform and deployed in the National Cybersecurity Lab at NUS for test-bedding by the industry.

APPLICATIONS

BNV can facilitate cloud service providers to enable their customers with Programmable Networks (SDN) at a low-cost and line-rate performance. It can also help enterprise networks and institutions to have greater flexibility/sharing in their network at a low-cost. Tenants can request for a specific network topology that is best suited for their applications.

ADVANTAGES

1. Provides ability to create arbitrary programmable topologies dynamically to tenants.
2. Provides an optimal mapping technique to the substrate network for a set of tenants.
3. Gives the edge to the provider to guarantee isolation, fidelity to the tenants.
4. Easy to adopt since it can be hosted on a commodity server and plugs into the network containing the SDN switches with minimal configuration changes

STATUS

Patent pending. Available for licensing.

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