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Abstract

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I. Introduction

II. High-level considerations

Our software defined network will be written in the Go programming language and fully integrated in to the Cloud Integrated Advanced Orchestrator (Ciao) [1]. The Go programming language was selected for several reasons, including the efficiency of the language regarding both speed and memory, the concurrency capabilities, and the ease of implementation. Go was compared against C and Python as alternatives, and prevailed in every criteria except for availability of the language.
This network mode will be written as a standalone networking mode for Ciao as an additional option to the standard Linux bridges available now. For this reason it must be fully integrated with the Ciao networking framework as it currently exists [2].

III. Conclusion

IV. Glossary

Bridge Software or hardware that connects two or more network segments.

Ciao Ciao is a cloud orchestrator that provides an easy to deploy, secure, scalable cloud orchestration system which handles virtual machines, containers, and bare metal apps agnostically as generic workloads. Implemented in the Go language, it separates logic into ”controller”, ”scheduler” and ”launcher” components which communicate over the ”Simple and Secure Node Transfer Protocol (SSNTP)” [1].

Cloud A huge, amorphous network of servers somewhere [3].

Cloud Orchestration An easy to deploy, secure, scalable cloud orchestration system which handles virtual machines, containers, and bare metal apps agnostically as generic workloads [4].

CNCI Virtual Machines automatically configured by the ciao-controller, scheduled by the ciao-scheduler on a need basis, when tenant workloads are created [2].

Generic Routing Encapsulation (GRE) Encapsulation of an arbitrary network layer protocol so it can be sent over another arbitrary network layer protocol [5].

Linux Bridge Configurable software bridge built into the Linux kernel [6].

Network Node (NN) A Network Node is used to aggregate network traffic for all tenants while still keeping individual tenant traffic isolated from all other the tenants using special virtual machines called Compute Node Concentrators (or CNCIs) [2].

nvGRE Network Virtualization using Generic Routing Encapsulation [7].

Open vSwitch Open source multilayer software switch with support for distribution across multiple physical devices [8].

OVS Open vSwitch [8].

Packet Acceleration Increasing the speed of the processing and transfer of network packets.

Packet Encapsulation Attaching the headers for a network protocol to a packet so it can be transmitted using that protocol [9].

SSNTP The Simple and Secure Node Transfer Protocol (SSNTP) is a custom, fully asynchronous and TLS based application layer protocol. All Cloud Integrated Advanced Orchestrator (CIAO) components communicate with each others over SSNTP [10].

Tunnel Point to point network connection that encapsulates traffic between points [9].

VxLAN Virtual Extensible Local Area Network [11].

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