

nvo3
Internet-Draft
Intended status: Informational
Expires: April 30, 2015

L. Huang, Ed.
R. Gu, Ed.
China Mobile
L. Xia
Huawei Technologies
Q. Zu
Ericsson
October 27, 2014

Network as a Service in datacenters use cases
draft-huang-nvo3-naas-usecases-00

Abstract

Network as a Service (NaaS) is a new network business model in the cloud computing area where virtualized E2E connectivity to end users is provided to make the network more flexible and scalable.

This draft describes Network as a Service (NaaS) system use cases in datacenters that are deployed typically for different applications. Considerations about the use cases are pointed out.

Status of This Memo

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NaaS use cases

October 2014

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[1.](#) Introduction

Network as a Service (NaaS) is a new network business model which describes services for network transport connectivity in the cloud computing area. Considering network and computing resources as a whole, resource allocations are optimized. The target of NaaS is to provide end to end virtual network with capacity for tenants in cloud datacenter, which is the essential part from the technical point of view. In NaaS, operators' network infrastructure can be virtualized and multiplexed for selling, while clients can make the network provision and use their own virtual network according to specific requirements.

In this draft, we focus on proposing network use cases of NaaS in datacenters. Two typical use cases are provided. One is about the virtual private cloud network and another is the intelligent traffic engineering across the datacenters. In both use cases, basic network models are introduced and considerations about the use cases are pointed out.

[2.](#) Definition of terms

VPCN: virtual private cloud network

FW: firewall

NAT: network address translation

LB: load balance

TS: tenant systems

VM: virtual machine

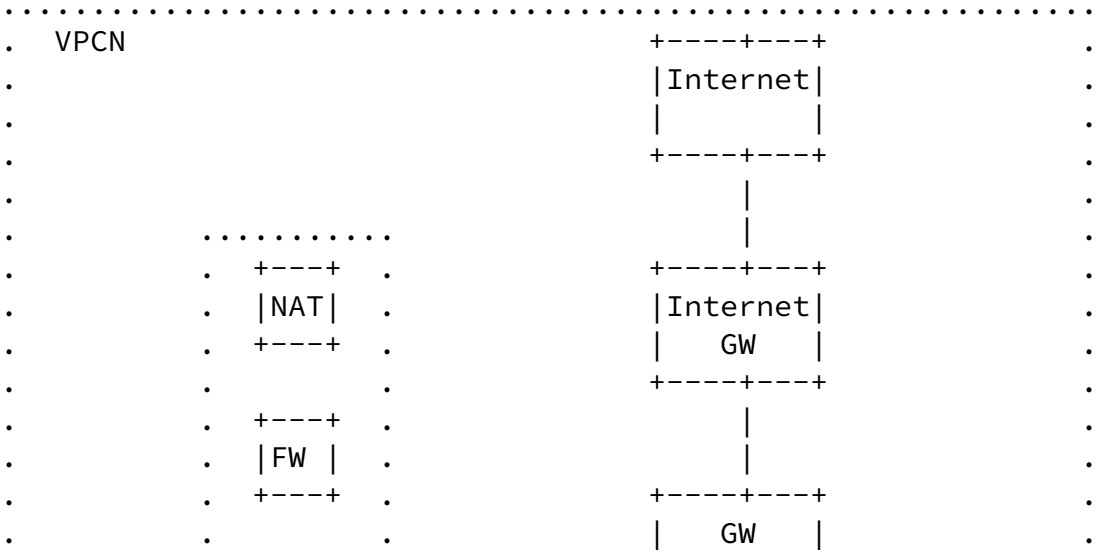
CE: customer edge

PE: provider edge

3. Use cases

3.1. Use cases 1 VPN

One of the typical use cases in NaaS is to construct the virtual private cloud network (VPCN) for tenants (i.e., enterprise, organization, etc) over the public cloud provided by the operators. Its main characteristic is that tenants can custom their own VPCN, i.e., network topology, VPN connection, network services, etc. Following Figure 1 is an logical network example for VPCN.



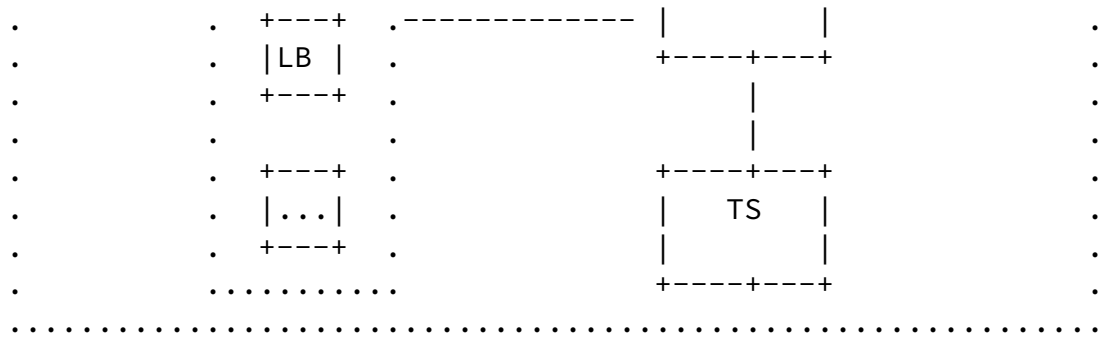
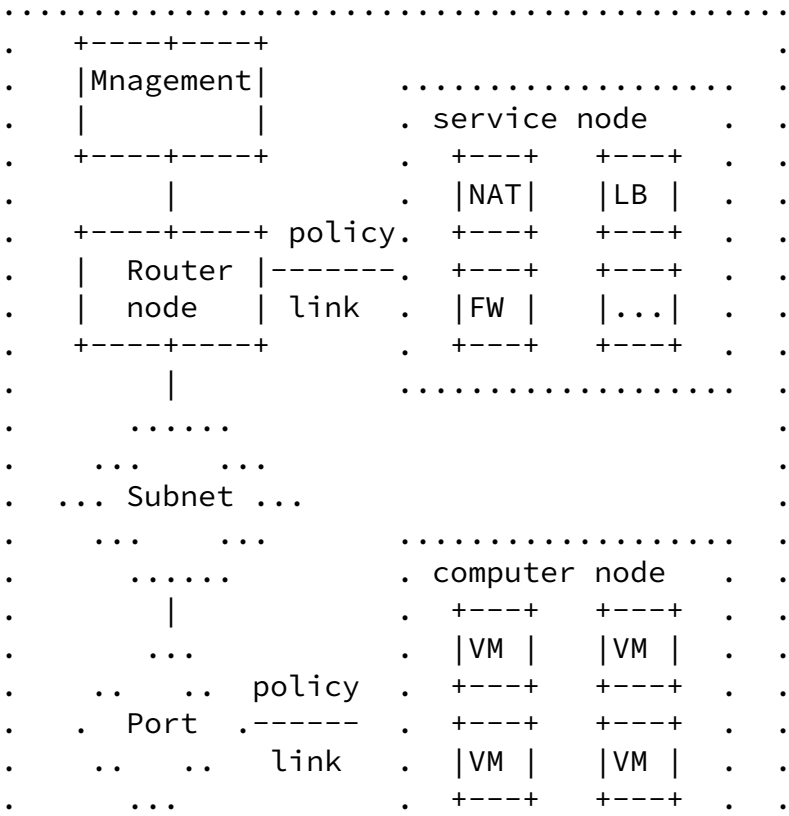


Figure 1: VPCN example

NaaS provides the network more convenient to the tenants. In traditional service, it takes a long time for tenants to rent their own network, while it costs more time for tenants to configure their network. Because the all the configurations are delivered by administrators manually. Besides, extensibility is limited to the number of vlan supported. Tenants are not available to monitor their network. So it turns to NaaS in VPCN.

In NaaS, the tenants can define their networks by themselves simply by Graphical User Interface. And the network they construct can be controlled by themselves as well. The administrators can take a global control from the management plane. NaaS provides it available that networks rather than unique devices are for sale.

In such a framework, the interface information from the tenants' side can be an issue, as the standard interface has several features. Tenants apply for the virtual network construction they need to deploy the end to end network. Different tenants are isolated from each other with their access policies defined by themselves. The virtual network can be managed, monitored and configured by tenants. Because of the open access of network to the tenants, the network model aimed at the tenants should be thoughtful. The network model is constituted of node, link, flow and policy. Node acts as the role of forwarding or processing the dataflow by some policies. Service node provides the service, while computer node refers to the VMs. Link connects two nodes. The network model can be divided into several typical models to provide one of network service, something like LBaaS, FWaaS or DNSaaS and so on.



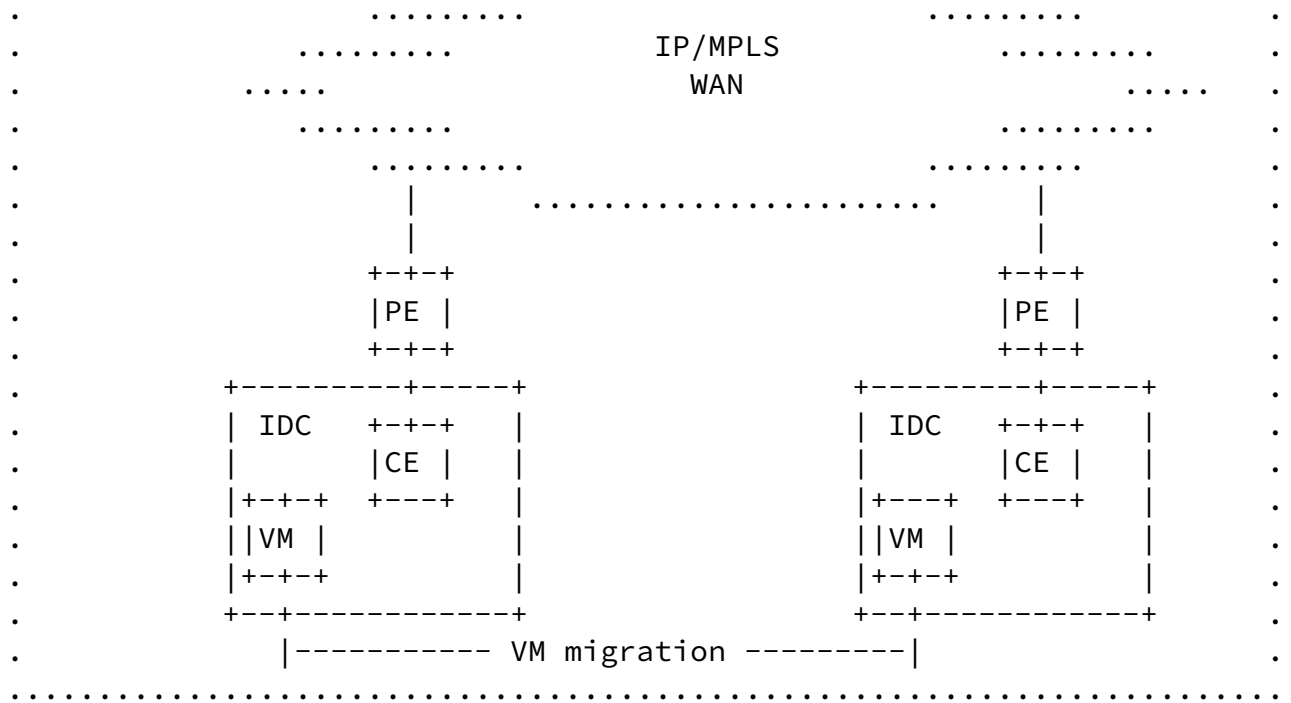


Figure 3: Intelligent traffic engineering across the datacenter model

4. OAM considerations

TBD.

5. Security considerations

In NaaS, security can be a problem in several aspects. To meet the requirement of the tenants, the virtual network should be secured and tenants' traffic should be isolated with each other. On the other

side, the security in NaaS is reflected in that traffic access should be authorized. Other security in such as VM migration can also be an issue.

6. Summary

This draft describes some typical use cases of NaaS in datacenters. NaaS provides network as a service to tenants. Tenants can build

their own network by NaaS easily with the basic network model provided. Through NaaS, traffic across the datacenters can be optimized by intelligent traffic engineering. It's expressed in given use cases that network virtualized with basic models can be helpful in providing NaaS.

7. IANA Considerations

The document does not require any IANA action.

8. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.

Authors' Addresses

Lu Huang (editor)
China Mobile
32 Xuanwumen West Ave, Xicheng District
Beijing 100053
China

Email: huanglu@chinamobile.com

Rong Gu (editor)
China Mobile
32 Xuanwumen West Ave, Xicheng District
Beijing 100053
China

Email: gurong@chinamobile.com

Fank Xia
Huawei Technologies

Email: frank.xialiang@huawei.com

Ericsson
8400, boul. Decarie Ville Mont-Royal
QC
Canada

Email: Zu.Qiang@Ericsson.com