



A techpaper on

TeX – Traffic eXchange SDN WAN

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WE-CONNECT



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Introduction

Conventional enterprise networking nowadays is focused on mostly high complex and difficult to maintain setups.

VLAN, VXLAN – most of the Layer2 technologies and network IEEE's, for example encapsulation of the encapsulation has been invented in a time in which it was dearly needed.

In order to save money other than use the full potential of switching fabrics and core grade equipment - these technologies have been originally been used.

Let me give you an example – Manufactures like Brocade and Cisco are still heavily used in fabric networking, in which a multitude of devices is being logically aggregated into one or more "devices".

These high complex setups not only are prone to mistakes but especially give a wide area of opportunities for human error.

Companies traditionally like to use expensive MPLS or dark fiber connections in order to connect multiple locations and provide edge services. In many situations where dark fiber and MPLS connections are not available, IPSEC VPNs are used for multi–WAN setups.

Multiple manufacturers are rebranding this approach as SD-WAN and are selling S2S VPNs with custom HW and SW components.

We have questioned this enterprise behavior to use and invest into such technologies.

For us it seems more logical to use something which has been around in cluster technologies, like Kubernetes, OpenShift and OpenStack for a very long time.

These technologies are proven in the industry and are being used by most enterprises in Cloud, On-Premise and hybrid environments.

All of them are based on Software Defined Networking, short SDN, which is taking care of all the traffic produced in that cluster or in more than one cluster, even in between clusters.

As clusters we define one or more VM, pod, container which is part of a bigger, scalable and controlled environment.

Our thought process is based on lifting that cluster concept out of the cluster and applying it directly into classical networking environments.

This techpaper is describing our Proof of Concept (PoC) which we started in June 2020 together with our Sponsor and Partner **BSE Software GmbH SolNet/Data11** and **Erich Hohermuth.**





Thoughts

We had a lot of fun not limiting our thought process in any way.

Relatively fast we had a good understanding of what would work and what would not really play out in a positive way.

We shifted our focus to SD-WAN and realized a certain disappointment with solutions existing in the market.

First of our goal became to add the N to SDN-WAN, because all the available solutions are missing the possibility to actually "do the networking".

SD-WAN

Meaning you want to connect two or more facilities - Meaning you want to build a VPN connection - Meaning you want to connect cloud and On-Premise - Meaning you do not want to be provider depended - Meaning you want to use cheap commodity hardware - Meaning you want to use your existing internet uplink - mostly

Our obvious question became present "why are companies or people in general using this technology to overcome their boundaries, with creating even more boundaries?"

SDN-WAN

Will we make something better, if we use SDN technology used in cluster systems? Will we make something scalable, if we use an actual SDN, as it is meant to be?

Yes, we will. – Using practices like Everything as Code, CI/CD and git, we would set the basics for a new SDN-WAN deployment.

Open vSwitch and Openflow are used to "do the networking". Layer 2 or smart Switches are merely used to be port multiplicators.

In this PoC we decided on the external zone, WAN, only. In later implementations and PoC we will focus on the internal Zone, LAN, as well.





Our PoC Approach

Illustration client site







Illustration SDN-Central







Variant 1

Description

Layer 2 is enabled by Open vSwitch and our Virtual Cable to form a secure and SDN-WAN optimized network.

Already existing switching and core hardware can be used to multiply ports or to connect the internal zone to your wishes and needs.

You are not bound to any expensive WAN connections. An internet uplink is all you need.

Illustration







Variant 2

Description

Layer 2 is enabled by Open vSwitch and our Virtual Cable to form a secure network. Already existing switching and core hardware can be used to multiply ports or to connect the internal zone to your wishes and needs.

You are not bound to any expensive WAN connections. An internet uplink is all you need.

Illustration







Variant 3

Description

Layer 2 is enabled by Open vSwitch to form a connection of your provided VPN or direct connections. You might be bound to WAN connections.

Illustration







What is the future?

We will concentrate on building the SDN-LAN, basically the same bases as the external zone SDN-WAN but enriched by internal zone features.

Our full automation will be built up and put through basic usage testing.

SDN-Central will be productive from June 2021 onward.

At the same time are creating products and sales packages.

Managed SDN will be implemented.





Notes

1. With this publication the Proof of Concept will be finished and everything ongoing from this point is part of the evolvement of TeX – Traffic eXchange

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Legal statement PoC

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