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**Welcome
To
Network for you
VXLAN**



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Virtual extensible Local Area Network (VXLAN):

- Virtual extensible Local Area Network (VXLAN) is a tunneling protocol that tunnels Ethernet (layer 2) traffic over an IP (layer 3) network.

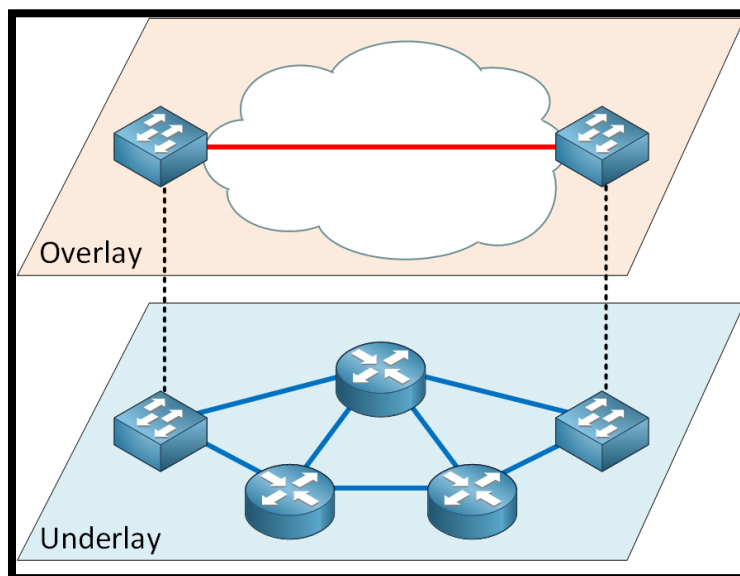
Why do we want this?

Basically, Traditional Layer 2 network issues as given below

1. Spanning-tree. (It will block all of our redundancy link)
2. Limited amount of VLANs. (12 Bit Vlan id It will be 4094 Vlan)
3. Large MAC address tables. (Before Server Virtualization one MAC address per Switchport but after Server Virtualization Multiple MAC addresses per switchport one for each VM)

Let see How VXLAN work.

- VXLAN have Overlay and Underlay Network.
- Overlay network is Virtual Network which run top of underlay Network.
- Underlay Network is a Physical Network. It is simple network we only use Routing here all the fancy stuff is happened on the Overlay Network.



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In Case of VXLAN Overlay Network is Layer 2 Network and Underlay is Layer 3 Network.

- Overlay Network is Virtual (L2)
- Underlay Network is Physical (L3)
- Overlay runs on top of underlay.
- VXLAN is have **VXLAN Network Identifier (VNI)** this is similar to the VLAN ID (In traditional VLAN) different is it is 24 Bits so we will have approx.
- **16 Million VXLANs** so it will be ok for Larger Service Provider Networks.

We also have the **VTEP(VXLAN tunnel endpoint)** devices it is device which Encapsulates and De encapsulates layer 2 traffic and this connects to the overlay and the underlay network.

The two option

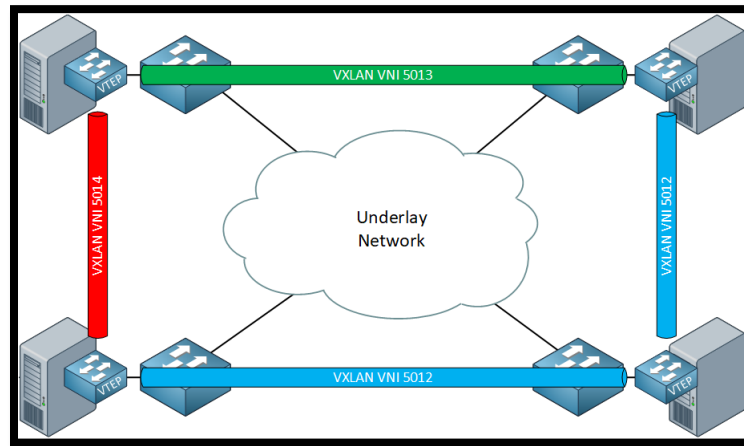
1. Software (Host-Based)
2. Hardware (VXLAN Gateway)

VTEP Software:

- It has Hypervisors
- VMWare ESXi
- Microsoft Hyper-V

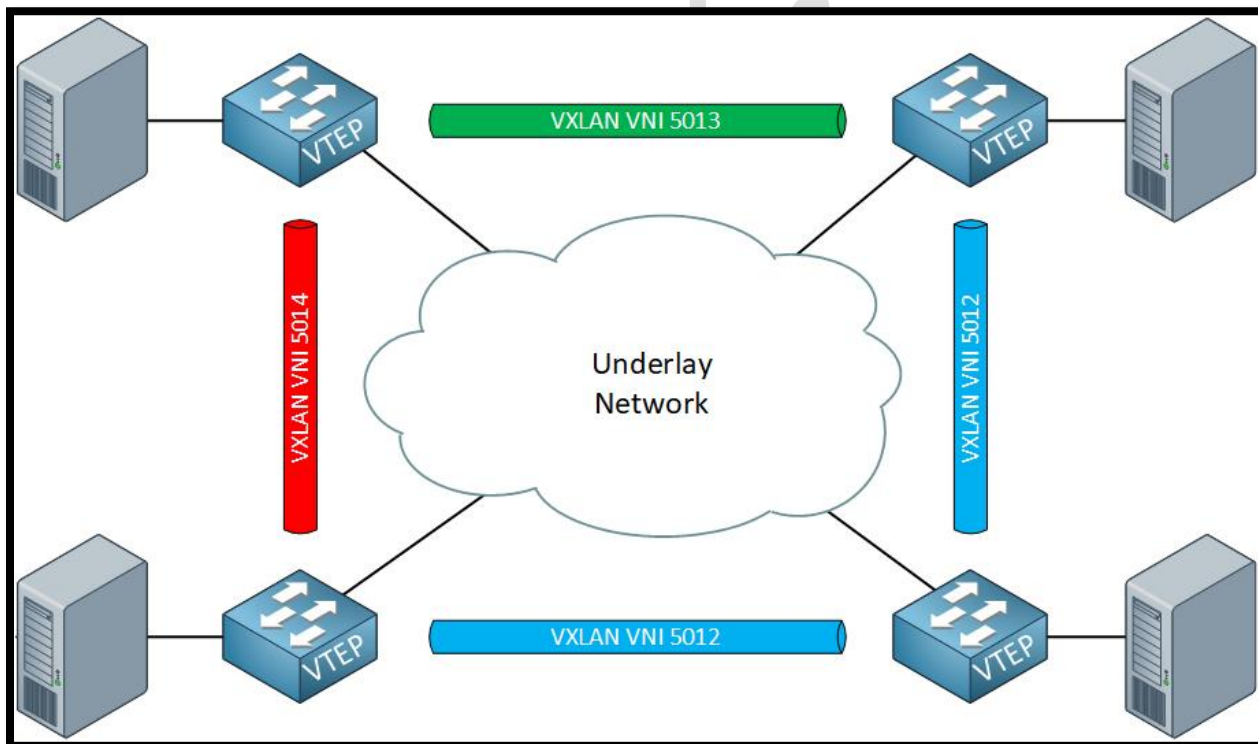
This Hypervisors run Virtual Switch which support VXLAN. So VXLAN tunnel run between Virtual Switches of the Hypervisor.

so, the Underlay network don't know even what is VXLAN. Hypervisors only run VXLAN.



VTEP Hardware:

We can use VTEP Hardware devices like Router, Switch and Firewall that support VXLAN



VTEP Interfaces:

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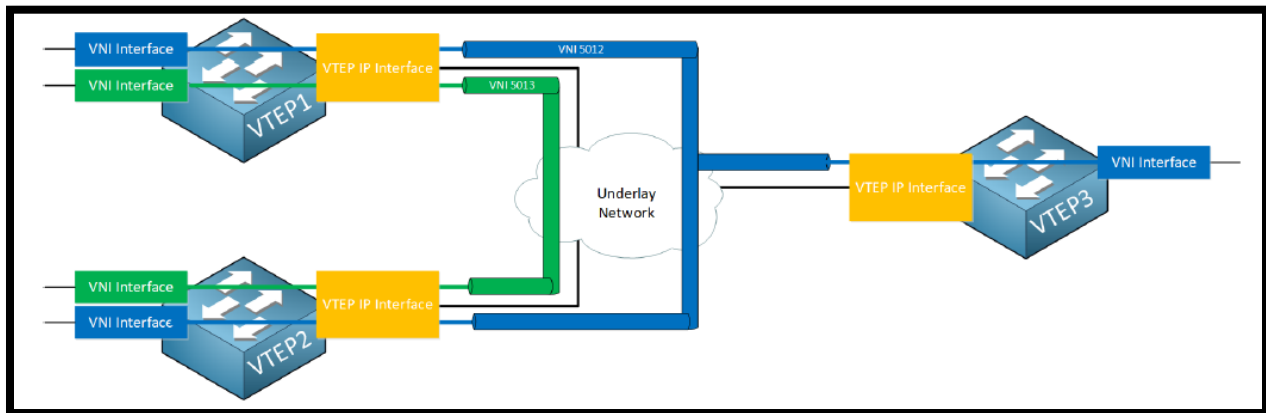
VTEP IP Interfaces and VNI Interface

VTEP IP Interface:

- It connects VTEP to underlay network.
- Unique IP address.
- Encapsulates and de-encapsulates traffic.

VNI Interface:

- Similar to SVI Interface.
- Keeps Network traffic separated on physical interface.



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