

Address Resolution Issues Induced by VPN-oriented Data Center Service

<http://tools.ietf.org/html/draft-so-armd-vdcs-ar-00>

<http://datatracker.ietf.org/doc/draft-so-vdcs/>

Ning So

ning.so@verizonbusiness.com

Linda Dunbar

linda.dunbar@huawei.com

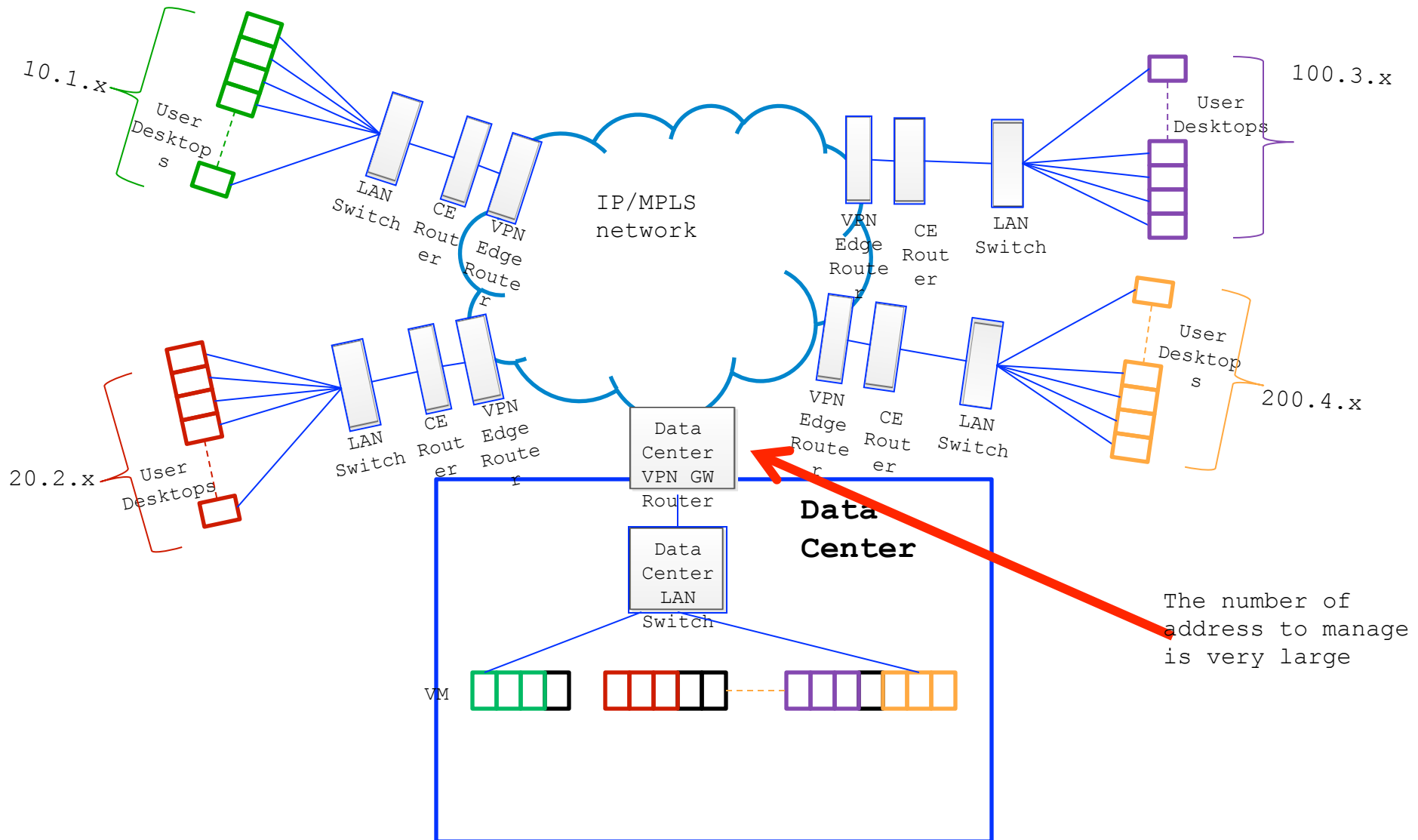
What Is VDCS

- ✚ VPN-oriented Data Center Services (VDCS) are the extensions to the existing L2 and L3 VPN services into data centers and to control the virtual resources sharing functions
 - ✚ Strictly maintaining the secure, reliable, and logical isolation characteristics of VPN
 - ✚ Making the data center resources as additional attributes to VPNs
 - ✚ Allowing end-to-end VPN-based service management
 - ✚ VPN having the control on how and what data center resources to be associated with the VPN

Address Issues Induced by VPN-o-DS

- ✚ Address scalability
- ✚ Address conflict

VPN-o-DCS Logical View



Scalability issues

L2VPN's VMs offload to data center

- ❖ L2VPN's PEs and VSIs have to learn and maintain the MAC & VLAN for all the hosts/VMs associated with this L2VPN.
- ❖ When there are 100's (1000's) VPNs offload VMs to provider data center(s), the amount of MAC&VLAN \leftrightarrow IP mapping for the PE is extremely large.

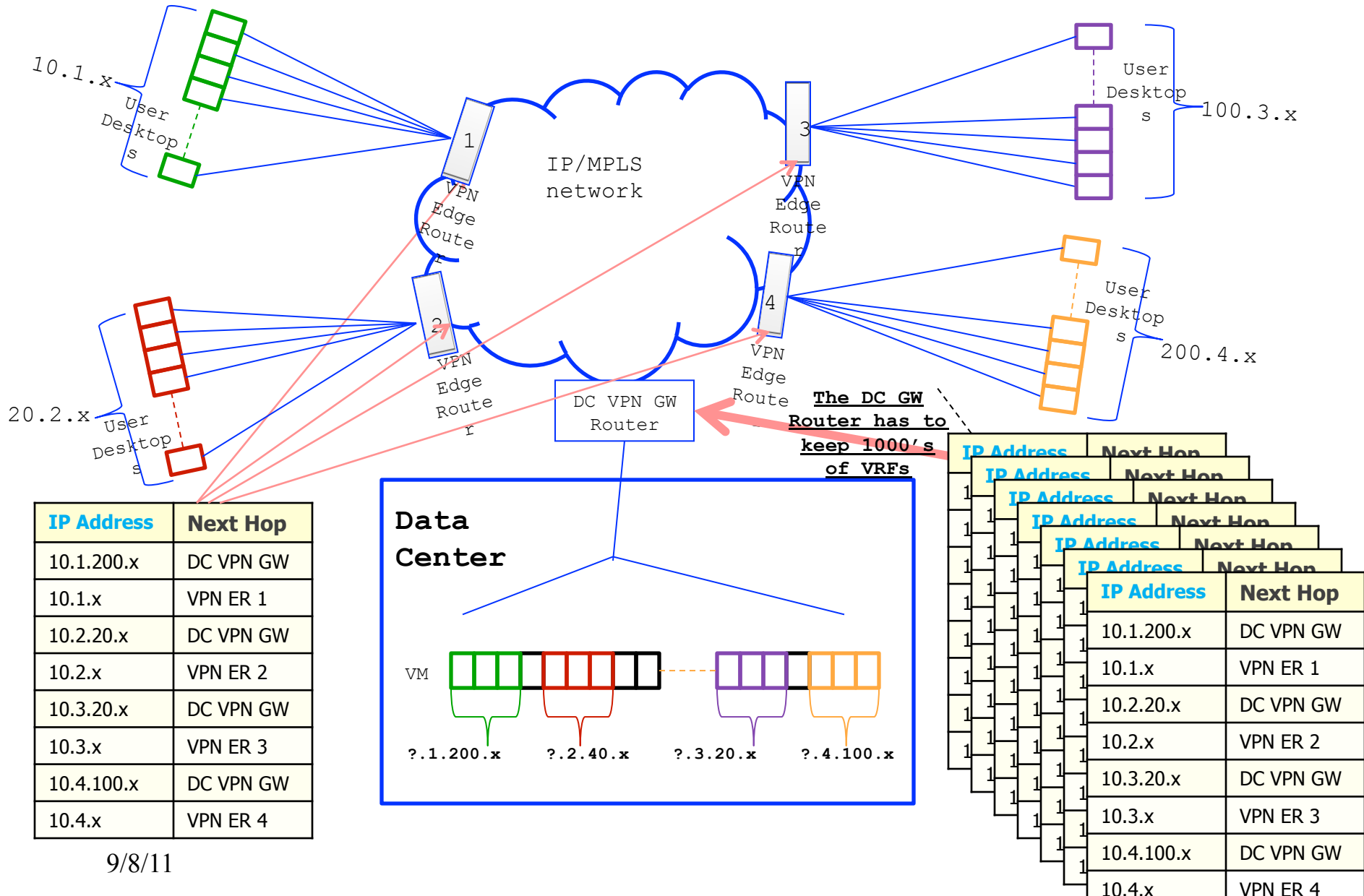
Scalability issues

L3VPN's VMs offload to data center(s)

- ⊗ Scenario 1: offloaded VMs in DC are in different subnets than customer subnets
- ⊗ Scenario 2: offloaded VMs in DC are in same subnet as customer subnet.
 - ⊗ the traditional “subnet” concept is broken.
 - ⊗ the ARP/ND messages from the VMs in the data center have to be flooded to the corresponding sites to which those VMs belonging.
- The data center gateway routers (CEs or PEs) have to handle both customer and data center IP/MAC addresses

But the routing tables at PEs become more complicated

- If Data Center hosts VMs for thousands of VPNs, gateway router has to maintain thousands of VRF tables.



✦ Address Conflict:

- ▣ Addresses used by different VPN clients clash
- ▣ Clients require their own IP Addresses in Data Center

Address conflict in L3VDCS

