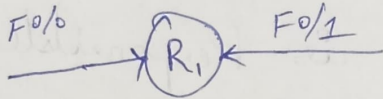


Ques:

VRF:

→ VRF is a technology which is used to create multiple routing tables for on a single router.

→ Let us say, by default router has 2 interfaces

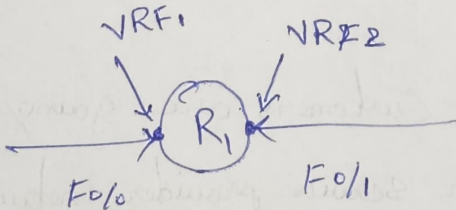


Both $F0/0$ & $F0/1$ interfaces
routers will be stored in
Global Routing Table

* In normal router there will be only one routing table containing these 2 interfaces information means, both are member of single routing table.

→ we, cannot configure same network on the both interfaces, this will give us overlapping error.

→ So, VRF is used to divide the router virtually.



VRF ₁ Routing table	VRF ₂ Routing table

* Why we use public & private IP Addresses?

As we have a shortage of IPv4

Ex: 10.0.1.0 is a private IP but all the different Customers will use same 10.0.1.0

* Service provider & Internet Service provider

1. Service provider: is Responsible for providing Connectivity between two points

→ Let us say, Customer A & Customer B are the 2 Customers.

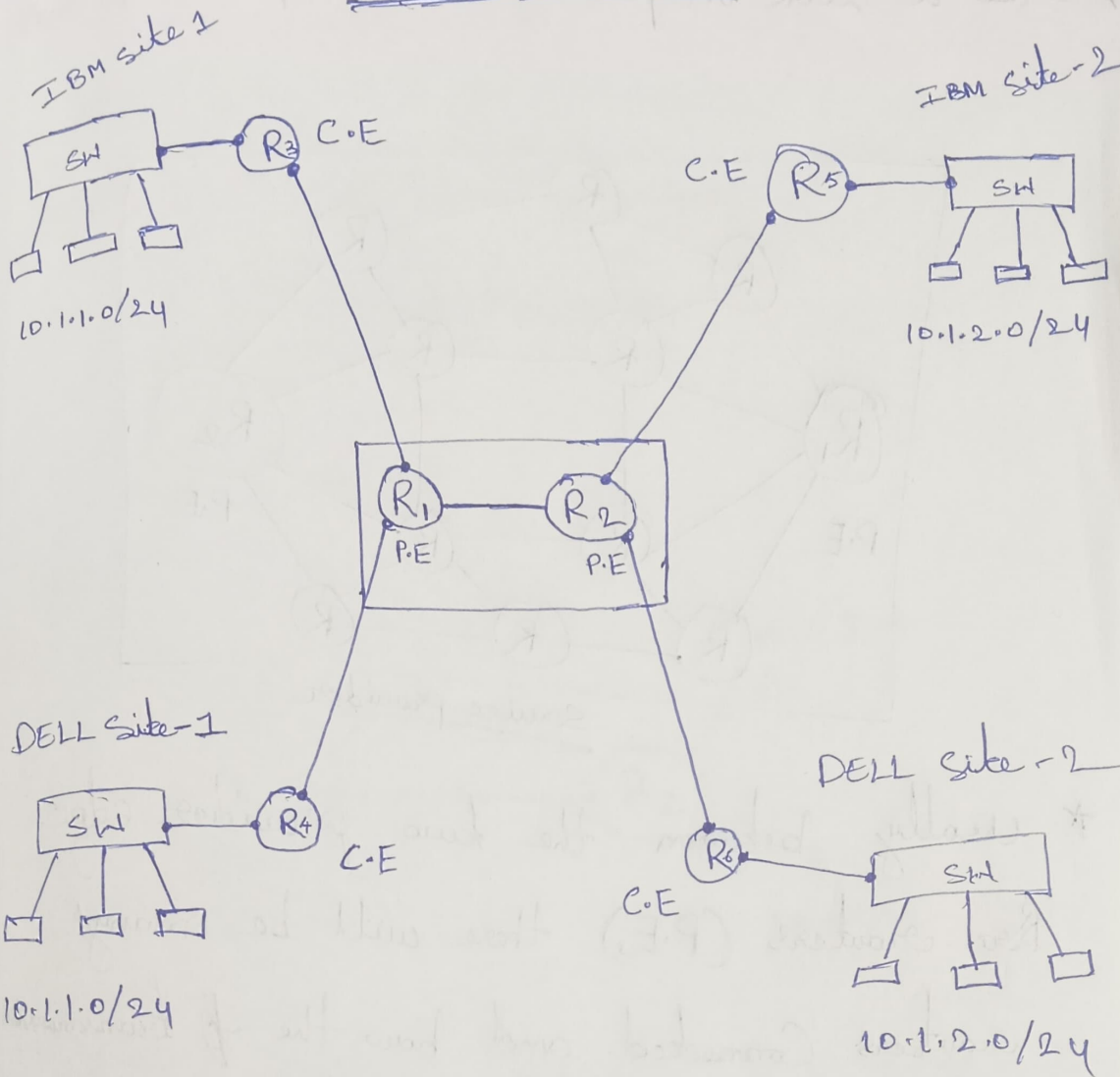
Customer A: using private IP: 10.1.1.0

Customer B: using private IP: 10.1.1.0

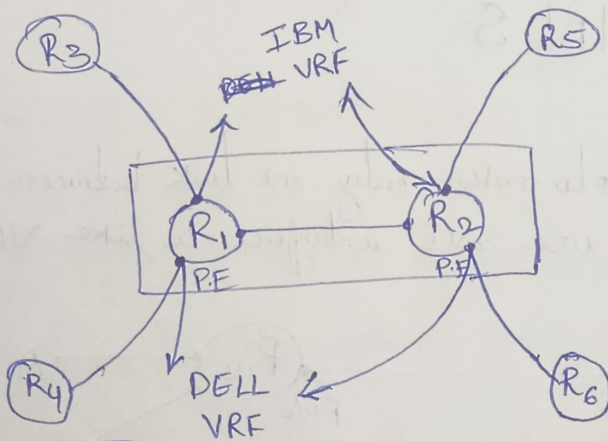
Now, these two Customers are going to Communicate with each other over service provider network.

Now, how these two customer ~~networks~~ ^{networks} are differentiated by the Service provider is by using VRF.

VRF Example Topology



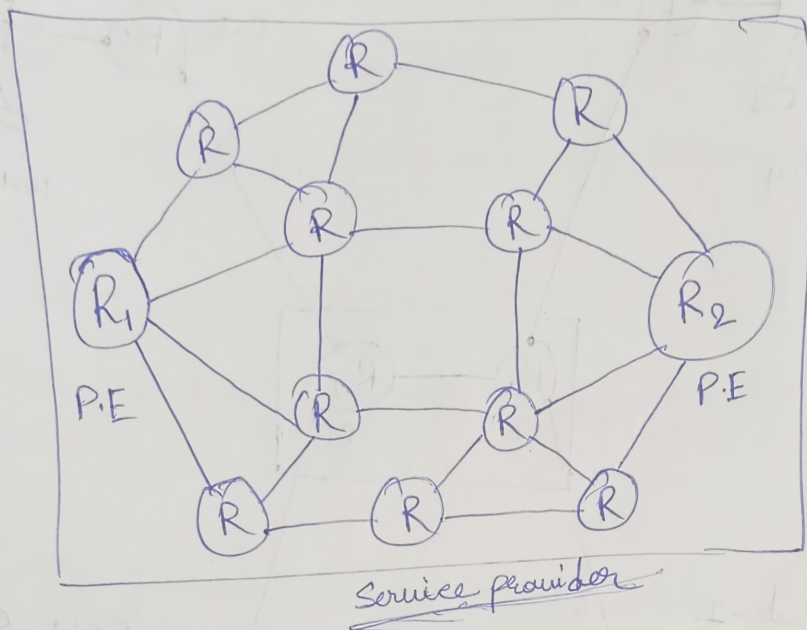
→ Let us simplify the above diagram



R1 - PE	
IBM VRF	DELL VRF
Site 1	Site 1

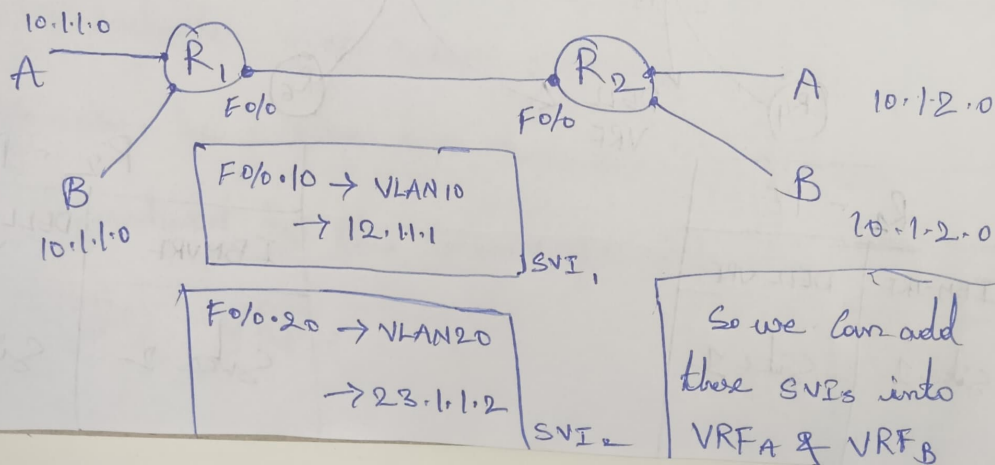
R2 - PE	
IBM VRF	DELL VRF
Site 2	Site 2

* take a look on practical service provider



* usually between the two provider edge routers (P.Es) there will be many routers connected and how the transmission takes place from R_1 to R_2 is taken care by MPLS

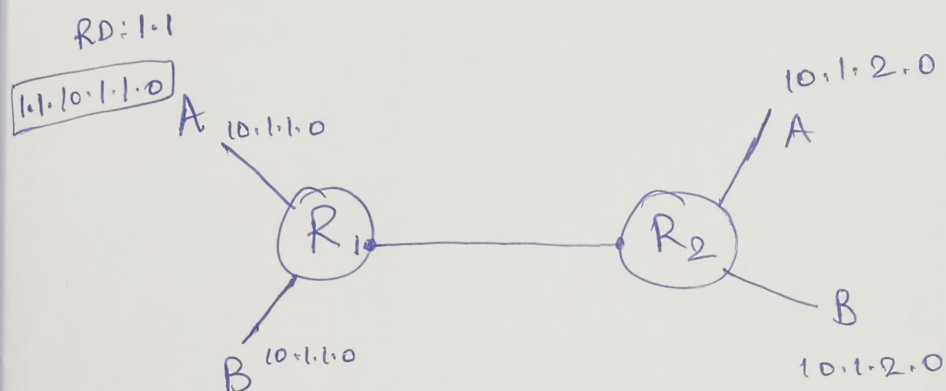
* if we want to make only one link between P.E & P.E then we should use SVI interface as like VLANs



* But, in realtime if we have only one link between PE (R₁) & PE (R₂).

→ we can do with R.D value

RD → Route-distinguisher



$$\boxed{\text{RD} + \text{IP addresses}} = \text{VPNv4} \Rightarrow 96\text{-bits}$$

R.D \Rightarrow 64 bit

IPv4 \Rightarrow 32 bit

} 96-bits

* So, now the VPNv4 is of 96 bits and to route this 96 bits of data normal BGP is not suitable

* Normal BGP can route only till 32 bit prefix

* So, to achieve this, there will be ~~one~~ one more BGP called MP-BGP.