

Usecase

- 1. Double NAT
- 2. Destination NAT
- 3. Source NAT
- 4. Hairpin NAT
- 5. NAT Exception

Port/general  
bridge

router  
tunnel

New HOSTIF attribute  
TRAP\_SNAT\_MISS  
TRAP\_DNAT\_MISS  
TRAP\_HAIRPIN\_MISS

New Switch attribute  
GLOBAL\_NAT\_en/dis

New RIF attribute  
IN\_ZONE\_id

Ingress ZONE table  
{  
  match :  
    ingress\_rif  
  action :  
    set\_in\_zone(zone)  
  default :  
    set\_default\_zone  
}

Ingress VRF table  
{  
  match :  
    ingress\_rif  
  action :  
    set\_vrf(VRF)  
  default :  
    drop  
}

ACL + Trap table  
match :  
  GLOBAL\_NAT\_en  
  VRF  
  SIP/SPORT  
  DIP/DPORT  
  PROTO  
action :  
  NO\_NAT\_en/dis  
  ZONE\_CHECK\_en/dis  
default :  
  NAT

SNAT&DNAT  
{  
  match :  
    VRF  
    dip  
    dport  
  sip  
  sport  
  ip\_proto  
  action :  
    set(sip,sport.dip,dport)  
}

DNAT  
{  
  match :  
    VRF  
    dip  
    dport  
  ip\_proto  
  action :  
    set(dip,dport)  
    set(nop)  
  default :  
    trap\_id\_dnat\_miss  
}

Increment  
DBL NAT\_HIT  
Counter

ACL + Trap table  
Policy Based Forwarding

Router table  
{  
  match (LPM) : ingress\_vrf,dst\_ip(prefix)  
  action : ---{trap,copy\_to\_cpu,forward,drop}  
    {Set\_next\_hop\_id,go to table net\_hop}  
    {Set\_next\_hop\_group\_id,  
      go to table next\_hop\_group}  
  {set\_out\_zone: OUT\_ZONE\_id}  
  default :  
    drop  
}

Next hop group table  
{  
  match :  
    next\_hop\_group,hash\_val  
  action :  
    {set\_egress\_rif(ERIF),  
      set\_nh\_dstip(packet.dst\_ip)}  
    {Set\_next\_hop\_id,  
      go to table net\_hop}  
  default :  
    drop  
}

Next hop table  
{  
  match :  
    next\_hop  
  action :  
    {set\_egress\_rif(ERIF),  
      set\_nh\_dstip(packet.dst\_ip)}  
    {set\_nh\_dstip(NH\_IP),  
      set\_egress\_rif(ERIF)}  
  default :  
    drop  
}

ERIF check table  
{  
  match :  
    ERIF  
  action :  
    check\_ttl(),  
    check\_mtu(),  
    check\_nat\_zone(),  
  default :  
    drop  
}

Neigh table  
{  
  match :  
    egress\_rif,NH\_DstIP  
  action :  
    {trap,copy\_to\_cpu,forward,drop}  
    {Set\_packet.DMAC}  
  default :  
    trap\_to\_cpu  
}

Egress\_L3\_interface table  
{  
  match :  
    ERIF  
  action :  
    {Set\_packet.SMAC,  
      Set\_packet\_VID}//set l2 headr  
  default :  
    drop  
}

Egress RIF

check\_nat\_zone()  
{  
  match :  
    if ((IN\_ZONE\_id == OUT\_ZONE\_id)  
      && (ZONE\_CHECK\_dis)  
    action :  
      trap NAT\_HAIRPIN  
  else if ((IN\_ZONE\_id != OUT\_ZONE\_id)  
    action :  
      trap DNAT\_MISS  
}

SNAT  
{  
  match :  
    VRF  
    sip  
    sport  
  ip\_proto  
  action :  
    set(sip,sport)  
    set(nop)  
  default :  
    trap SNAT\_MISS  
}

Increment  
SNAT\_HIT  
Counter

Increment  
NATH\_HAIRPIN  
Counter

Increment  
DNAT\_MISS  
Counter

Increment  
SNAT\_MISS  
Counter

HostIF Trap