L3 HA

- Gateway Load Balancing Protocol
  - Cisco Propriatery
    - Sup 2 / 720 only
  - methodes
    - Round Robin
    - Weighted
    - Host dependent
  - Group
    - 0-1023
  - Priority
    - 1-255
    - default 100
  - Roles
    - no preempt default
    - Active Virtual Gateway
      - answers ARP Requests
      - up to 4 virtual MACs
      - Assigns Virtual MACs to AVFs
      - 007.b4 + Group ID + FWd Nr
    - Active Virtual Forwarder
    - Secondary Virtual Forwarder
  - Hello
    - sent between AVR + others
    - 3s default
    - 1-60s | 50-60000ms
    - holdtime
      - 10s default
      - <180s
  - Config
    - (int) glbp #g ip #ip
    - (int) glbp #g priority #p
    - (int) glbp #g preempt [delay minimum #s]
    - (int) glbp #g timers [msec] #helo [msec] #hold
    - (int) glbp #g timers redirect #red #timeout
    - (int) glbp #g load-balancing [roud-robin | wighted | host-dependent]
      - redirect
        - keep MAC running
        - 600s
      - timeout
        - keep MAC actice
        - 18h
  - verify
    - sh glbp [brief]
- VRRP
  - Group
    - 0-255
  - Advertisements
    - 224.0.0.18
    - default 1s
  - Router Stat
    - master
      - Virtual MAC
        - 0000.5e00.01+Group ID
    - backup
    - preempt default
  - Priority
    - 1-254
    - 100 default
  - config
    - (int) vrrp #g ip #ip
    - (int) vrrp #g priority #p
    - (int) vrrp #g timers advertise [msec] #s
    - (int) vrrp #g timers learn
      - sync timers
    - (int) no vrrp #g preempt [delay #s]
    - (int) vrrp #g authentication #key
- HSRP
  - Groups
    - 0-255
    - mac 16 different Numbers
    - per Interface
  - Router States
    - active
      - Virtual MAC
        - 0000.0c07.ac+Group ID
    - standby
      - monitors hellos
    - listen
    - change only when active goes down
      - use preempt
  - Priority
    - 0-255
    - default 100
    - higher is better
    - higher Int IP
  - Hello
    - 224.0.0.2
    - UDP 1985
    - Timers are Synced
    - 1-245s | 15-99ms
      - 3s default
    - holdtimer
      - >=3x Hello
      - 1-255s | 50-3000ms
    - (int) standby #g timers [msec] #hello [msec] #hold
  - config
    - (int) standby #g ip #IP
    - (int)standby #g priority #
    - standby #g preempt [delay [minimum #s] [reload #s]]
      - minimum
        - 0-3600s
        - starts when router is ready again
      - reload
        - after reload
        - 0-3600s
    - (int) standby #g authentication #string
    - (int) standby #g authentication md5 key-string [0 | 7] #string
    - (int) standby #g authentication md5 key-chain #name
    - (int) standby #g track #int [#dec]
      - decrement priority
      - default 10
      - needs preemptino
  - Verify
    - sh standby [brief] [vlan #] [#int]
- Redundant Switching Supervisor
  - Mode
    - Route Processor Redundancy
      - >2min
      - only partialy booted
      - reload every Modul
    - RPR+
      - >30s
      - booted
      - L2+L3 Functions not startet
      - needs same IOS release
    - Statefull Switchover
      - >1s
      - sync config
      - Sync L2 infomation
      - booted+initialized
  - conf
    - ()redundancy
      - (red) mode (rpr | rpr+ | sso)
  - verify
    - sh redundancy states
- Nonstop Forwarding
  - Rebuild Routing Information Base
    - with SSO
  - enable per Protocol
    - (bgp) bgp graceful-restart
    - (eigrp) nfs
    - (ospf) nsf
    - (is-is) nsf