- ipv6
  - routing
    - enable ipv6 routing
      - () ipv6 unicast-routing
      - () ipv6 route #prefc/#length (#nt [#nexthop] [#AD] [tag #tag]
        - need interface if nexthop= link local
      - static
        - AD 1
        - FF02::5/6
          - uses link-local addresses
        - interface Id
          - used instead of Layer 3 Addresses
          - supports ipv4/6
        - () ipv6 router ospf #id
        - (router) router-id #id
        - (int) ipv6 ospf #id area #area
        - config
          - (int-fr) frame-relay map ipv6 #ip #dlci [broadcast]
            - both link local and global address
            - broadcast only for link-locala
      - OSPF
        - sh ipv6 route ospf
        - verify
          - sh ipv6 ospf neighbors
          - sh ipv6 interfaces broef
          - sh ipv6 ospf database
        - multible instances on same link
          - () ipv6 ospf #id area 0 instance #id
        - type 3
          - Interarea prefix
        - type 4
          - interarea router
        - Link LSA
        - type 8
          - Link-Local Scope
            - only flooded on link
          - map global to link-local addresses
        - Intra-Area Prefix LSA
        - type 9
          - ipv6 Network information
        - new LSAs
          - V6
            - ipv6 enabled
          - E
            - external enabled
          - 0 on stub networks
        - Router option bits
          - R
            - transit router
            - (router) area #id no-transit
          - DC
            - hello suppresion
          - MC
            - deprected multicast extension
          - N/P
            - NSSA
          - NT
            - NSSA border router
        - Router LSA bits
          - V
            - virtual link endpoint
          - E
            - ASBR
          - B
            - ABR
      - using ipsec
        - no ike
        - set spi manually
        - (int)ospfv3 encryption ipsec spi #id esp
        - authentication
          - aes-cbc 192 #pass sha1 #pass
          - (int) ospfv3 authentication ipsec #spi md5|sha1 #key
          - (router) area #id authentication ipsec spi #spi md5|sha1 #key
      - redistributing
        - same as ipv4
        - does not take connected routes from enabled interfaces
          - use include-connected
      - different TLVs
        - same topologie for ipv4/pv6
        - single
          - default on IOS XE
          - (router-af) single-topology
        - different topology for ipv4/6
        - topologie modes
          - multi
            - default on IOS XR
            - (router) metric-style wide
            - (router-af) multitopology
          - single topologie
          - learns from multi-topologie tlvs
        - singel-topologie transition
      - ISIS
  - Addressing
    - configuration
      - (int) ipv6 enable
        - enable ipv6 and create link local addr
      - (int) ipv6 address #ip/#length
      - [link-local | anycast]
      - (int)ipv6 address autoconfig
      - (int) ipv6 address dhcp
      - (int) ipv6 address #prefix/length#
      - eui-64
    - unicast
      - FE80::/10
        - bits 11-64 default 0
        - link local
          - used be NDP
          - as next-hop
          - not routed
      - FE9 - FEB
      - 2000 + 3000
      - 2000::/3
        - global unicast
      - FD00::/8
        - unique local
          - private addresses
      - pseudo random
        - + 40bit Global ID
      - ::1/128
        - loopback
      - ::/128
        - unspecfied
      - host all 0
        - subnet router anycast
    - EUI-64
      - split MAC-Address
      - insert FF.FE
      - U/L bit
        - 7th bit(l2r)=1
    - host address assignment
      - multicast FF02::1:2
        - like ipv4 DCHP
      - stateful DHCP
        - Gateway via NDP
        - Prefix via NDP
      - statelessautoconfiguration
        - Host part via EUI-64
        - DNS via DHCP
      - static configuration
      - static configuration with EUI-64
    - prefixes
      - any bits after prefixlenght are 0
      - assigned to a costumer
      - global unicast
        - site prefix / global routing prefix
        - first 48 bit
        - last 16bits of Prefix
          - Site Level Aggregator (SLA)
      - normally 64 bit
      - interface ID / host part
        - 7th bit
        - U/L bit
          - 0 administratiy
          - 1 globally uniq
    - Verify
      - sh ipv6 interface
        - local route for each Interface IP
      - sh ipv6 route
        - like MAC-table
      - sh ipv6 neighbors
        - list cached RAs
      - sh ipv6 routers