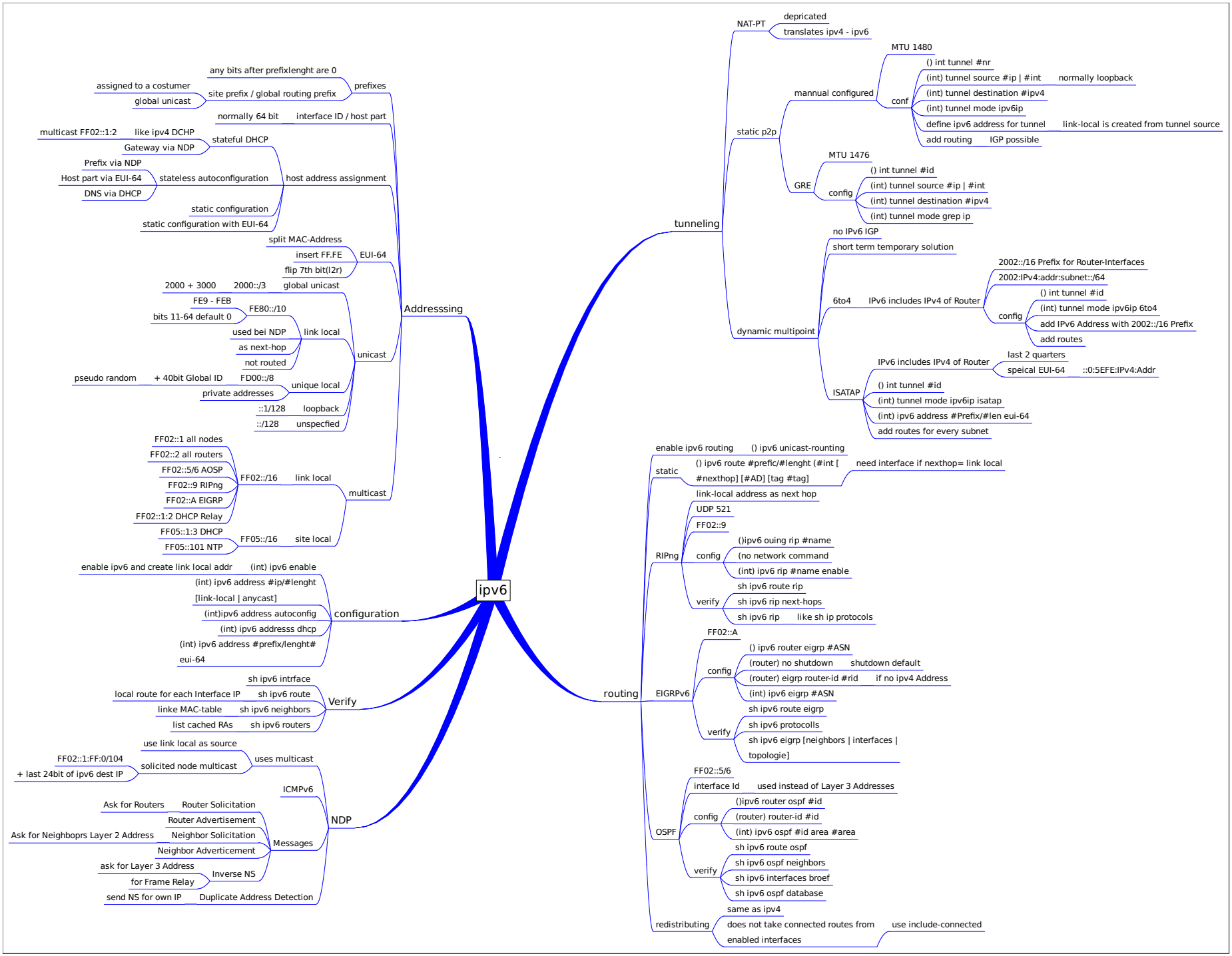
ipv6
Addresssing
prefixes
any bits after prefixlenght are 0
site prefix / global routing prefix
assigned to a costumer
global unicast
interface ID / host part
normally 64 bit
host address assignment
stateful DHCP
like ipv4 DCHP
multicast FF02::1:2
Gateway via NDP
stateless autoconfiguration
Prefix via NDP
Host part via EUI-64
DNS via DHCP
static configuration
static configuration with EUI-64
EUI-64
split MAC-Address
insert FF.FE
flip 7th bit(l2r)
unicast
global unicast
2000::/3
2000 + 3000
link local
FE80::/10
FE9 - FEB
bits 11-64 default 0
used bei NDP
as next-hop
not routed
unique local
FD00::/8
pseudo random
+ 40bit Global ID
private addresses
loopback
::1/128
unspecfied
::/128
multicast
link local
FF02::/16
FF02::1 all nodes
FF02::2 all routers
FF02::5/6 AOSP
FF02::9 RIPng
FF02::A EIGRP
FF02::1:2 DHCP Relay
site local
FF05::/16
FF05::1:3 DHCP
FF05::101 NTP
configuration
(int) ipv6 enable
enable ipv6 and create link local addr
(int) ipv6 address #ip/#lenght
[link-local | anycast]
(int)ipv6 address autoconfig
(int) ipv6 addresss dhcp
(int) ipv6 address #prefix/lenght#
eui-64
Verify
sh ipv6 intrface
sh ipv6 route
local route for each Interface IP
sh ipv6 neighbors
linke MAC-table
sh ipv6 routers
list cached RAs
NDP
uses multicast
use link local as source
solicited node multicast
FF02::1:FF:0/104
+ last 24bit of ipv6 dest IP
ICMPv6
Messages
Router Solicitation
Ask for Routers
Router Advertisement
Neighbor Solicitation
Ask for Neighbopr Layer 2 Address
Neighbor Adverticement
Inverse NS
ask for Layer 3 Address
for Frame Relay
Duplicate Address Detection
send NS for own IP
tunneling
NAT-PT
depricated
translates ipv4 - ipv6
static p2p
mannual configured
MTU 1480
conf
() int tunnel #nr
(int) tunnel source #ip | #int
normally loopback
(int) tunnel destination #ipv4
(int) tunnel mode ipv6ip
define ipv6 address for tunnel
link-local is created from tunnel source
add routing
IGP possible
GRE
MTU 1476
config
() int tunnel #id
(int) tunnel source #ip | #int
(int) tunnel destination #ipv4
(int) tunnel mode grep ip
dynamic multipoint
no IPv6 IGP
short term temporary solution
6to4
IPv6 includes IPv4 of Router
2002::/16 Prefix for Router-Interfaces
2002:IPv4:addr:subnet::/64
config
() int tunnel #id
(int) tunnel mode ipv6ip 6to4
add IPv6 Address with 2002::/16 Prefix
add routes
ISATAP
IPv6 includes IPv4 of Router
last 2 quarters
speical EUI-64
::0:5EFE:IPv4:Addr
() int tunnel #id
(int) tunnel mode ipv6ip isatap
(int) ipv6 address #Prefix/#len eui-64
add routes for every subnet
routing
enable ipv6 routing
() ipv6 unicast-rounting
static
() ipv6 route #prefic/#lenght (#int [
#nexthop] [#AD] [tag #tag]
need interface if nexthop= link local
link-local address as next hop
RIPng
UDP 521
FF02::9
config
()ipv6 ouing rip #name
(no network command
(int) ipv6 rip #name enable
verify
sh ipv6 route rip
sh ipv6 rip next-hops
sh ipv6 rip
like sh ip protocols
EIGRPv6
FF02::A
config
() ipv6 router eigrp #ASN
(router) no shutdown
shutdown default
(router) eigrp router-id #rid
if no ipv4 Address
(int) ipv6 eigrp #ASN
verify
sh ipv6 route eigrp
sh ipv6 protocolls
sh ipv6 eigrp [neighbors | interfaces |
topologie]
OSPF
FF02::5/6
interface Id
used instead of Layer 3 Addresses
config
()ipv6 router ospf #id
(router) router-id #id
(int) ipv6 ospf #id area #area
verify
sh ipv6 route ospf
sh ipv6 ospf neighbors
sh ipv6 interfaces broef
sh ipv6 ospf database
redistributing
same as ipv4
does not take connected routes from
enabled interfaces
use include-connected