

# A Optimal Load-balance mechanism for NAT64 (OL-NAT)

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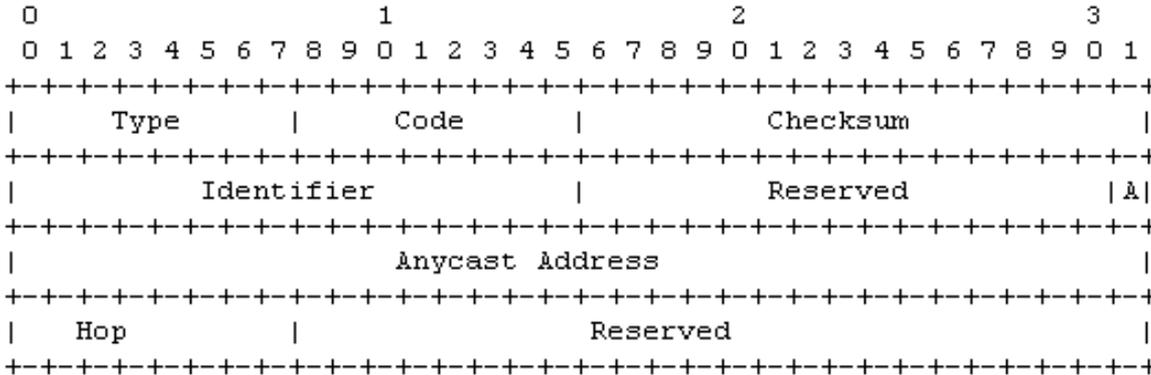
# What's problems we want to resolve

- Deployment of large-scale network and growth of data traffic could result in a single-point failure of NAT64
- Load-balance based on routing metrics might lead to unbalanced load distribution. For example, the traffic is always led to the NAT64 which has minimum distance from source to GW
- Multiple NAT mechanism is still restrained by a static configuration and localized mapping information

# How to overcome the problems

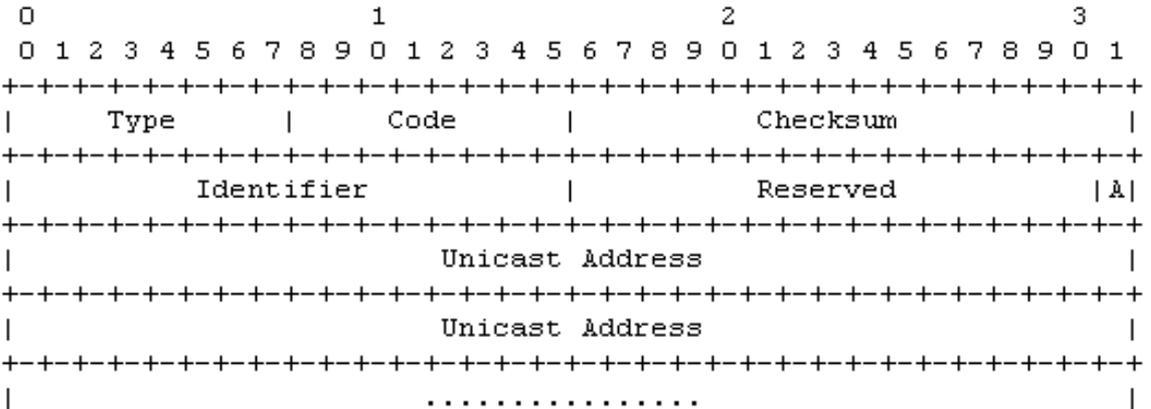
- A extended anycast load-balance mechanism is proposed to discover the optimum NAT64 and avoid single-point failure problem
  - NAT64 load status combining with routing distance metrics are adopted to perform the selection of optimal NAT64
- New defined ICMP process are used to synchronize the mapping states between different NAT64

# Anycast Load-balance mechanism



- **The flag A** indicates this message is delivered by anycast propagation
- **Anycast address** represents identifier of a bundle of NAT64 equipments
- **Hop** is used to measure the distance from source to destination NAT64

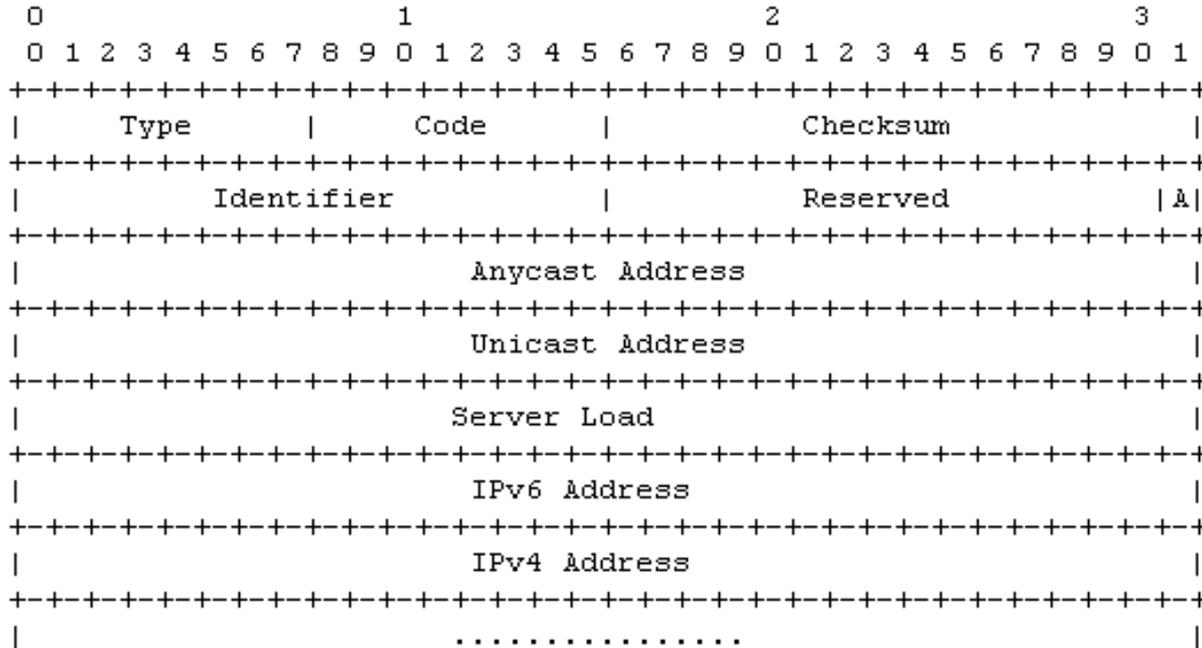
## NAT64 anycast request message



- **A unicast address** is listed in order to show unicast address of respective NAT64
- **The top unicast address** has high priority

## NAT64 anycast response message

# Mapping Information Synchronization

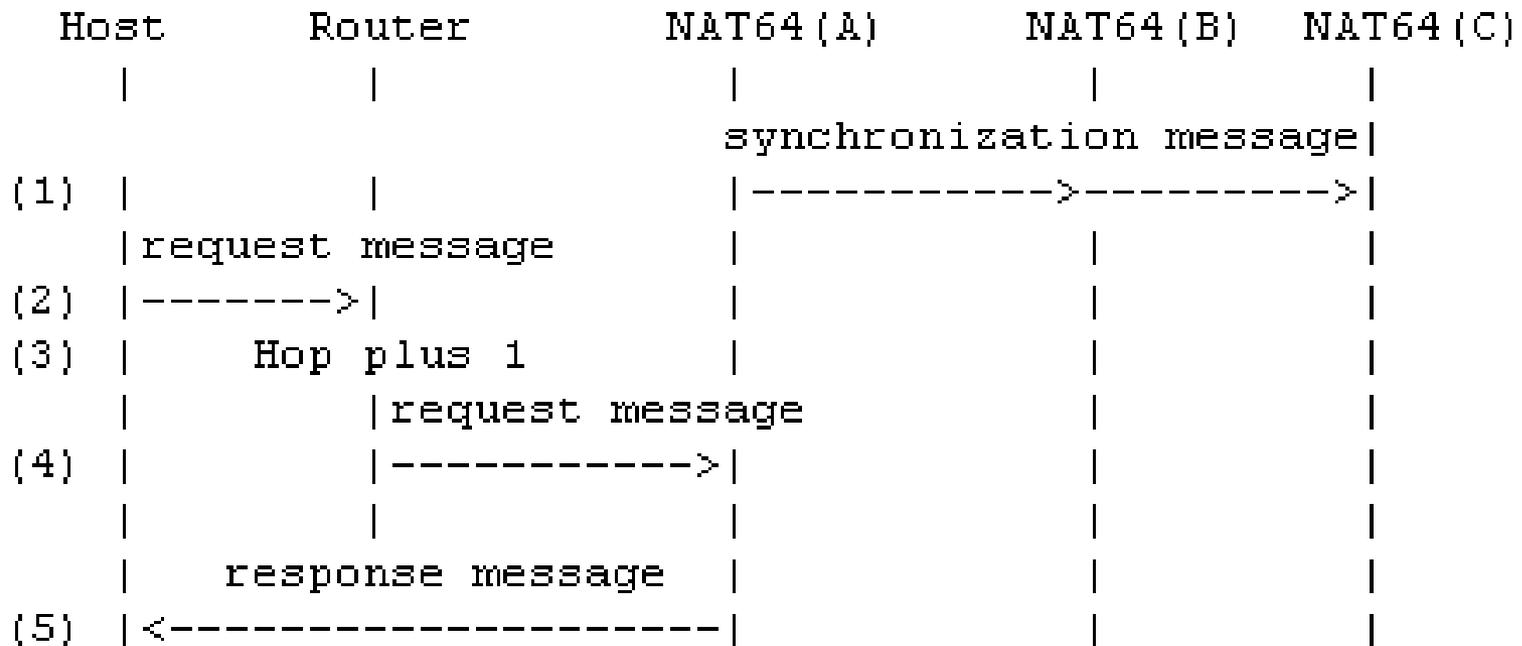


- **Anycast address** represents identifier of a bundle of NAT64 equipments
- **Unicast address** indicate itself network interface address
- **Server load** is to indicate loading status
- **The IPv6 address and IPv4 address fields** are used to carry IP address related mapping information

## NAT64 anycast synchronization message

For memory issues and considerable synchronization traffic, mapping states information could be reduced by constructing a virtual group, which identified by a specific anycast address and multicast address. Depending on that, only NATs within the virtual group are required to share state. Meanwhile, the update traffic could be also decreased.

# Optimal Load-balance Data Flow Description



- 1) Synchronize the mapping information and service load status
- 2) Send a NAT64 anycast request message to discover optimal NAT64
- 3) Update Hop field
- 4) Load information combing with distance to discover the optimal NAT64
- 5) Response the unicast address of optimal NAT64 to the host

**THANKS**