NHRP Applicability Statement

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Related Protocols

NHRP is a generalization of:

1. RFC 1577 Classical IP over ATM,
2. RFC 1209 The Transmission of IP Datagrams over the SMDS Service.

In that NHRP is not confined to a LIS and is not particular to an MBMA technology.

NHRP differs from the Experimental Protocol RFC 1735 NARP

in that NHRP makes use of next hop routing in resolving addresses.

NHRP is specific to IP, but in principle should be applicable to other protocols.

Key Features

Distributed address resolution. NHRP is not a routing protocol, but an inter-LIS address resolution mechanism which may make use of IP routing in reaching the entity containing the address information.

"Augmentation" of IP routing with NBMA features. After IP routing determines a route, NHRP allows the use of NBMA specific features along the routed path.

Advantages of this include:

- ***Cut-through routing***. *Ability to bypass intermediate routers connected by an NBMA network.*
- ***QoS support.*** *When the NBMA network is ATM, NHRP allows the use of QoS guarantees provided by the NBMA network. (Implementation principles TBD).*

One disadvantage of "augmenting" IP routing with NBMA feature is:

- ***Routing loops in Router-Router operation***. *When there is topology change outside the NBMA, NHRP cut-through path may represent stale information.*

Ability to forward along the NHRP request path. Recommended mode of operation, reduces delay.

When to Use NHRP

Ideally, use of NHRP should be application dependent, default being hop-by-hop IP routing.

NHRP can be used in:

- Host-to-host communication.
- Host-to-router communication
- Router-to-host communication.

Cut through route is safe (loop free) in router-to-router communication for example

when the B bit is set in the NHRP reply. Other cases TBD.

An NHRP request can be issued by:

- The originating host with an NBMA interface.
- A router that receives data from its non-NBMA interface and forwards it via its NBMA interface.

Router hierarchy issues.

Protocol Scalability

In the **server mode**, scalability of NHRP is limited.

Each server must be configured with the address groups served by all the other severs in the logical NBMA.

In the **fabric mode**, the scalability of NBMA is similar to the one of established IP routing protocols.