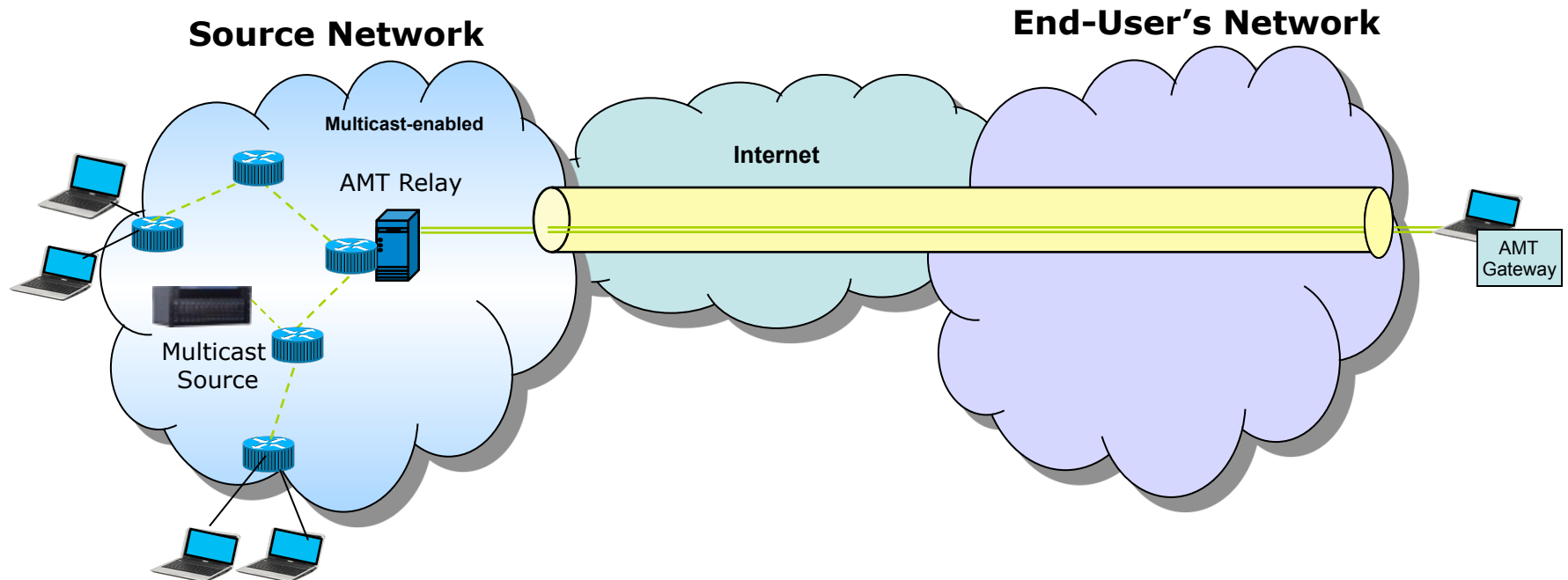


# Proposal for AMT Multicast Source-AMT Connectivity Model For Inter-connected Networks (AS's)

# Anycast Addressing Issue

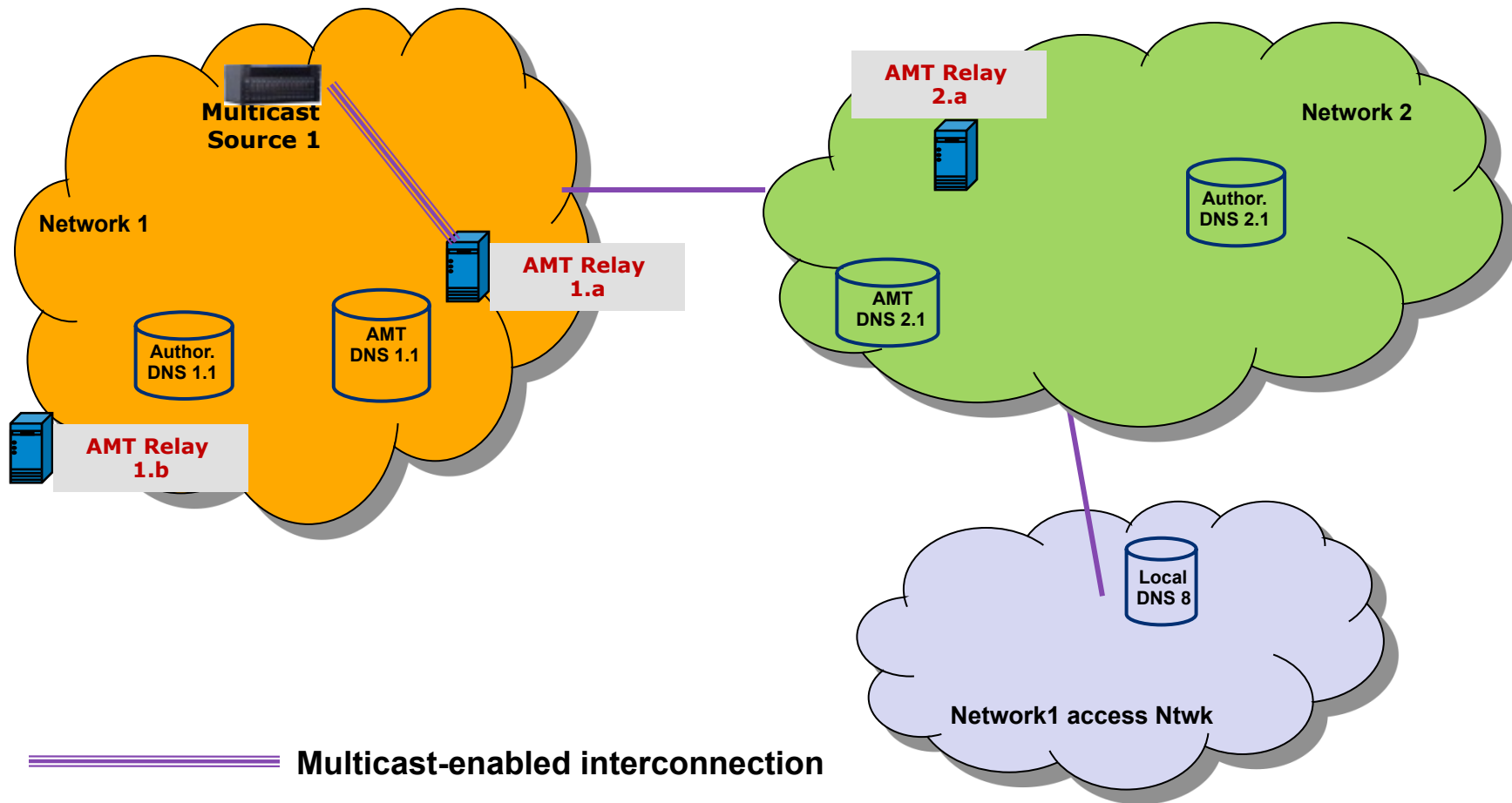
## Problem

- With the existing model for AMT anycast addressing, when an end-user requests multicast content via AMT, the request will be routed to the nearest AMT Relay, which could be in the requestor's local network or any other network.
- For the connection to be successful, the end-user must reach an AMT Relay that has multicast connectivity to the Multicast Source that originates the content.
- If the AMT Relay reached by the end-user does not have multicast connectivity to the source, the result will be a failure to obtain the content via multicast.
- If the AMT Relay reached does have multicast connectivity with the source, but is located in a distant network, in many cases the following highly inefficient AMT tunnel will result.



- A way is needed to route an anycast AMT request to the closest AMT Relay that has multicast connectivity to the requested Source. This could be a local (to the end-user) AMT Relay on another provider's network, or an AMT Relay in the Multicast Source's network, or an AMT Relay in an intermediate network.

# Network Architecture and Connectivity



==== Multicast-enabled interconnection

— Unicast-only interconnection

**Network 1** and **Network 2** networks are internally multicast-enabled

**Network 8 is not multicast-enabled**

# Requirements for Solution

*Only two requirements:*

**1. Each network that has one or more ATM Relays with multicast connectivity to a given source (S1), and that wishes to serve content from that Source, must have “AMT DNS” server that is authoritative for that source domain and**

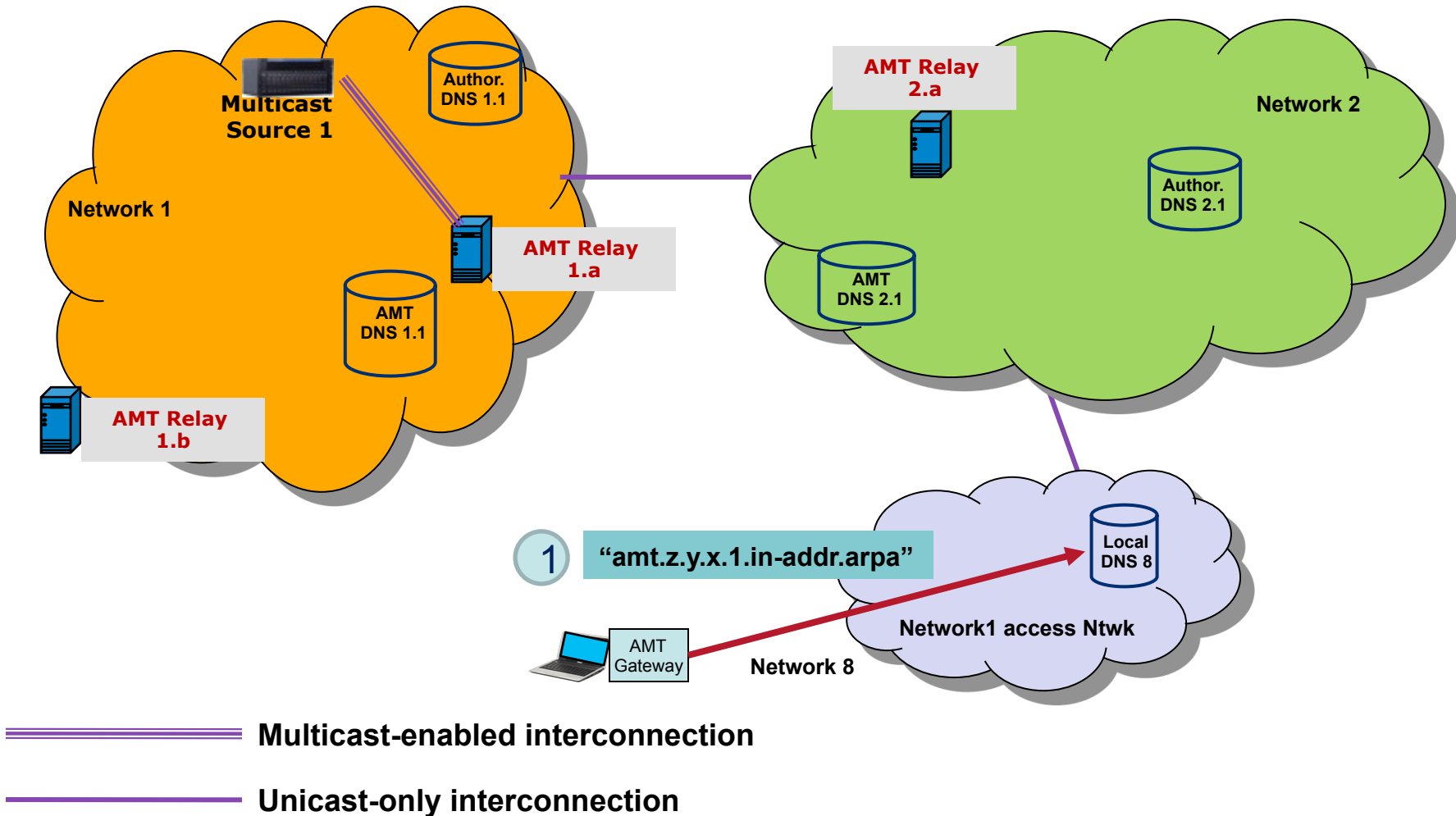
**2. That all such DNS servers be reachable by the same anycast address, and the entries in those AMT DNS servers map to the AMT Relays in their own networks.**

- Instead of seeking the AMT Relay by means a **global** AMT Relay anycast address, the AMT Gateway generates a DNS query of the form “**amt.ReverseS1.in-addr.arpa**”.
- The query to that domain will naturally result in eventual redirection of the DNS query to a DNS server authoritative for the source “S1” that is accessible by AMT.
- As an example of such a query, for a source IP address “a.b.c.d”, the value of “ReverseS1” in the DNS query would be of the form “d.c.b.a”. Typically, the value of “a” will identify the network that hosts the Source.

\* Instead of using the global AMT anycast address

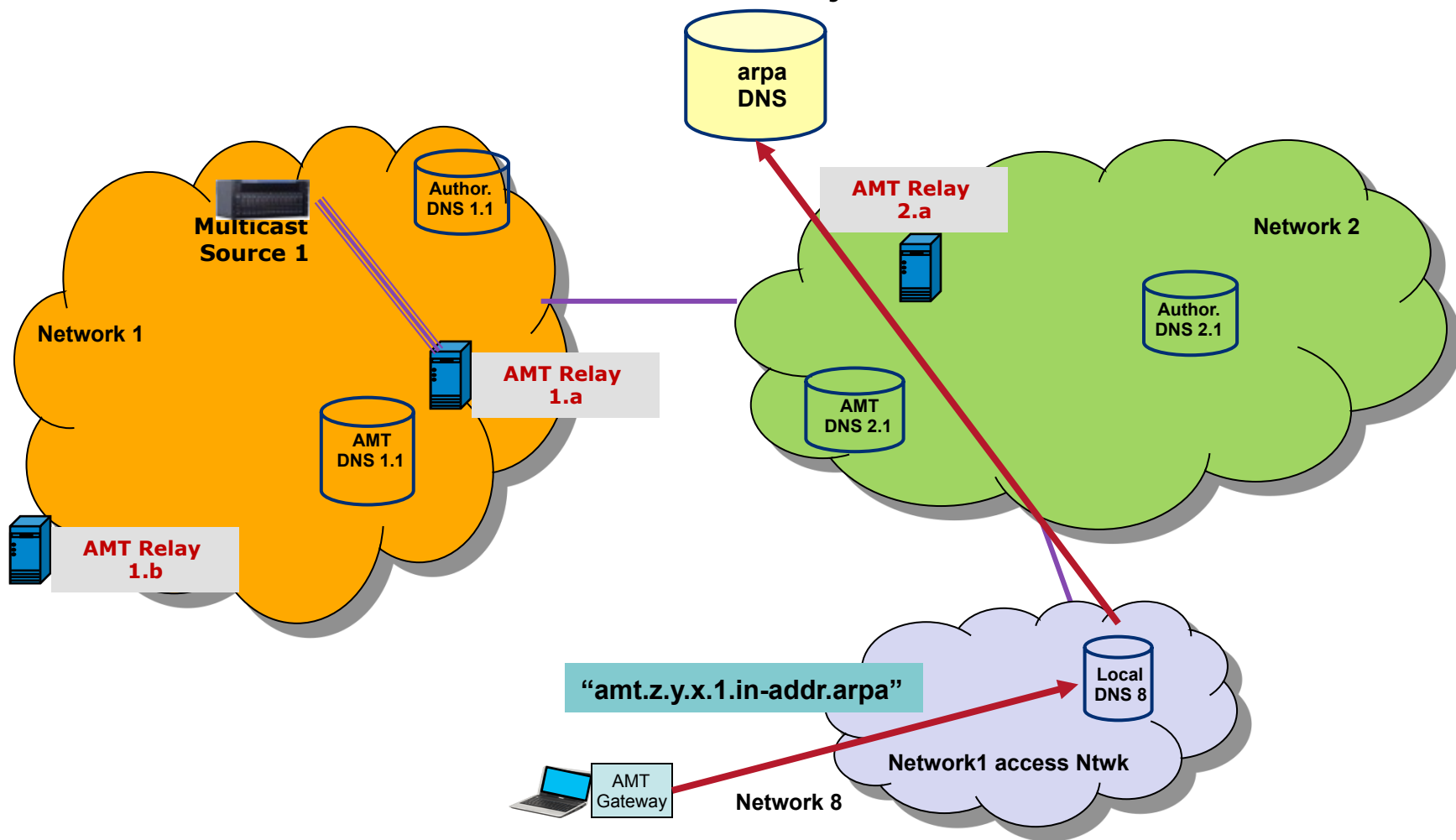
## Example

**End-user application on Network 8 wants content on S1 (1.x.y.z), the AMT Gateway determines it does not have native multicast access to S1, seeks to connect via AMT Relay, constructs DNS query for “amt.z.y.x.1.in-addr.arpa”**



## Example

Local DNS server will not authoritative for the domain. However, local DNS will query the “.arpa” authoritative DNS for the address of the “amt.z.y.x.1” auth DNS

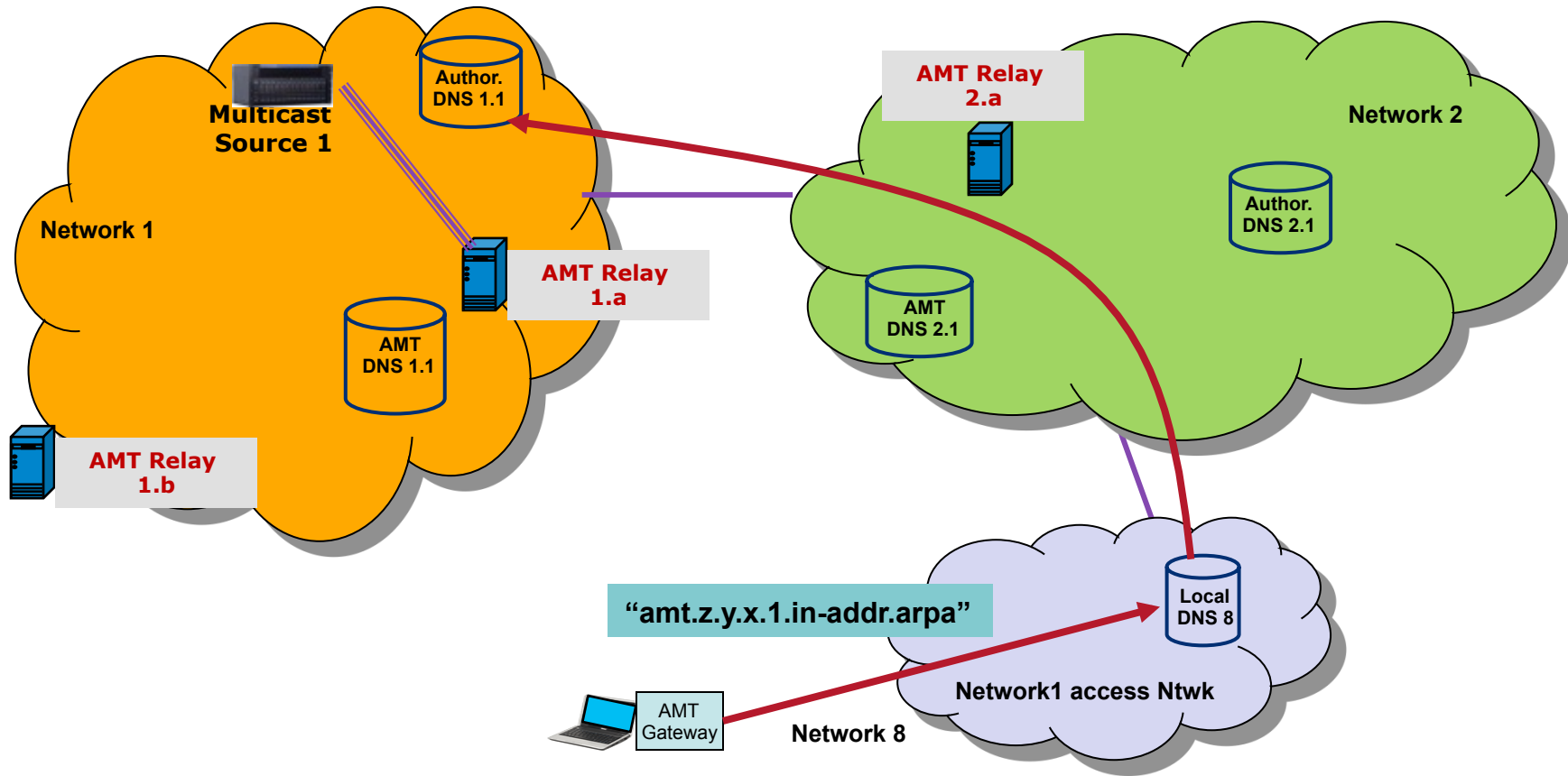


==== Multicast-enabled interconnection

— Unicast-only interconnection

## Example

The “.arpa” authoritative DNS server will be aware of the DNS server authoritative for the network associated with “a”. It thus redirects the local DNS query to that authoritative DNS server (i.e. DNS 1.1).

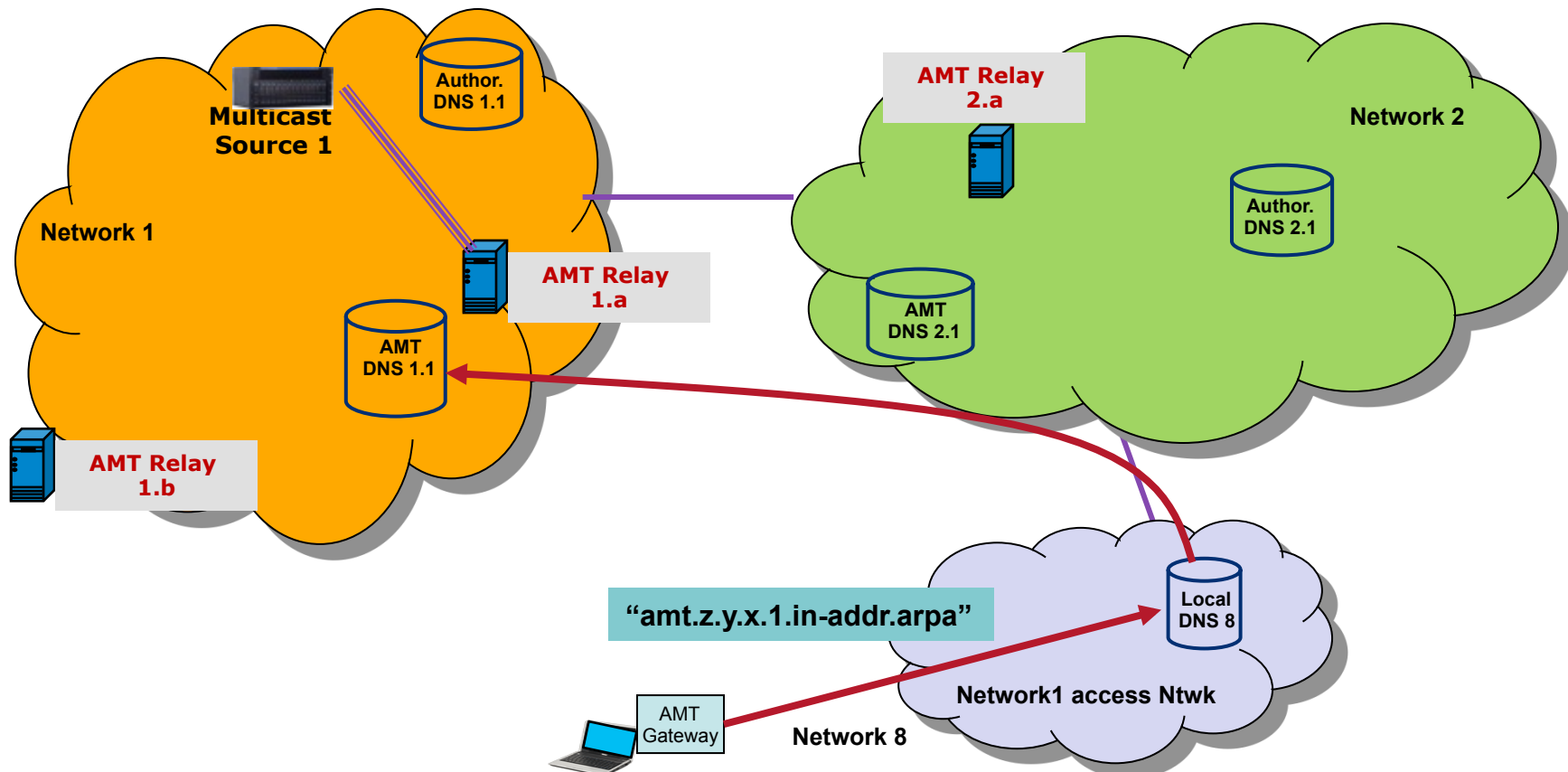


==== Multicast-enabled interconnection

— Unicast-only interconnection

## Example

In turn, the “Network 1” authoritative DNS server redirects the DNS query to the appropriate DNS servers authoritative for the source being sought in the query. Given the appearance of the term “amt” in the query, the DNS record for that entry will have been configured to point to an AMT-specific DNS (which is reachable by an anycast address.)



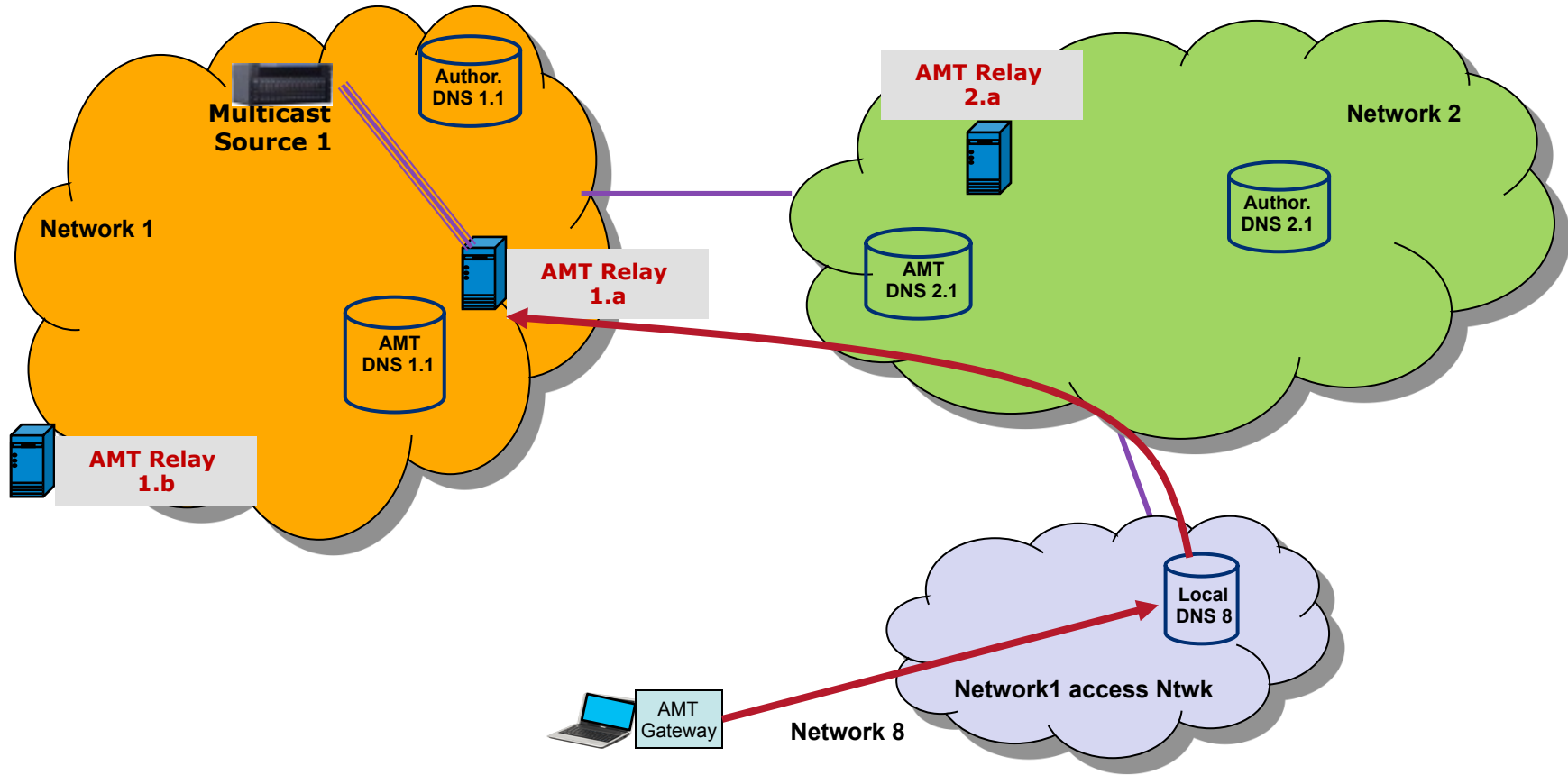
1. The “AMT” DNS that is reached will be resident on a network that has multicast connectivity to the source “S1”. This may be because the source is on that same network, or it may be because that network has multicast interconnection to the network on which the source is located.

2. Because the “AMT” DNS was reached by anycast, that network /DNS is assured to be nearest (in routing metric) to the DNS local to the AMT Gateway.



# Example

**THE AMT DNS Returns the IP Address of its own network's AMT relay.**

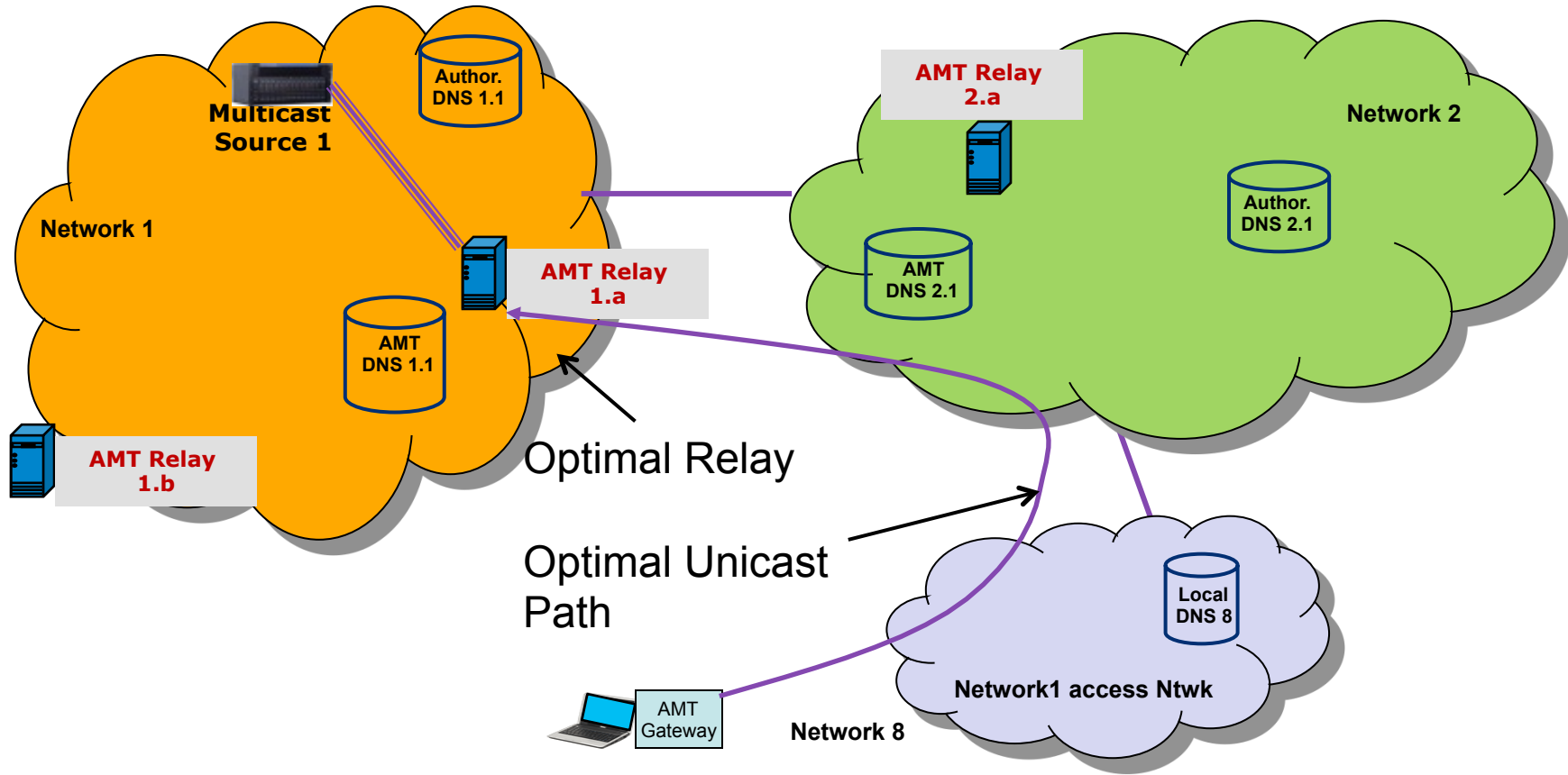


==== Multicast-enabled interconnection

— Unicast-only interconnection

# Example

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==== Multicast-enabled interconnection

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