

draft-nortz-optimal-amt-relay- discovery-00

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Scope of Document

- Develop RFC for finding an optimal AMT Relay via a DNS-based procedure in an SSM multi-network environment, where connectivity between networks may or may not be multicast-enabled.
- Two Requirements:
 - AMT Relay determined by this procedure must have multicast connectivity to Source
 - Maximize multicast portion of path and minimize unicast portion of path
- Optimality Policies/Rules should be flexible:
 - Based on Distance
 - Based on Load
 - Other??

DNS-Based Procedure

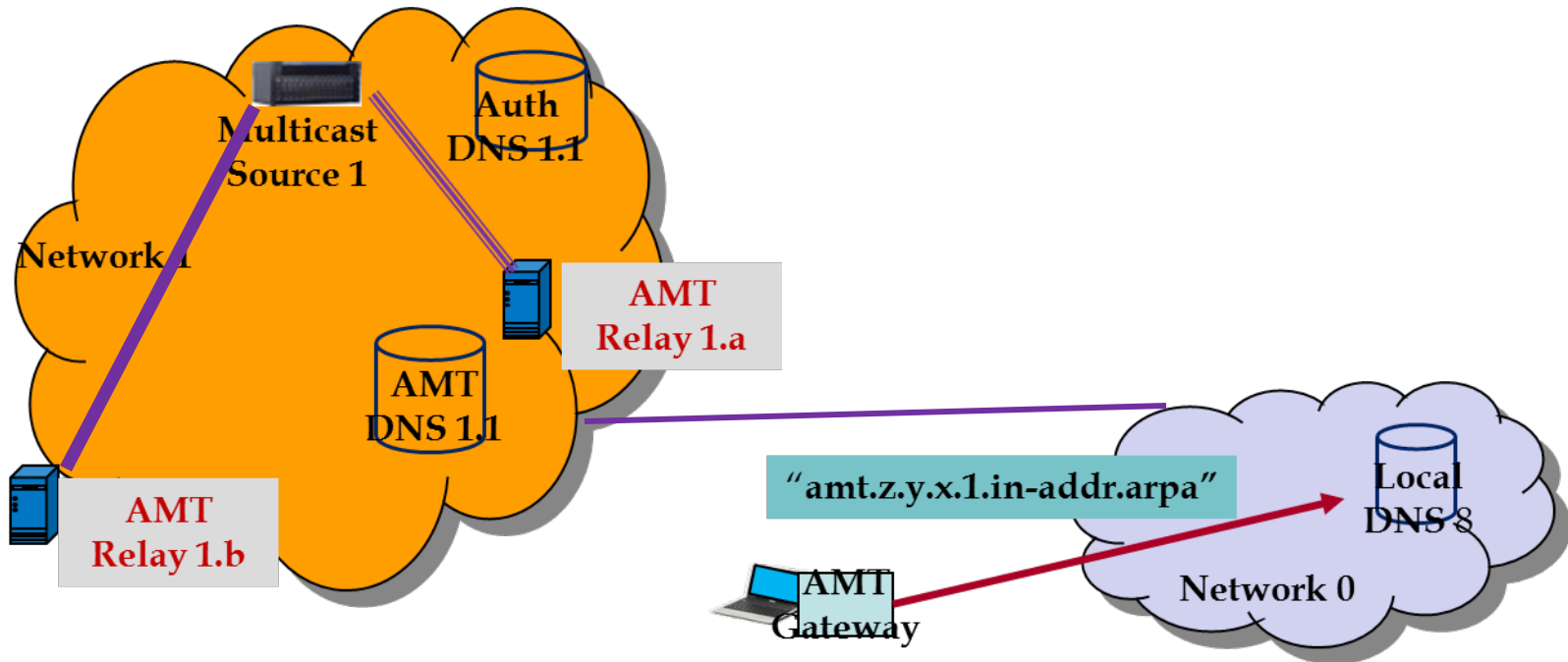
- Two Requirements:
 - Each network that has one or more AMT Relays with multicast connectivity to a given source (S1), and that wishes to serve content from that Source, must have an “AMT DNS” server that is authoritative for that source domain
 - All such DNS servers must be reachable by the same anycast address, and the entries in those AMT DNS servers must map to the AMT Relays in their own networks

- Notes:
 - Instead of seeking the AMT Relay by means of a global AMT Relay anycast address, the End User’s 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.

Illustrative Example

End-user application on Network 0 wants content on S1 (1.x.y.z), the AMT Gateway determines it does not have native multicast access to S1, and so seeks to connect via AMT Relay. Thus it constructs a DNS query for “amt.z.y.x.1.in-addr.arpa”.

Goal is to determine which AMT Relay is optimal by Distance: 1a or 1b??

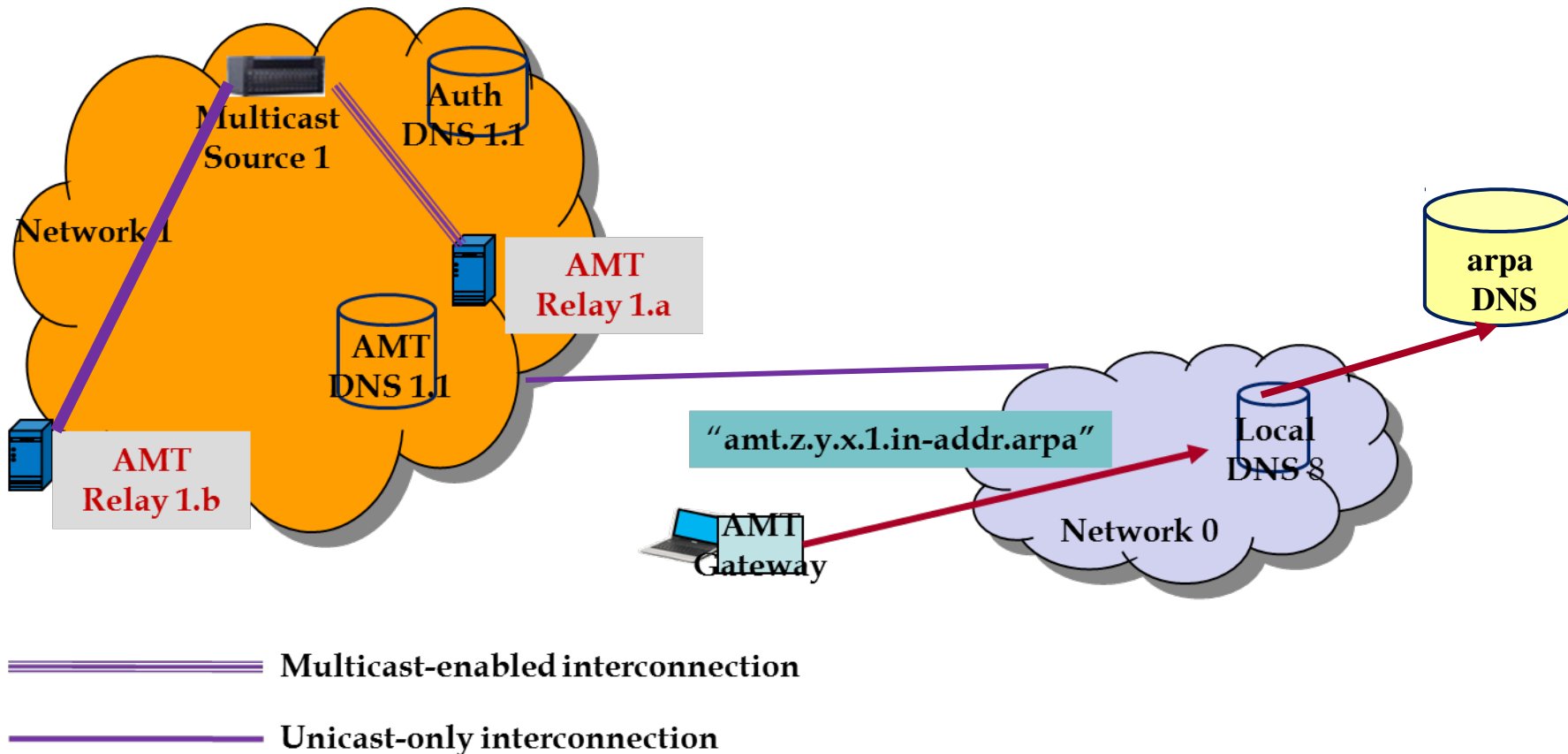


==== Multicast-enabled interconnection

— Unicast-only interconnection

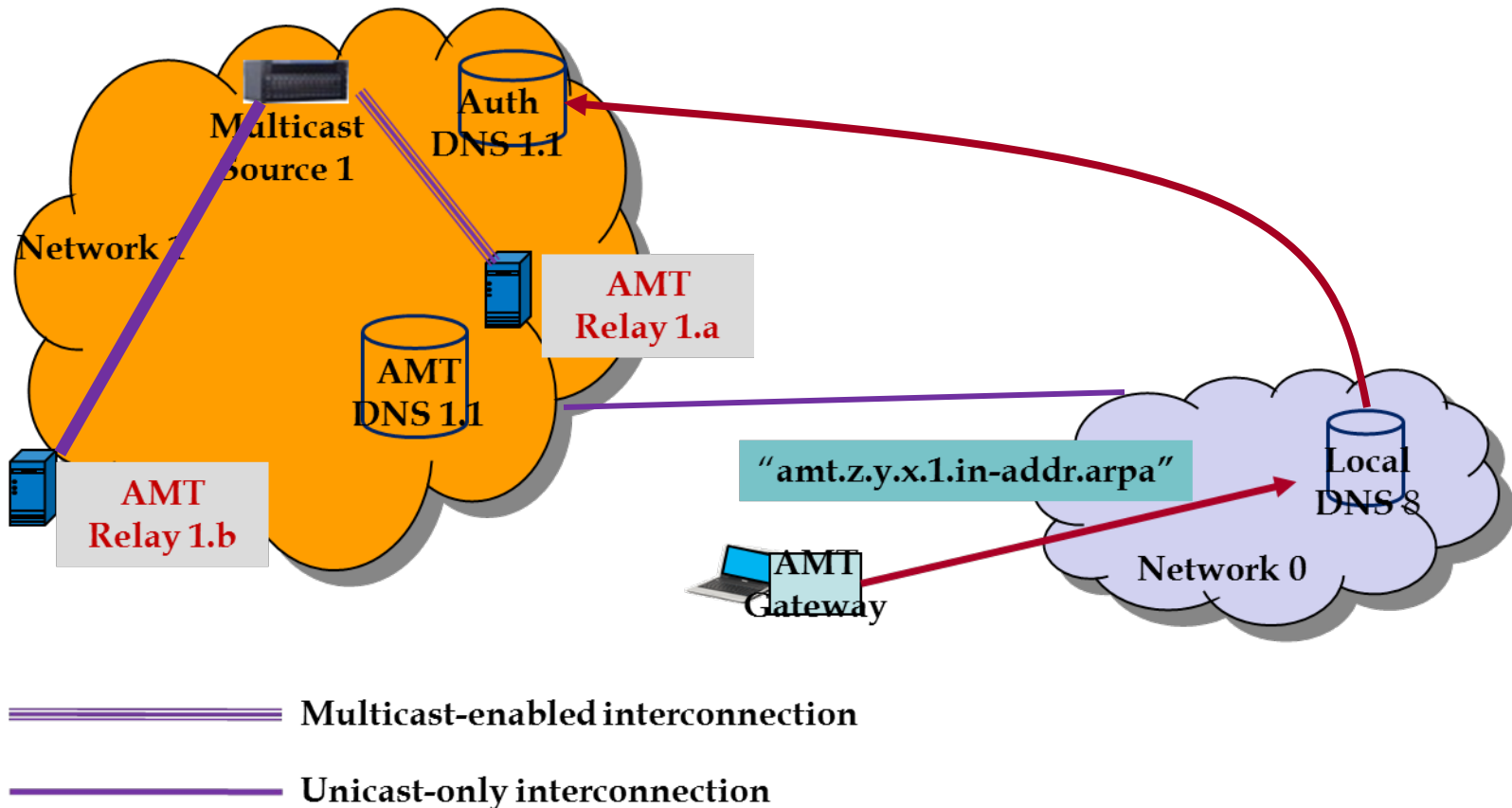
Illustrative Example

Local DNS server is 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



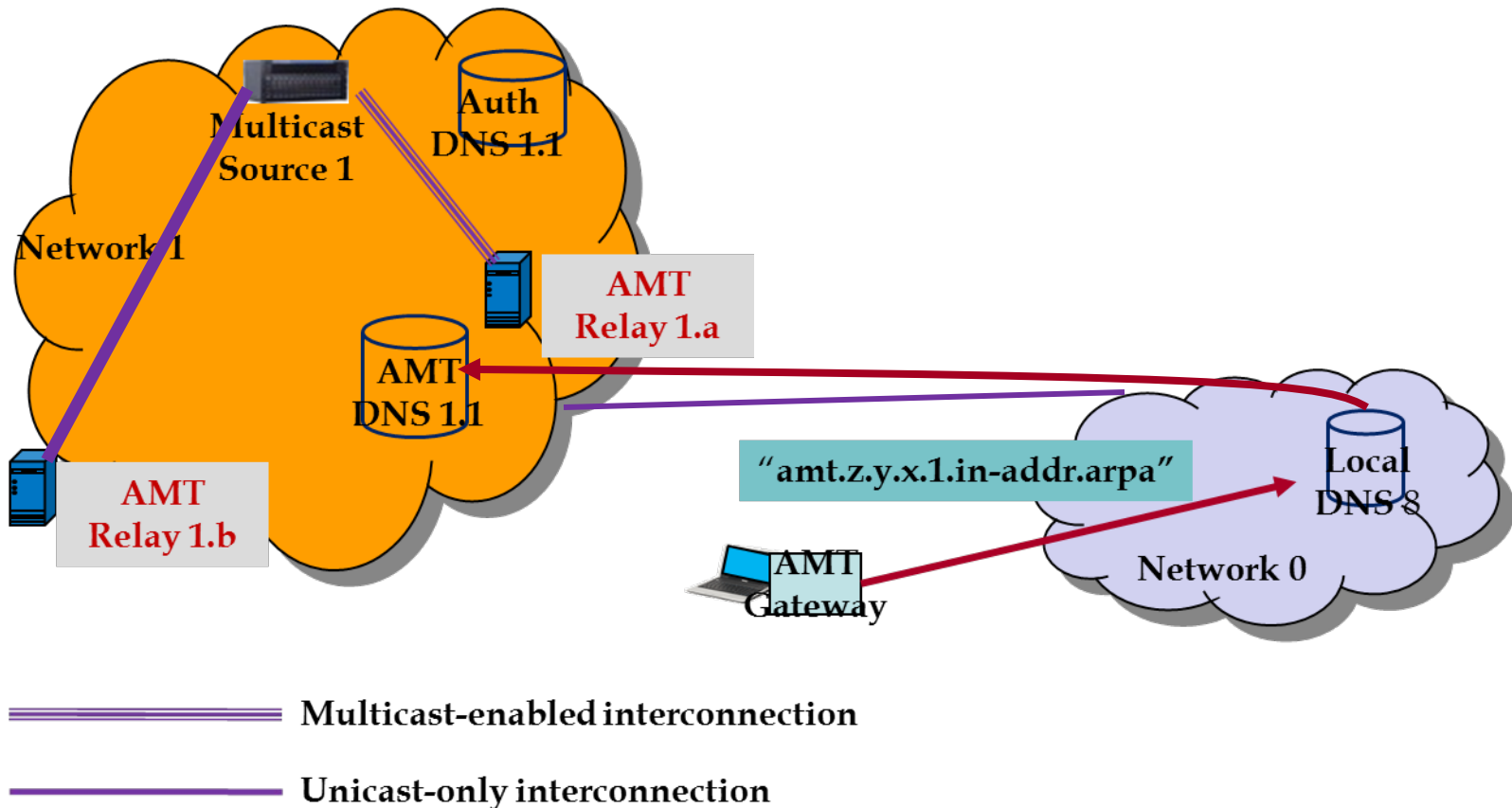
Illustrative Example

The “.arpa” authoritative DNS server will be aware of the DNS server authoritative for the network associated with “1”. It thus redirects the local DNS query to that authoritative DNS server (i.e. DNS 1.1).



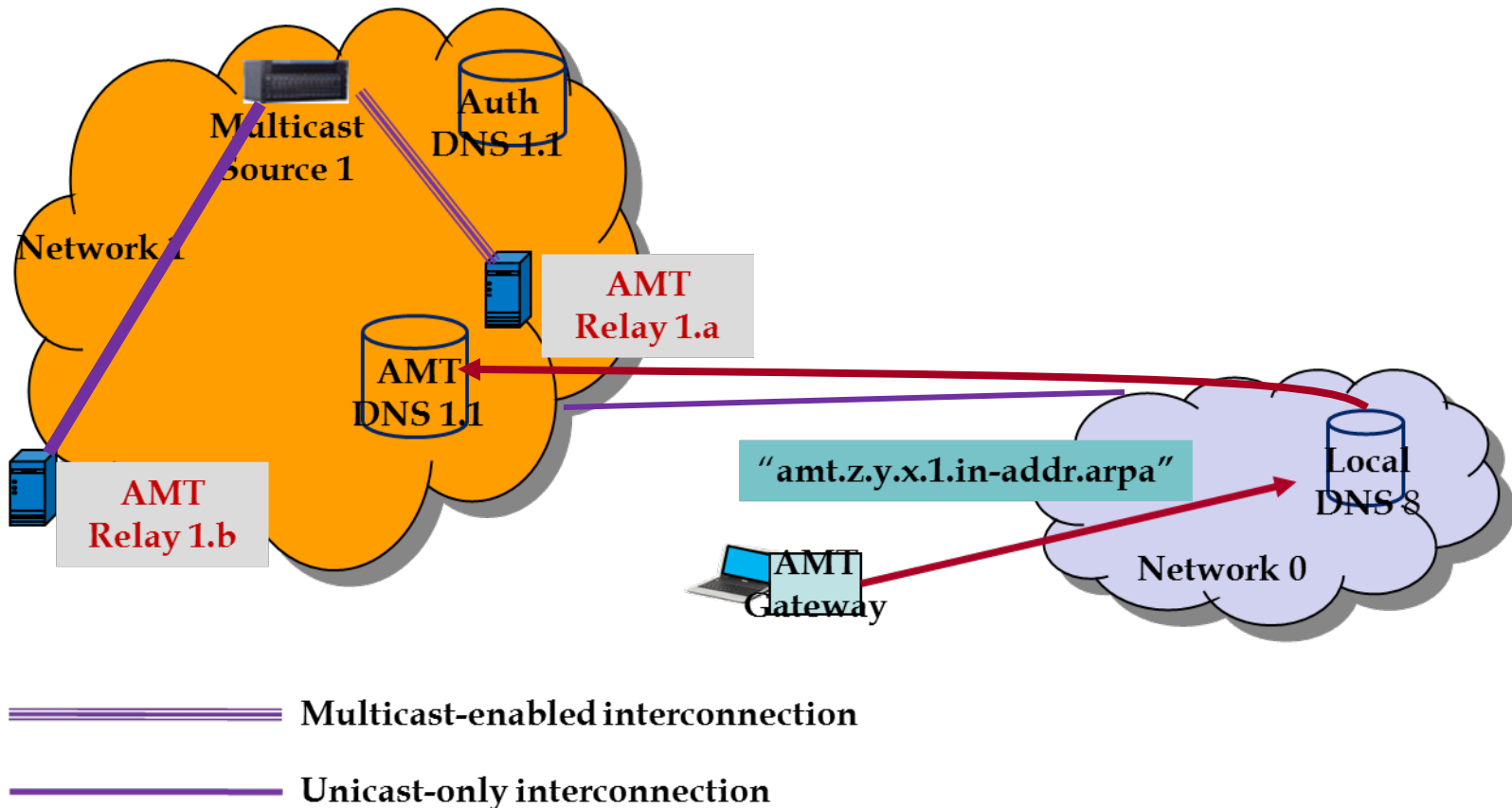
Illustrative Example

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.)



Illustrative Example

THE AMT DNS Returns the IP Address of its own network's AMT relay determined per Policy Rules. In this case, Policy is "Closest Distance". Hence, IP Address of Relay 1.a is returned.



Illustrative Example

The Gateway now has a path to the Optimal Relay and hence the Source 1.

