Easy Selection of QoS

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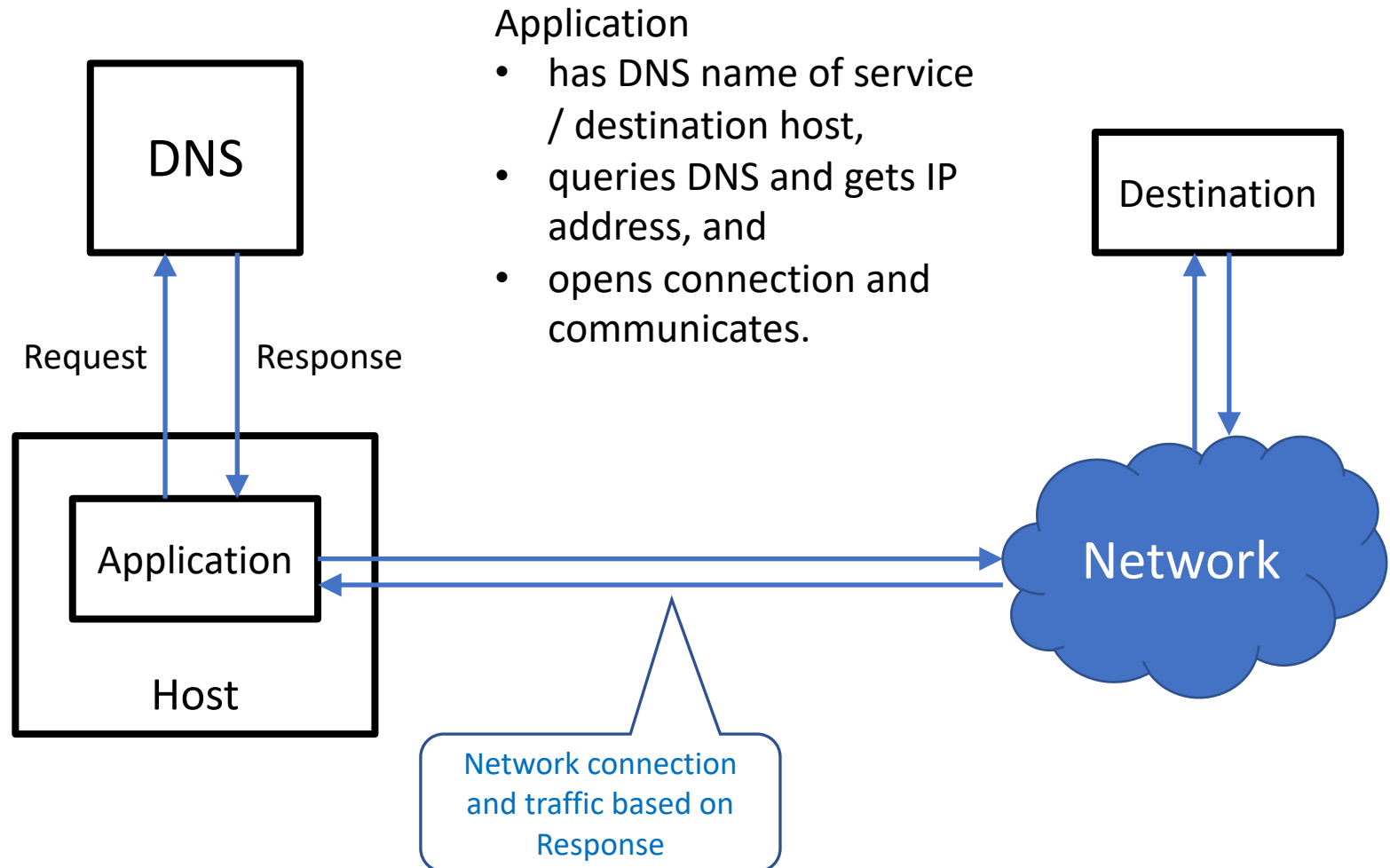
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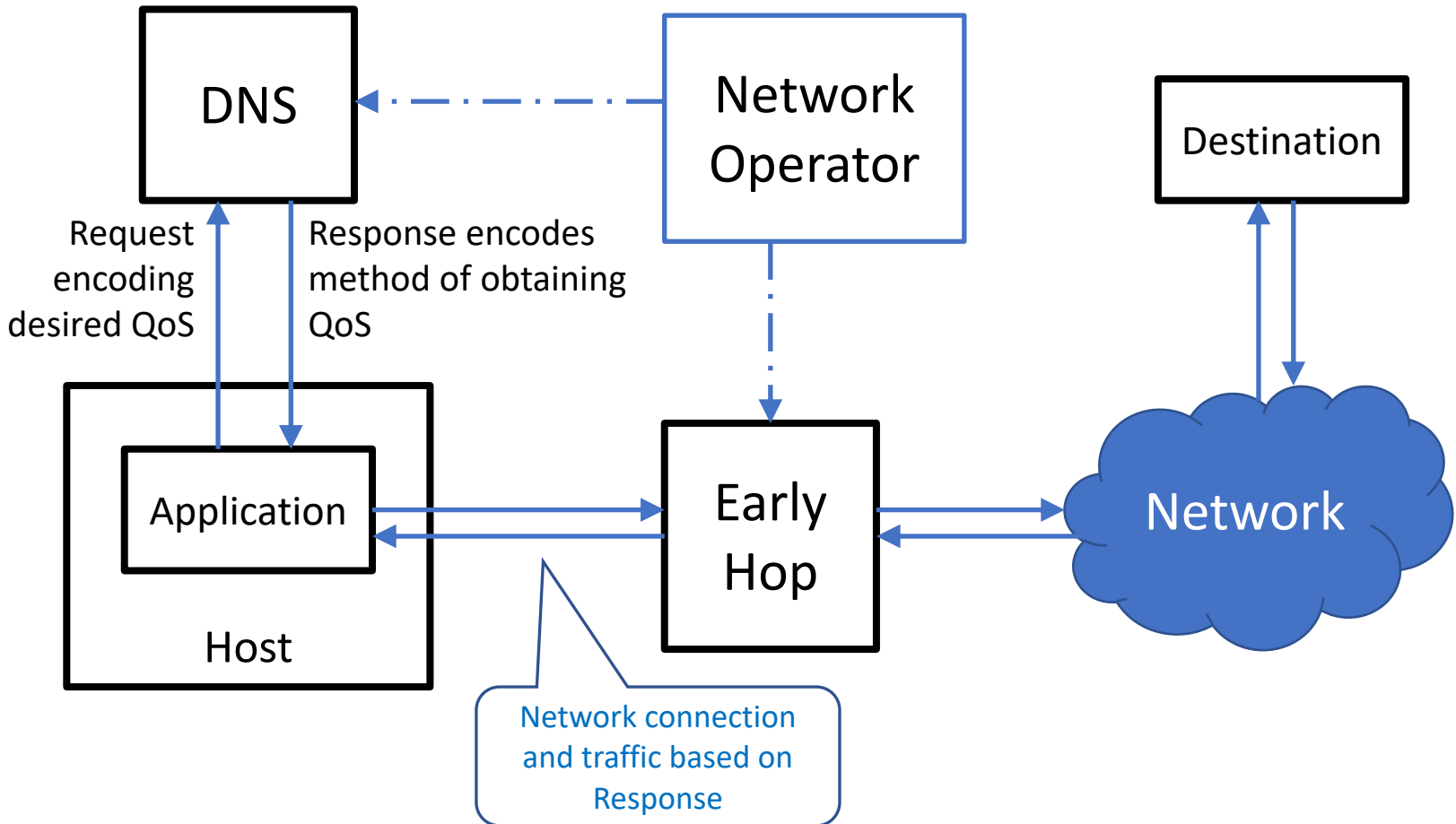
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Goals

- Even a QoS ignorant application using ordinary unmodified APIs can benefit.
  - Get the benefit of signaling the network how to handle traffic through header fields, use of network slicing, …
- No on-the-wire protocol changes.
- More flexibility and QoS control available to applications that understand QoS but continuing to minimize any API changes.

Typical Network Connection

DNS

Application
- has DNS name of service / destination host,
- queries DNS and gets IP address, and
- opens connection and communicates.

Destination

Request   Response

Application

Host

Network

Network connection and traffic based on Response

Network Connection

DNS

Network Operator

Destination

Request encoding desired QoS

Response encodes method of obtaining QoS

Application

Host

Early Hop

Network

Network connection and traffic based on Response

Network Connection (cont.)

- DNS Request encodes desired QoS in the name being queried, probably in a prefix label.
  - draft-eastlake-expressing-qos-requirements
- Response from DNS encodes method of obtaining QoS, for example using some low order IPv6 address bits.
  - draft-farrel-irtf-introduction-to-semantic-routing
- A first/early hop router/switch can select packet header modifications or routing to maximize the chance of achieving desired QoS.
  - Typically useful in a limited domain.

Levels of Application

1. No change.
   - Requires that the application have or be given a DNS name that indicates QoS but otherwise just works.

2. DNS name knowledgeable.
   - Application can construct names that requests communication service quality.

3. New RRtype(s).
   - Application can request information from DNS on setting up and/or conducting the communication.

4. 2 and 3 can be combined.

Types of Communication Service Quality

- Coarse QoS
  - One of:
    - normal, minimize latency, maximize bandwidth, minimize jitter, minimize packet loss, minimize cost, …

- Specific metrics
  - Any subset of:
    - Maximum acceptable latency
    - Minimum acceptable bandwidth
    - Maximum acceptable jittery
    - Maximum acceptable packet loss
    - …

For further information

- Related Drafts
  - draft-eastlake-expressing-qos-requirements
  - draft-farrel-irtf-introduction-to-semantic-routing

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