Draft-lear-httpbis-srvinfo-rr

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Cisco Confidential 1

Problem

- We need a way to upgrade from 1.1 to 2.0

- Some would like to eliminate the first round trip to avoid "Upgrade:"

- Let's not simply move the round trip

MUST do Upgrade

- What is described here is an optimization, and not a full scale alternative

Design goals

- Application protocol version must be discoverable within the DNS

- Transport protocol (e.g., tcp, sctp) information must be discoverable within the DNS

- Performance of the application must not be impacted

- Multiple instances and versions of http should be supported on the same system.

- No new URIs

    (Bus side problem)

Possible Approaches: SRV

- Used by many applications

- Allows for an additional level of redirection

- Target may or may not be in the same zone as the QNAME

    _http._tcp.www.example.com in srv 10 10 49080 foo.bar.com

- _tcp.example.com is often a separate zone for load balancing purposes

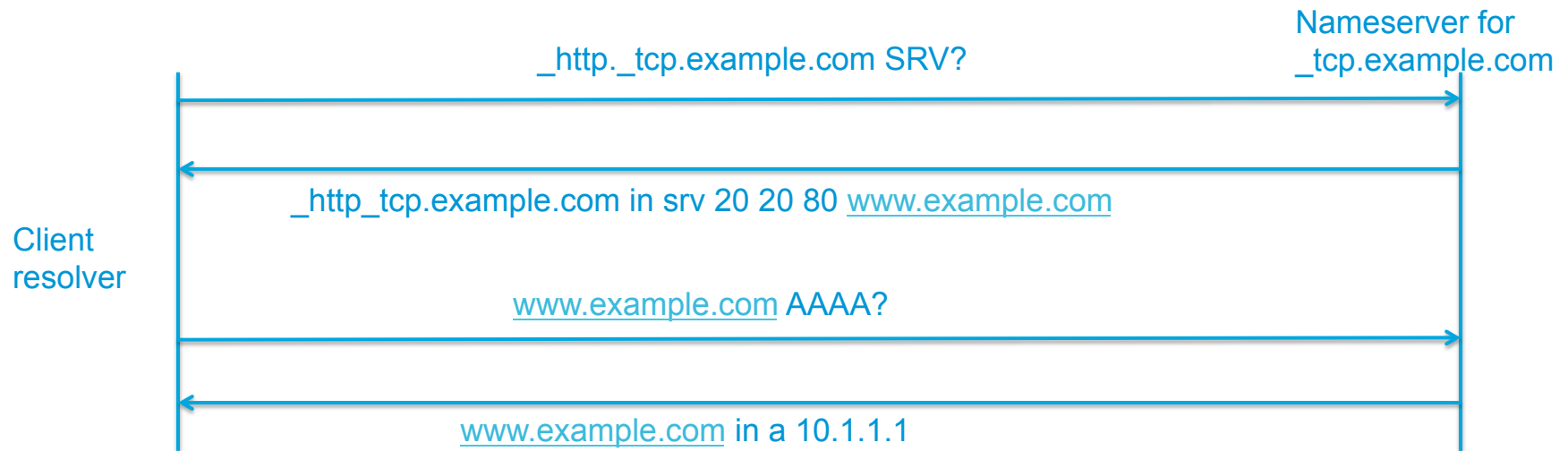   This may complicate domain configurations (e.g., split DNS, etc)

SRV Packets

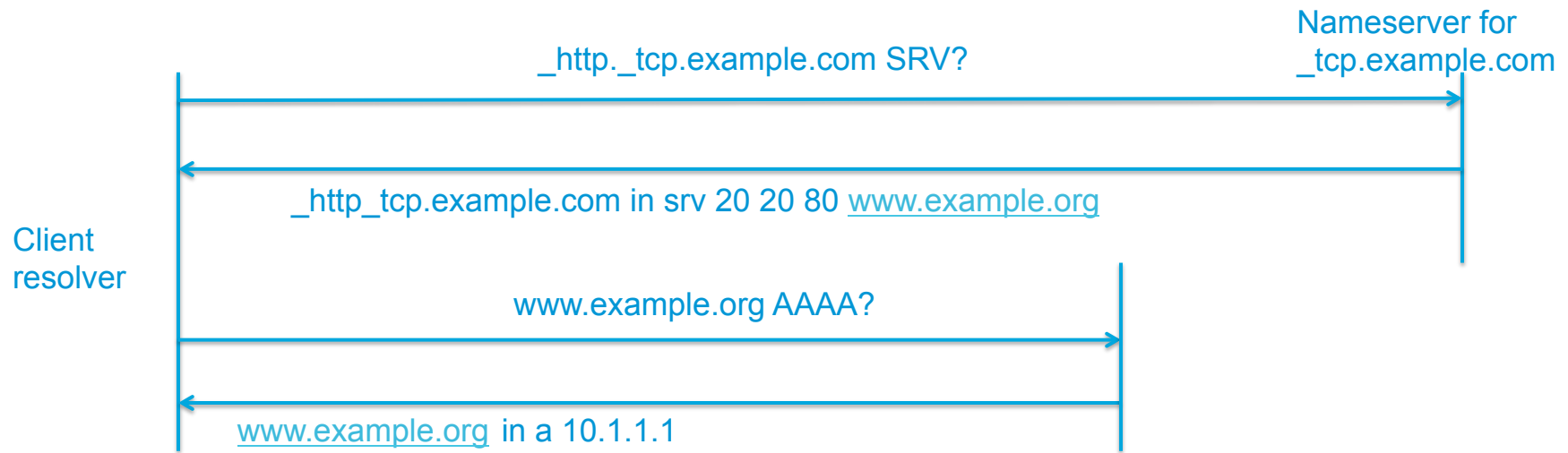For record: _http._tcp.example.com in srv 20 20 80 www.example.com
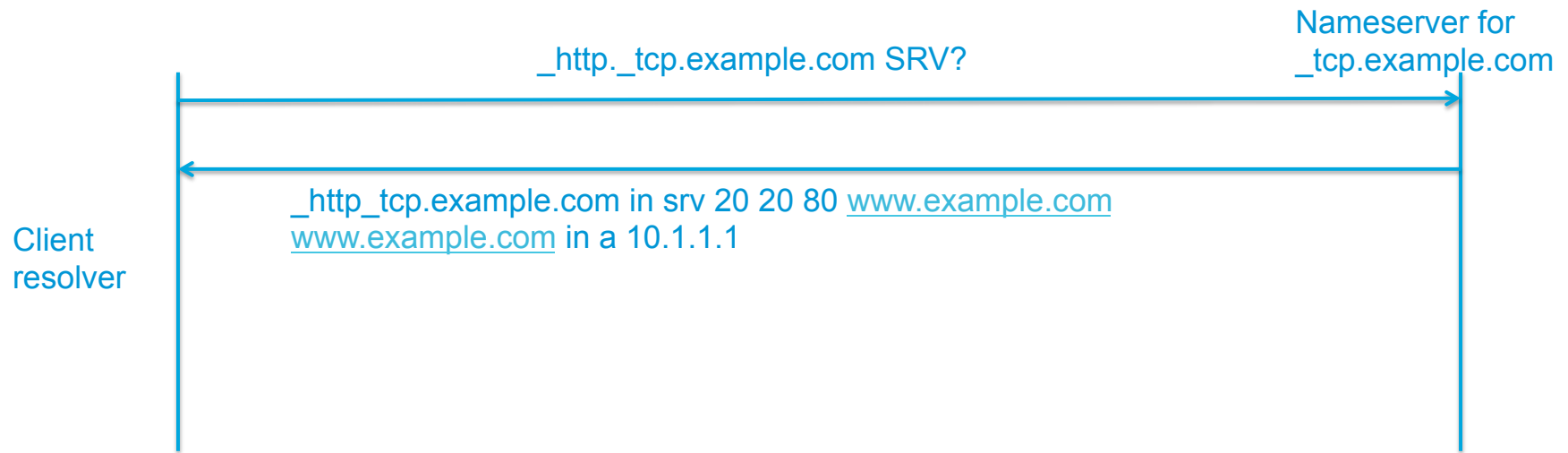
Nameserver for
_tcp.example.com

_http._tcp.example.com SRV?

_http_tcp.example.com in srv 20 20 80 www.example.com
www.example.com in a 10.1.1.1

Client
resolver

SRV Packets

For record: _http._tcp.example.com in srv 20 20 80 www.example.com

Nameserver for
_tcp.example.com

_http._tcp.example.com SRV?

_http_tcp.example.com in srv 20 20 80 www.example.com

Client
resolver

www.example.com AAAA?

www.example.com in a 10.1.1.1

SRV Packets

For record: _http._tcp.example.com in srv 20 20 80 www.example.com

Nameserver for
_tcp.example.com

_http._tcp.example.com SRV?

_http_tcp.example.com in srv 20 20 80 www.example.org

Client
resolver

www.example.org AAAA?

www.example.org in a 10.1.1.1

Name server for www.example.org

NAPTR and URI Records

- NAPTR:

    Very powerful search and replace mechanism

    Builds on SRV

    Allows for transport protocol discovery

    Does not provide protocol version information

- URI

    Maps a domain to multiple URIs

    Lacks protocol version information
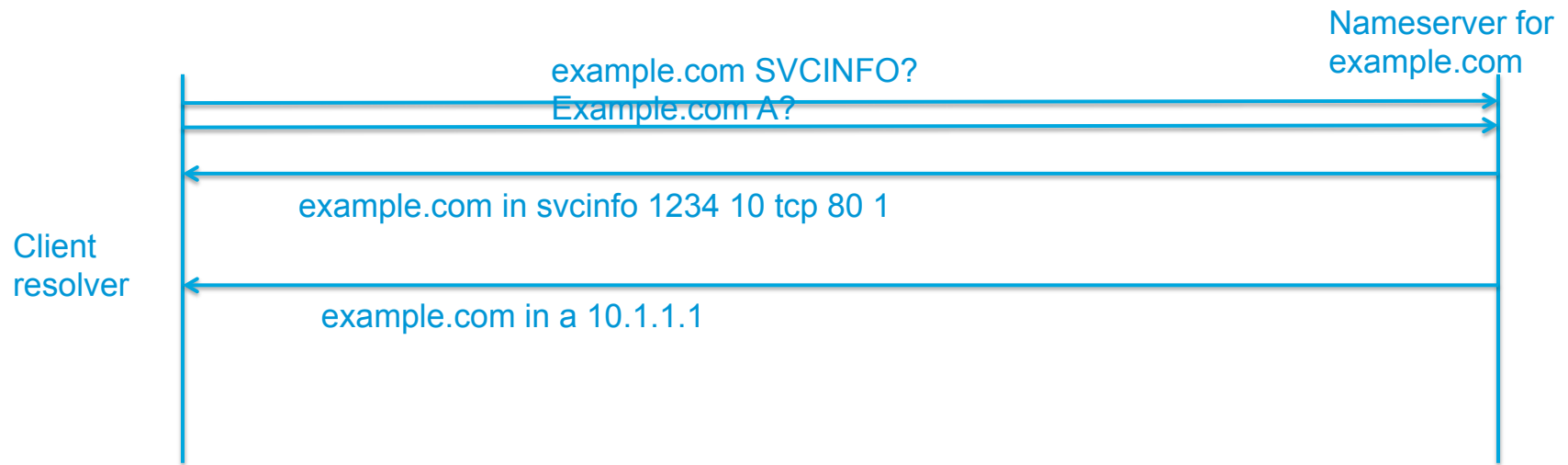
Running a race

- Used by Happy Eyeballs to determine best accessible IP versions

- Doesn't provide protocol information on its own

- May be necessary to reduce latency

- Certainly advance queries will help

SVCINFO Resource Record

- domain TTL Class SVCINFO InstanceId Priority Proto Port Version

- No additional indirection on QNAME

    No risk of required sequential lookups

- Priority, Protocol, Port, Version self-explanatory

- InstanceID is used to index against the port in the URI

    Two records with matching InstanceID mean that the same service is described by both records for a given name

SVCINFO flow

For record: _http._tcp.example.com in srv 20 20 80 www.example.com

Nameserver for
example.com

example.com SVCINFO?
Example.com A?

example.com in svcinfo 1234 10 tcp 80 1

Client
resolver

example.com in a 10.1.1.1

Qualities of DNS Records

- They are cached – sometimes

- Clients don't know where zone cuts are

- DNS is one of three approaches prior to connection to provide version information
  A new URI
  Specification as part of HTML

Questions

- Is the optimization worth it for one protocol turnaround?

- Is there an interest in other transport protocols for HTTP?

- Should we combine proto, version into a "profile"?