

Considerations on Request Routing for CDNI

draft-stiemerling-cdni-routing-cons-00

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Purpose of this memo

2 drafts on request routing

- draft-peterson-cdni-strawman
- draft-xiaoyan-cdni-requestrouting

Framework

- draft-davie-cdni-framework

Fulfill their purpose of specifying request routing mechanisms

- Fulfilling functional requirements

drafts seem to neglect a few operational requirements

Request Routing (annotated)

All times *without* processing times

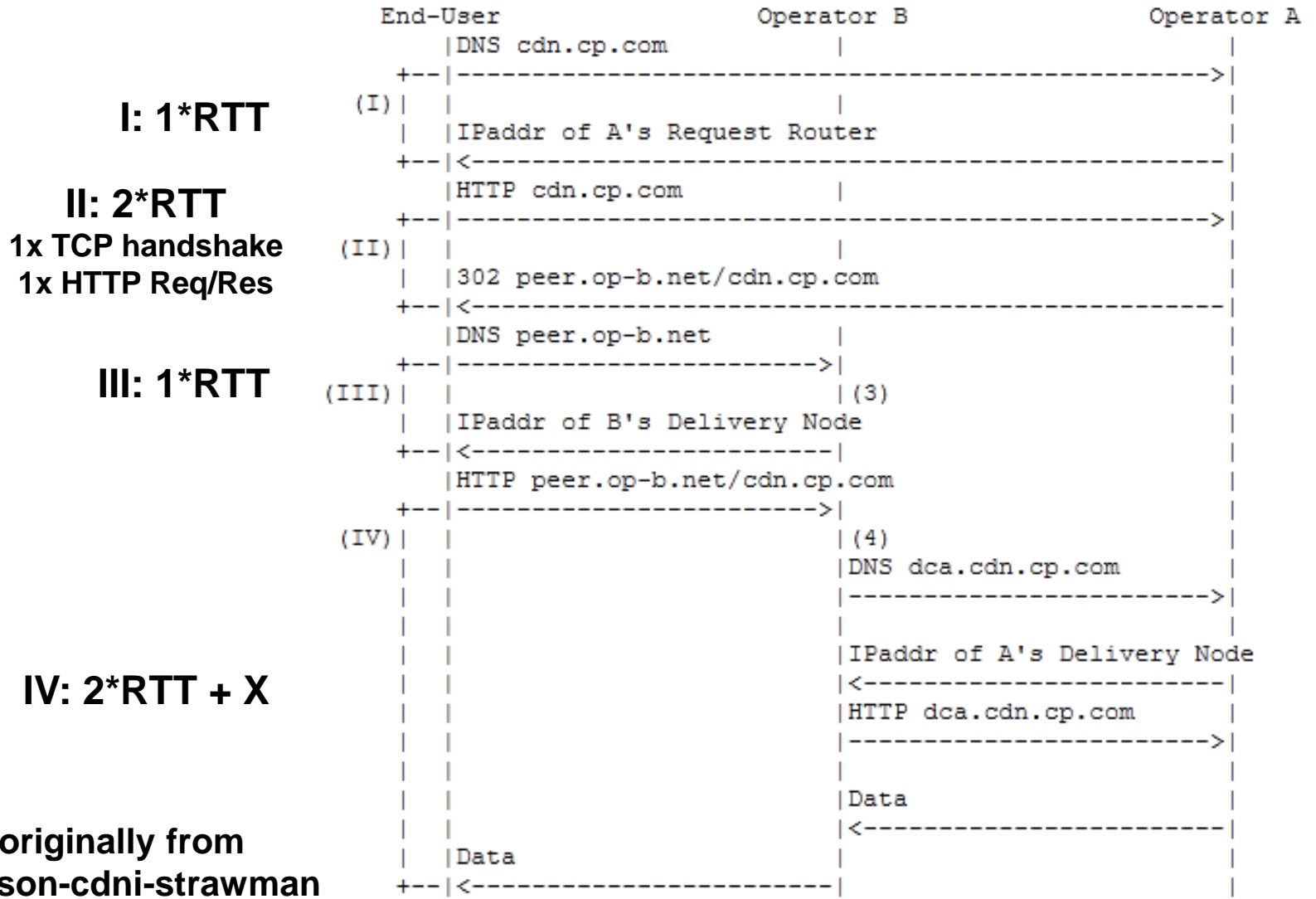


Chart originally from
draft-peterson-cdni-strawman

Speed Matters

Access-Type	DNS resolution (gmx.de, cached)	RTT (Germany)
ADSL (11 MBit/s)	26 ms	30 ms
DFN (32 MBit/s)	12 ms	10 to 20 ms
3G (EPlus)	200 to 300 ms	200 to 300 ms

Table 1: Some time measurements

$$T_{\text{start}} = t_I + t_{II} + t_{III} + t_{IV}$$

$$T_{\text{start}} = 1 * \text{RTT} + 2 * \text{RTT} + 1 * \text{RTT} + (2 * \text{RTT} + X)$$

For ADSL:

$$T_{\text{start}} = \underbrace{120\text{ms}}_{4 * \text{RTT}} + \underbrace{(60\text{ms} + X)}_{2 * \text{RTT}}$$

Summary

180ms + X looks rather long compared to what's out there

Youtube video access:

- 19 ms to resolve FQDN of cache in charge,
- 2 ms for TCP 3-way handshake,
- and yet 2 seconds until the content is actually requested (flash player boot-up time?)

Speed matters

- See also related work on speeding up TCP and HTTP
 - TCP initial congestion window & SPDY
- Current request routing schemes do not seem to be fast
- Probably too slow for content access in some use cases
- Need a faster mechanism

Other things still to be drilled down

- Failure detection
- Operational recommendations
 - e.g., do not cascade too many CDNs

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