CDN Interconnection Problem Statement

draft-jenkins-cdni-problem-statement-02

Ben Niven-Jenkins

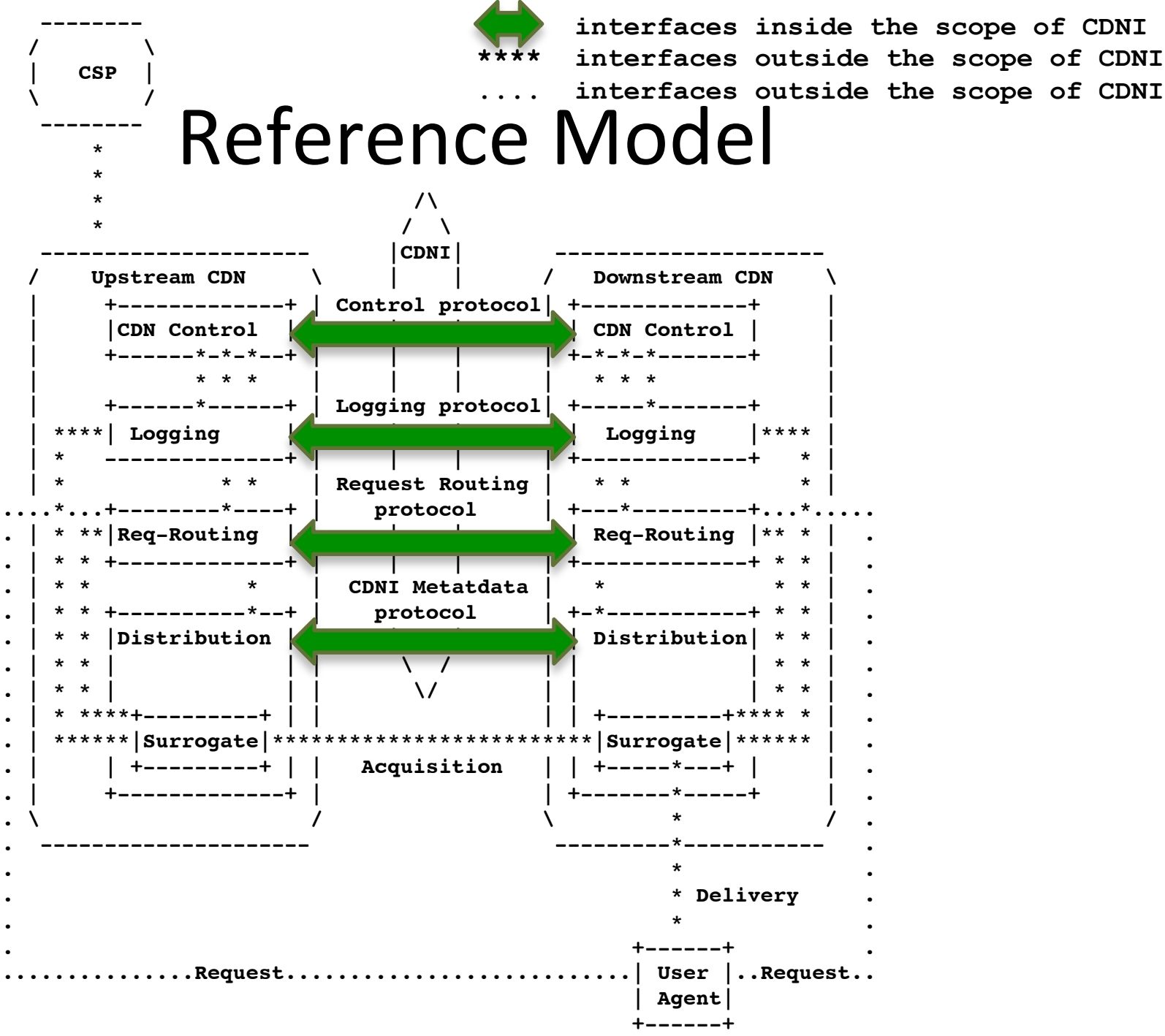
Francois Le Faucheur

Nabil Bitar

Drivers

- Increasingly NSPs are deploying their own CDNs
  - To deal cost-effectively with the growing usage of content delivery applications (e.g. video)
  - To deliver to multiple devices
  - To provide better (or more managed) User Experience
- But…
  - Different NSPs operate different independent CDNs
  - Content Providers want to make their content available but may not want to deal with multiple NSPs' CDNs
- So…
  - NSPs need the ability to interconnect their CDNs

Reference Model



Interfaces

- The CDNI Control interface
  - Allows an upstream CDN to affect state in a downstream CDN
    - Content invalidation/removal
    - Distribution Metadata invalidation/removal
    - Request downstream CDN to acquire content ahead of demand
  - Allows a downstream CDN to communicate (reasonably) static information to Upstream CDN
    - E.g. Capabilities & Policies
  - May enable Bootstrapping/configuration of other CDNI protocols
- The CDN Logging interface
  - Allows the Logging systems in interconnected CDNs to communicate
    - E.g. Access log lines for accounting & monitoring

Interfaces

- The CDNI Request Routing interface
  - Allows the Request Routing systems in interconnected CDNs to communicate
    - Information to facilitate redirection of User requests between CDNs
    - Information to facilitate CDN selection (e.g. CDN reachability)
- The CDN Metadata interface
  - Allows the Distribution systems in interconnected CDNs to communicate
    - Properties/policies for distributing & delivering the content
    - E.g. Rules for delivering content
    - E.g. How to acquire content

Non-Goals / Out of Scope

- New session, transport or network protocols
- Interfaces/protocols between
  - CSP & CDN
    - Content ingestion
  - CDN & CDN
    - Content acquisition
  - CDN & End User
    - New delivery protocols
- Content preparation
  - Encoding/Transcoding
- DRM
- Apps consuming CDNI logs
- Internal CDN protocols
- Individual CDN scalability
- Algorithms for
  - Intra-CDN & Inter-CDN request routing
  - Caching

Priorities

- Industry needs a targeted, deployable solution
  - 18-24 month timeframe
- Base scope
  - Minimum scope for interworking CDNs to allow operators to offer a basic operational service
  - Do not want to boil the ocean
- Enhanced scope
  - Extra stuff
- Reuse not reinvention
  - Reuse existing session, transport & application protocols (without changes)
  - Reuse existing schema languages (without changes)
  - Expectation is that CDNI can just define the schemas & associated semantics to exchange required information over existing application protocol(s)

Standards Gap

- IETF CDI WG (Concluded)
- 3GPP
- ISO MPEG
- **ATIS IIF / CSF**
- CableLabs
- **ETSI MCD / TISPAN**
- ITU-T SG13
- OIPF
- TV-Anytime
- SNIA
- IRTF P2PRG
- OCEAN
- Eurescomm P1955

- ATIS (IIF & CSF)
  - Has use cases for CDNI
  - Do not want to define protocols
  - Would like to reuse CDNI
- ETSI
  - Similar to ATIS

Problem Statement mentions all the above

Only those in **bold** are working on CDNI related architectures

Focusing the Problem Statement

- Originally the Problem Statement was used
  - To document the problem space
  - But also as a sort of "holding area" for other material
    - That was relevant to WG formation but not strictly related to describing the actual problem that CDNI is now chartered to solve.
- Proposal:
  - Focus the Problem Statement on just articulating the problem space for CDNI
  - Remove the "Non-Goals for IETF" section
    - Duplicates what is documented in the WG's charter.
    - Possibly move the acquisition discussion at the end to another part of the document?
  - Remove the "Prioritizing the CDNI Work" section
    - Duplicates what is documented in the WG's charter and milestones?
  - Remove the sections on related standardization (6.1) and research projects (6.2)
    - Ongoing work in other bodies is always a "moving target" and will almost certainly become out of date pretty rapidly
    - Possibly retain the Gap Analysis in section 6.3 as it points to specific work that could be reused or may be directly relevant to CDNI WG?
  - Raised these questions on the WG list on 4th July – 3 responses so far!

Progressing the Problem Statement

- Milestone to publish a Problem Statement by **Dec 2011**
  - Only one more Face to Face meeting before then
- Proposal:
  - Adopt current Problem Statement draft as WG draft
  - Aim to have a version ready for WG Last Call by next IETF
- Open Questions that might impact the draft's contents:
  - Explicitly show in reference model that acquisition by a Downstream CDN Surrogate could make use of a CDN Service (Request Routing) in an Upstream CDN?
  - Are the set of protocols listed in the problem statement sufficient to implement CDNI?
  - Does the problem statement describe them in sufficient detail for a problem statement?
  - Are there any significant gaps or additional topics not present in the current document that should be?