Dynamic-Anycast in Compute First Networking (CFN-Dyncast) Side Meeting

IETF 109, Online Meeting
18 November, 2020

Side meeting chairs:
Peng Liu (China Mobile)
Georgios Karagiannis (Huawei)

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Definitive information is in the documents listed below and other IETF BCPs. For advice, please talk to WG chairs or ADs:

BCP 9 (Internet Standards Process)

BCP 25 (Working Group processes)

BCP 25 (Anti-Harassment Procedures)

BCP 54 (Code of Conduct)

BCP 78 (Copyright)

BCP 79 (Patents, Participation)

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NOTE on side meeting

- Open to all
- Meeting minutes will be publicly posted
- Not under NDA of any form
- Please list your name and affiliation in the chat feature of webex (or Etherpad) during meeting
- Discussions at the end of all presentations
- During presentations only clarification questions are welcomed
- Wikipage, including the Webex access information:
  - https://trac.ietf.org/trac/ietf/meeting/wiki/109sidemeetings
- CFN-dyncast github: https://github.com/cfn-dyncast/ietf109
- Etherpad for notes: https://etherpad.wikimedia.org/p/cfn-dyncast-ietf109

Agenda

1. Admin [5: 5/75]

2. Problems and use cases: Peng Liu (China Mobile) [10: 15/75]
   draft-geng-rtgwg-cfn-dyncast-ps-usecase

3. CFN-dyncast architecture as an example: Luigi [10 : 25/75]
   draft-li-rtgwg-cfn-dyncast-architecture

4. Computing and networking metrics: Jianfei Li (China Unicom) [10 : 35/75]

5. Recap of the feedback received and related work in IETF [35: 70/75]

6. Wrap up and next steps (chairs) [5 : 75/75]

Recap of the feedback received and related work in IETF

CFN-Dyncast Question	Answer
Clarification of CFN & CFN-dyncast	CFN: Compute first networking. It is used to refer a general trend for "compute-network integration" CFN-dyncast: dynamic anycast in CFN; Dyncast focuses on the anycast and compute first networking nodes based routing architecture and optimizations considering the dynamic status of computation and network path characteristics when making routing decisions;
Relation to IRTF RGs: COINRG and ICN based solution, service routing	CFN-dyncast targets an engineering solution (through proposed standard specification work) for the problem of anycast and compute first networking nodes based routing architecture and optimizations, considering the dynamic status of computation and network path characteristics when making routing decisions, while work in the IRTF, e.g., ICN RG and COIN RG, is longer-term in alignment with the IRTF objectives;
Service instance & service, how the terms differ from SFC's	One Service can have several instances running on different nodes; Service instance is a running environment (e.g., a node) that makes the functionality of a service available; All service instances running the same service are identified by the same Service Identifier (SID);
How to map a Service-ID to a service?	A "Service ID" (SID) is used to uniquely identify a service, at the same time identifying the whole set of service instances that each represent the same service behaviour, no matter where those service instances are running. SID can be represented, for example, by a special range or coding of anycast IP address or DNS. Each service instance is associated to a "Binding ID", i.e., a unicast address, indicating where the service instance is running. Hence, there is a dynamic binding between an SID (the service) and a set of BIDs (the instances of the service);

Recap of the feedback received and related work in IETF

CFN-Dyncast Question	Answer
What is the difference between a CFN-dyncast node and a normal router?	CFN-dyncast node is a router with additional features to support compute first networking;
Why realizing dyncast at network level?	Current client/server-level realization of dyncast will impact efficiency and latency, which will be improved applying a network level solution;
How policy to be defined if it is not centralized?	Both types of policies (centralized and distributed) can be used in the context of CFN dyncast; Note that the definition, management and distribution of the policy is currently not in scope of the CFN-dyncast activities; The question to the community is whether solutions to these aspects should be in scope for any future IETF work;
Relation with Alto WG	ALTO and CFN- Dyncast can be seen as complementary, where CFN-Dyncast can represent the underlying technology that collects the necessary information from the edges regarding costs, load, and other parameters; In addition CFN-Dyncast can collect the types of services that are supported by each edge;
Relation to DMM WG: Mobile movement	The proposed approach for flow affinity support is to initially use the DMM work; If extensions to DMM solutions are needed for the support of CFN Dyncast Flow affinity, then requirements will be provided to DMM WG;
Focus of work: What IETF protocol specification work needs to be done for CFN-dyncast?	CFN-Dyncast could focus on: 1) Specification of CFN dyncast-framework and functional components 2) Reuse existing IETF protocols when possible. Define protocol extensions when needed or introduce a new protocol when necessary including features like: • Represent computing metrics in defined service/service instance context • Distribute the metrics, format and how dynamic/frequent the updates should be • Use the metrics in route determination • Definition of requirements for any new data plane extensions and procedures;

Any questions?

Wrap-up Discussions and Next Steps

- Is the problem space clearly defined?

- Should this work be done in IETF?

- Is there interest to participate in this work?

- Set up mailing list for discussion (cfn-dyncast@ietf.org?)

Backup

- Examples on possible CFN-dyncast protocol extensions:
  - draft-li-rtgwg-cfn-framework-00 (expired)
  - Other drafts in the related area:
    - draft-dunbar-idr-5g-edge-compute-app-meta-data
    - draft-dunbar-6man-5g-edge-compute-sticky-service