Interconnection Intents

<draft-contreras-nmrg-interconnection-intents-05>

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Motivation and objectives (reminder)

Classical Interconnection

Provider A  Provider B

Evolution of Interconnection

Provider A  Provider B

- Interconnection today is conceived only as pure IP traffic interchange
- BGP as base protocol for this (sessions advertising reachability of IP prefixes)

- New models for interconnecting SDN/NFV/Edge enabled networks are required (E.g., for deploying or requesting specific VNFs and service graphs, i.e. SFCs)
- Apart from IP prefixes, it can be required advertisement of Service Functions and/or Data Center capabilities
Summary of the draft (reminder)

• Target: to leverage on IBN technologies to handle enriched interconnection requests (i.e., traffic interchange and beyond)

• Scenarios of applicability:
  • Interconnection of non-public to public Networks in 5G
  • Multi-domain Network-as-a-Service requests (see e.g. sec.4.4 in RFC8568)
  • Multi-domain Network Virtualization (draft-bernardos-nmrg-multidomain-01)
  • Provision of services in the edge-cloud continuum (workload deployment and interconnection)

• Modes of usage for interconnection intents
  • only IP traffic interconnection (i.e., traditional peering / transit)
  • service (e.g., CDNi as defined e.g. by IETF CDNI or Streaming Video Alliance)
  • VNFaaS (e.g., packet core capabilities for MVNOs), for instance leveraging on draft-ietf-teas-sf-aware-topo-model
  • Computing capabilities (for instantiating functions/containers on top), for instance leveraging on draft-llc-teas-dc-aware-topo-model.
  • Microservices deployment and connection in the edge and cloud continuum
  • Any combination of the ones before
Updates from -04 version

- Extension of the scenarios to include Edge-Cloud Continuum
- Added new example of intent for delivery of composite service functions at the Edge-Cloud continuum (see slide #6)
  - Pointer to a repo with some initial implementation
- Added reference to [I-D.ramseyer-grow-peering-api] as potential result of the intent for the case of conventional IP peering
  - The detailed translation is left for next version
- New section on “Lessons learned” (see slide #5)
- New co-author (T. Velivassaki) and contributors
Lessons Learned

• New services imbricate an interplay of cloud and network technologies. Furthermore, such services typically involved more than one provider, and could span multiple administrative domains. Finding proper ways of automating service deployment and operation is a must, and requires the possibility of triggering actions in cloud and network. Intents can play a relevant role there, because their level of abstraction

• Multiple adaptors could be required due to the different technologies underneath, both at cloud and network levels. Different cloud managers (e.g., Kubernetes, Openstack, etc) and network automation capabilities (e.g., SDN controller, Network Slice controller, overlay solutions, etc) could participate of a single service.

• Common, abstract intents should be defined and agreed among parties so to enable automation in multi-domain scenarios. This implies common understanding and expectations of the intents, as well as negotiation capabilities and monitoring, for intent assessment in this scenarios where contractual relationships will happen.
Example 3. Delivery of composite service functions at the edge and cloud continuum

IntentExpectation: SF_continuum
  IntentTarget: ServiceFunction
    IntentTargetValue: SF2
    IntentContext: SFcomposite = SF0
  IntentTarget: NodeType
    IntentContext: EdgeCloud
  IntentTarget: SLO_Vcpu
    IntentTargetValue: 2
    IntentTargetCondition: greater than
  IntentTarget: SLO_Vram
    IntentTargetValue: 4
    IntentTargetCondition: greater than
  IntentTarget: SLO_Bandwidth
    IntentTargetValue: 1 Gbps
    IntentTargetContext: 90%
  IntentTarget: SLO_Latency
    IntentTargetValue: 10 ms
    IntentTargetCondition: lower than
Next steps

• Discuss on the proper structure of intents for this use case (and others)
  • It aligns with current efforts in IETF and 3GPP, but is that adequate for IRTF(/IETF)?

• Collect feedback on the approach followed

• Keep working on the intent framework