An Evolution of Cooperating Layered Architecture for SDN (CLAS) for Compute and Data Awareness

draft-contreras-coinrg-clas-evolution-02

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Background

• Cooperating Layered Architecture for Software-Defined Networking (CLAS) [RFC8597] proposes a layered control architecture where control functions associated with transport are differentiated from those related to services

• This draft proposes to augment CLAS by adding:
  • A new stratum for Compute, considering distributed computing capabilities attached to different points in the network
  • A new plane in all the strata, conceived to deal with stratum-related data that could permit the implementation of control-loop automation per stratum

• Draft already presented at IETF 116 and 117
Evolved CLAS Architecture
(simple representation)
Changes from -01

- Renaming “telemetry plane” in -01 (previously “learning plane” in -00) to “data analysis plane”
- Added a simple figure for illustrating that there is no hierarchical relationship among connectivity stratum and compute stratum
- Added a section for documenting possible means of communication between strata (and planes)
  - Initially only communication between strata are documented
  - See next slide
Communication between strata

• Communication between Applications and Service Stratum
  • Connectivity Provisioning Negotiation Protocol (CPNP) [RFC8921]
  • Interconnection Intents [I-D.contreras-nmrg-interconnection-intents]
  • Slice intent [I-D.contreras-nmrg-transport-slice-intent]
  • Selection of proper edge for service placement [I-D.contreras-alto-service-edge]
  • Composition of service function chains [I-D.lcsr-alto-service-functions]

• Communication between Service Stratum and Connectivity Stratum
  • Framework for Automating Service and Network Management [RFC8969], as well as the models referenced there
  • IETF Network Slice Service model [I-D.ietf-teas-ietf-network-slice-nbi-yang]
  • Service function aware TE topology model [I-D.ietf-teas-sf-aware-topo-model]

• Communication between Service Stratum and Compute Stratum
  • Data Center aware TE topology model [I-D.llc-teas-dc-aware-topo-model]
  • Cloud-based solutions (e.g., Kubernetes)

• Communication between Connectivity stratum and Compute stratum
  • Traffic steering with service function awareness (work in progress in CATS WG)
Next steps

• Add more deployment/use cases aligned with RG focus

• Request RG adoption