



IETF Hackathon

Optimizing XR Flows in the Edge Cloud Using ALTO and Bottleneck Structure Graphs

Point of contact: Ankita Bajaj and Jordi Ros Giralt

jros@qti.qualcomm.com (see full team in the last slide)

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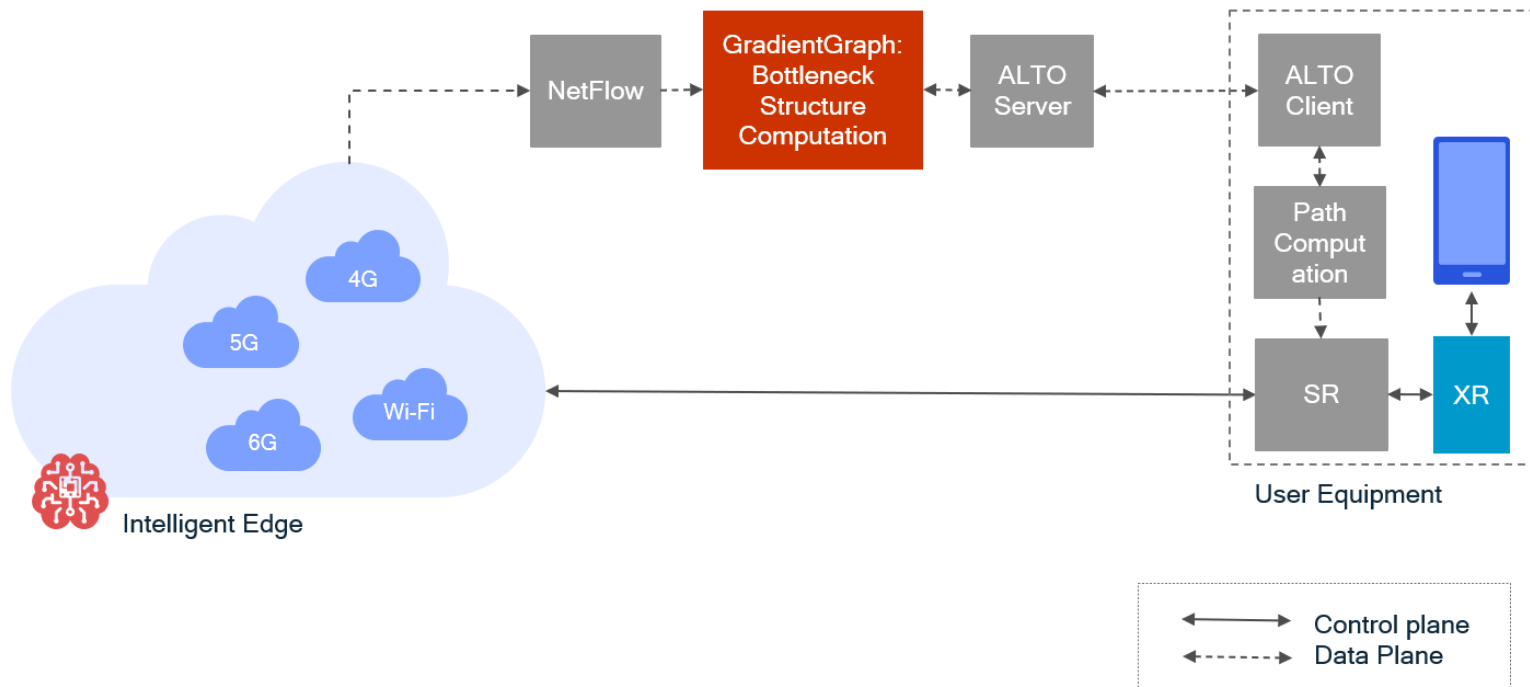
London, UK



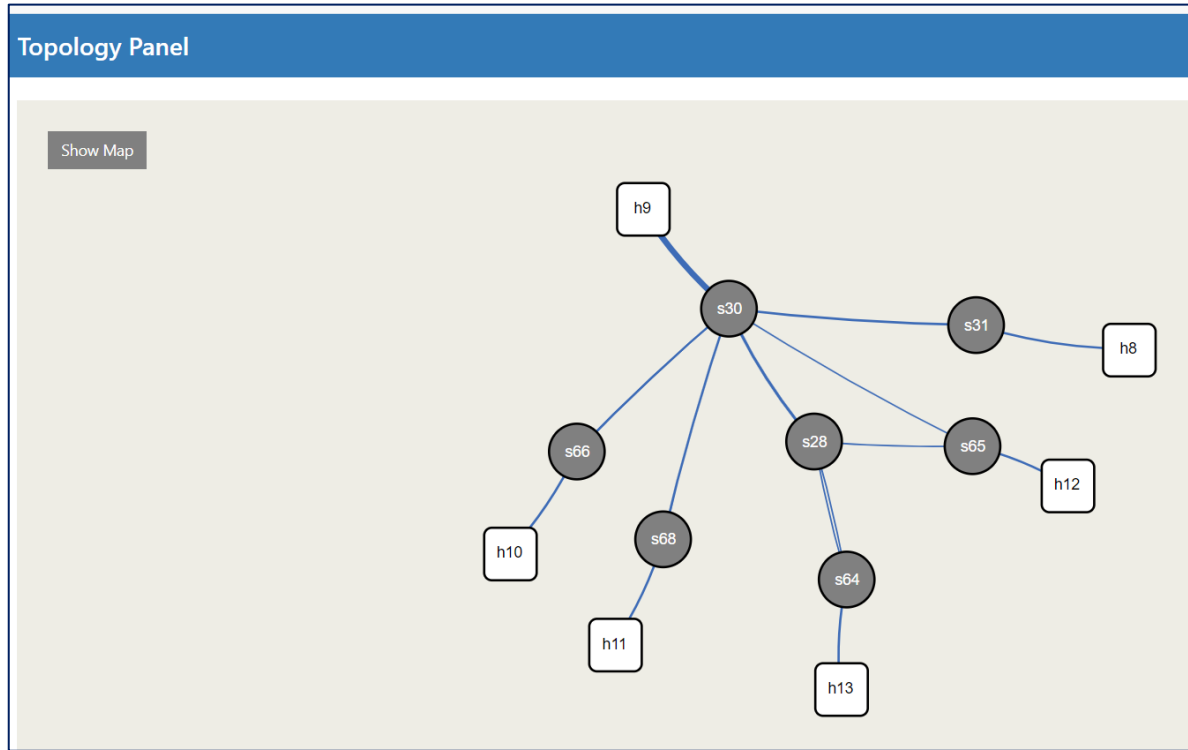
Hackathon Plan

- **Goal:** Optimizing XR Flows in the Edge Cloud Using ALTO and Bottleneck Structure Graphs
 - <https://datatracker.ietf.org/doc/rfc7285/>
 - <https://datatracker.ietf.org/doc/draft-giraltiyellamraju-alto-bsg-requirements/>
 - <https://datatracker.ietf.org/doc/draft-ietf-alto-path-vector/>
 - <https://datatracker.ietf.org/doc/draft-ietf-alto-unified-props-new/>
 - <https://datatracker.ietf.org/doc/draft-ietf-alto-performance-metrics/>
- **Challenge:** End-to-End Integration of ALTO, Source Routing, XR application and Bottleneck Structure Analysis to dynamically steer the XR flow through the edge cloud.

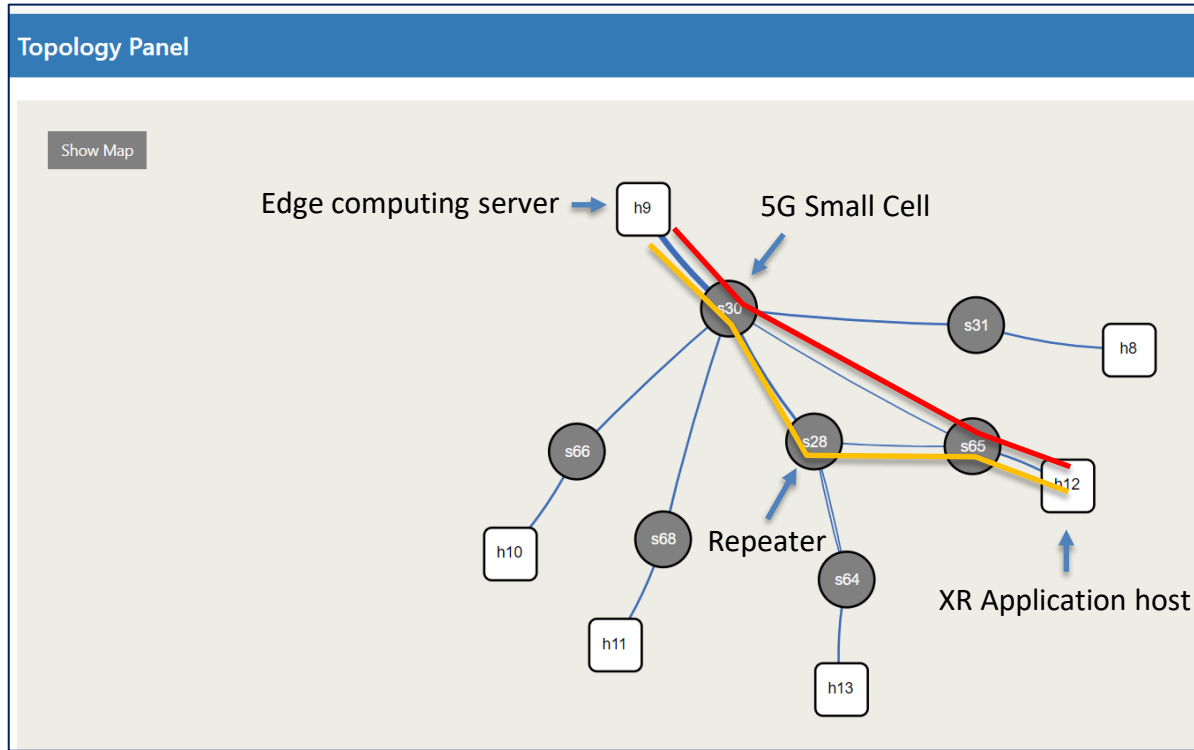
Optimized XR flow steering using IETF ALTO and GradientGraph (demo available in emulation mode)



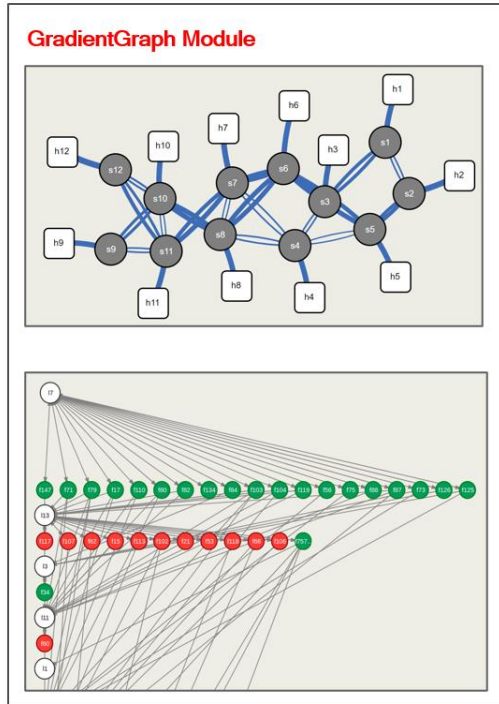
Demo: Optimized XR Flow Steering through a 5G Edge Cloud



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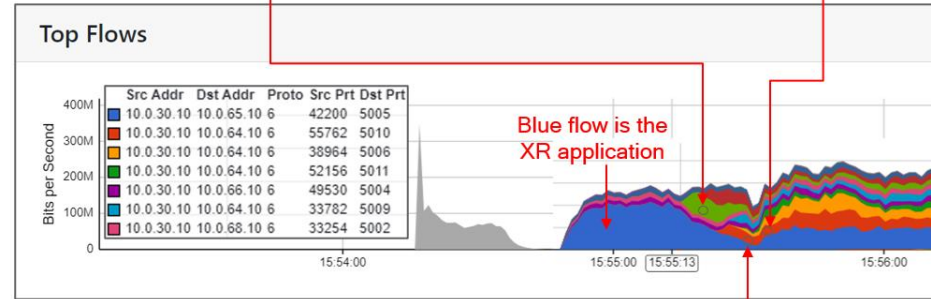


Demo: Optimized XR Flow Steering through a 5G Edge Cloud



1 Congestion → performance degradation

3 Rerouting: IETF SR



2 Detection: GradientGraph AI → IETF ALTO → XR

What we learned

- Bottleneck structure graphs (BSGs) are currently being discussed in the context of the ALTO WG.
 - <https://datatracker.ietf.org/doc/draft-giralt-yellamraju-alto-bsg-requirements/>
 - <https://datatracker.ietf.org/doc/draft-giralt-yellamraju-alto-bsg-multidomain/>
 - Drafts will be presented during the IETF 115 PANRG and ALTO sessions.
- This hackathon demo showed feasibility to integrate BSGs in a full-stack protocol solution (NetFlow/sFlow, BSGs, ALTO Server/Client, PCE, SR) to optimize flow steering in the edge cloud.
- Production deployment in the National Research Platform: <https://nationalresearchplatform.org/>
- This demo provides practical feedback into the ALTO WG:
 - BSGs provide a compact and scalable approach to incorporate traffic engineering information into the ALTO standard.

Wrap Up

Team members:

Jordi Ros-Giralt (jros at qti.qualcomm.com)
Sruthi Yellamraju (yellamra at qti.qualcomm.com)
Ankita Bajaj (ankitab at qti.qualcomm.com)
Richard Yang (yry at cs.yale.edu)
John Graham (jjgraham @ eng.ucsd.edu)
Harvey Newman (newman at hep.caltech.edu)
Kai Gao (kaigao at scu.edu.cn)
Jensen Zhang (jingxuan.n.zhang at gmail.com)
Mahdi Soleimani (mahdi.soleimani at yale.edu)
Jacob Dunefsky (jacob.dunefsky at yale.edu)
Lauren Delwiche (lauren.delwiche at yale.edu)
Qin Wu (bill.wu at huawei.com)

For more info, you can
contact:

jros@qti.qualcomm.com

yry@cs.yale.edu

bill.wu@huawei.com