

METRO-HAUL Year 2 Newsletter

March 2019



YEAR 2 – A TIME TO TEST

In 2018 our METRO-HAUL consortium was busy gathering requirements and designing the necessary hardware and control platforms for future 5G services. Now the project is moving into a new phase, one of implementation and testing.

End-to-end carrier Ethernet services are a compelling use-case in the context on SDN/NFV because they require deep interaction between resources located in the Central Office (CO) and the transport network providing interconnection between the COs.

The ONF's Central Office Re-architected as a Datacenter (CORD) initiative aims to bring the agility, flexibility, and automation of a cloud by means of a community-based open source project. Enterprise CORD (E-CORD), a key use-case that offers business enterprise connectivity services.

During ECOC 2018 we demonstrated our CORD-based platform, enhanced within the Metro-Haul project, to add features to control an optical transport network composed of disaggregated elements.

Machine Learning (ML) is going to change the way we deploy and control networks. ML may be applied to the gathering and analyzing of network intelligence data for a variety of applications that help network operators handle everything from policy setting and network control to security.

In METRO-HAUL we use ML as a key component of our Monitoring and Data Analytics (MDA) platform.

The ECOC demo objective is to show the dynamic setup of a Carrier Ethernet-Virtual-Circuit (EVC) from a global vantage point over a composite access and transport network, whose configuration is fully automated by the control-plane.

See the ECOC demo in action
<https://youtu.be/p8b1YupdJco>

SAFE CITIES

Collection and Coordination of Smart City Data Streams from a Large Number of Video Cameras

Over the last decade, Smart City and Safe City have become widely discussed. Most major cities today have a plan to become smarter and safer.

The video is a key element in these initiatives. Video gives us a view of traffic, of litter, and very importantly a view of the crime. Video has shown itself to be a good deterrent to planned crime such as organized pickpocketing or vandalism. The video is also invaluable in criminal and anti-terror investigations.

Prior to 5G and metro networks, cities have either deployed recording servers on poles close to a small number of cameras.

Just how successful has our Project dissemination been?

METRO-HAUL Research and innovation is supported by the EU through the Horizon 2020 program, and already we are having a real impact on technical leadership and developing technologies that will enrich Europe's citizens and our society.

Key dissemination achievements include:

Publication of more than 100 dissemination activities in total in the first year

Combination of peer-reviewed papers, journals, articles, standards & OpenSource code contributions

17 Highly ranked publications in its first year

Participated at more than 20 industry and academic events

Over 12 standards and OpenSource contributions



Or they have resorted to laying their own fibre and limiting coverage to spots close to the fibre.

Both solutions have drawbacks: while deploying servers on poles is initially less expensive and saves bandwidth, there is a significant maintenance cost, and there are reliability drawbacks.

In the Metro-Haul project, we are focusing on demonstrating the key enhanced capabilities of a metro network to provide low latency data delivery. Low latency in the video is required whenever a camera is remotely controlled. This can either be by a person in a control center manually controlling the camera with a joystick, or where one camera creates an output that is used to automatically control another camera.

Future applications could also include picking a recognized face out of a crowd on a static camera and then tracking a closeup view using a second camera. Or even further in the future behavior recognition could be the trigger.

See our blog on this topic for more detail:

<https://metro-haul.eu/2018/12/04/safe-cities-a-metro-haul-use-case/>



Well done! to Daniel Perdices and his co-authors: David Muelas, Luis de Pedro, Jorge E. Lopez de Vergara; for their award-winning paper “Network Performance Monitoring with Flexible Models of Multi-Point Passive Measurements”. This paper was published the 14th International Conference on Network and Service Management 2018 – <http://cnsm-conf.org/2018/>

The award-winning paper highlights the many concurrent management actions required for operation of network infrastructure. This is particularly critical in the case of reconfigurable deployments, such as Virtual Functions or Software-Defined Networks, to scale the affected equipment up and prevent performance bottlenecks. The paper provides an overview of dPRISMA (distributed Passive Retrieval of Information, and Statistical Multipoint Analysis), a passive monitoring system intended to fit statistical models for network measurements and raise alarms in the case of extreme behaviours.



Now well into the second year of the Metro-Haul project, and mapping our technical objectives into achievements in our deliverables - <https://metro-haul.eu/deliverables/>:

Flexible Metro Network and Edge Computing

Dynamic data plane with intelligent control plane involving multiple network segments and layers, spanning multiple geographical Data Centre (DC) locations and addressing resource heterogeneity including, notably, the optical transport. Without this data & control plane architectures, network resources supporting future 5G services would require enormous over provisioning, of both optical transport capacity across metro and core networks, and edge Data-Centre resources such as compute and storage.

MH References: D2.1, D3.1, D4.1

Open Multi-layer Disaggregated Network

Systematic and unified approach based on model driven development for the SDN control of multilayer disaggregated and open transport networks.

We are also providing flexibility in deployment choices, extensibility for the integration of new technologies and agility in migration processes without vendor lock-in.

MH References: D3.1, D4.1

Real-time Performance Monitoring & Analytics

Developed a telemetry and monitoring framework which provides a global, real-time view of the E2E network performance.

This new technology enables services configuration and reliable operation. It provides pro-active actions on early detection of issues. Machine-Learning within the decision engine to continually learn and improve as real network data is collected. It includes state-of-the-art advanced planning, placement and re-optimization.

MH References: D4.1, D2.2