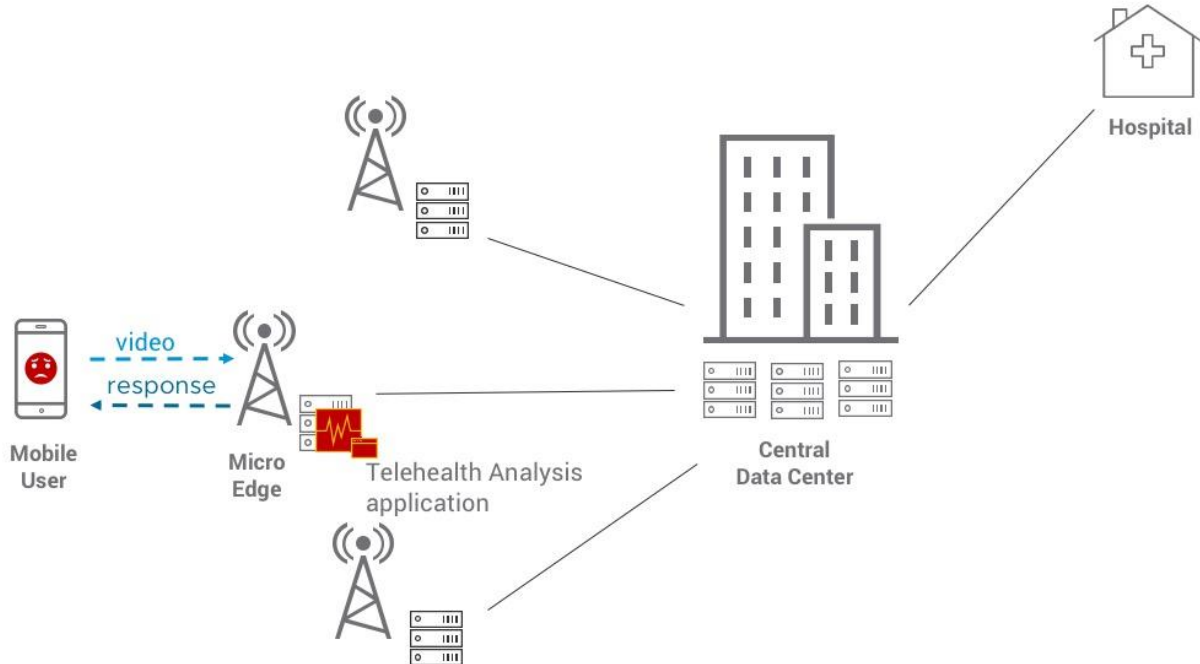


TeleHealth: A Mission Critical 5G Use Case

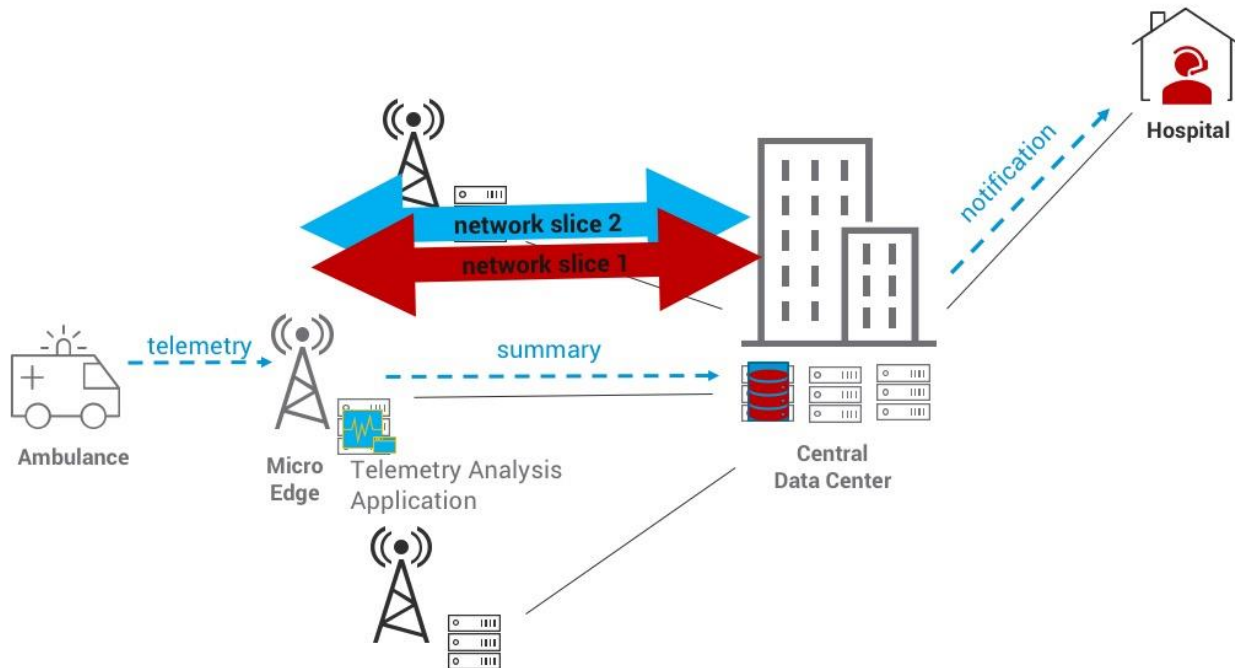
Dell Technologies, VMware and Telenor have collaborated closely to fully leverage and realize the potential and promise of 5G, Edge and machine learning innovation applied to a TeleHealth use case as part of a broader commitment to doing research and development going forward.

Health Service Administrators are looking at how advanced technology can play an enabling role in transforming healthcare delivery. Enabled by 5G and integrated Multi-Access Edge Computing (MEC), the design of better-connected and coordinated IT services will dramatically advance urgent healthcare delivery. The development of these new models will create improved experiences and life enhancing outcomes for patients in their care.

The vision of our Proof-of-Concept (PoC), which we'll be showing at [our booth at MWC 2019](#) in Barcelona, was to examine the scenario of possible stroke victims at a remote locations. We show how the continuous collection and streaming of patient data is enabled from initial contact through to arrival at the destination hospital emergency department.

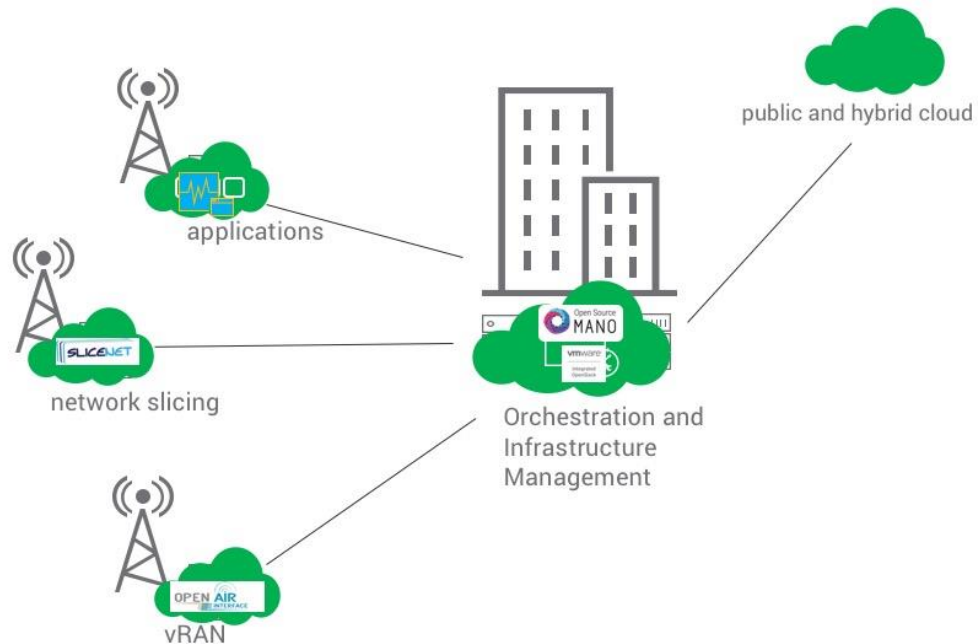


We demonstrate that the seamless composition of services will provide a secure, reliable, low-latency mobile HD video link from a remote ambulance to a hospital and an Edge assisted remote stroke assessment application that shortens the time to assess and provide urgent care to potential stroke victims (and save lives). The availability of remote, real-time HD video streaming from paramedics to the hospital emergency room or medical specialists enables more intelligent and timely decision making and improves the probability of better patient outcomes.



Additionally, new health assessment innovations, such as the telestroke application, are being developed to enable faster remote diagnosis; combining machine learning and real-time edge computing. This mission critical use case scenario (figure below) was approached from an end-to-end perspective, focusing on several key new 5G network capabilities that include:

- **E2E Networking Slicing** – leveraging Open Source Management & Orchestration (OSM) capability to provide virtual multi-layer slice from core, SDN/NFV, to radio access to enforce QoE requirements on common infrastructure
- **Multi-Access Edge Computing (MEC)**– common infrastructure platform, based on Dell Technologies hardware and VMware Integrated Openstack (VIO) and software-defined networking (NSX), supporting the hosting of virtual applications for low latency, as well as hardware acceleration and GPU for ML/Analytics capabilities
- **Hardware Acceleration** – GPU offload of x86 CPU for video, image processing, ML/Analytics and real-time processing
- **Intelligent workload placement** – as the ambulance moves between different edge sites toward the hospital, OSM instantiates, monitors and scales out critical VNFs to the appropriate MEC site
- **Automation and Programmability** – OSM provides cross-plane/domain orchestration, FCAPS management in concert with vRealize Operations Manager and QoE slice management



5G, IoT, Network Slicing and Multi-Access Edge Computing are transformative to the Telecom architecture, ecosystem and partnerships, as well as operating model. Dell Technologies is at the forefront of 5G innovation and actively participating in EU 5G research projects, relevant standards & open source consortia and with 5G/Edge use case development with the leading Telecom Service Providers. We are leveraging this innovation work to solve real problems as well as increase our understanding of vertical solution requirements and business drivers to build our 5G partner ecosystem. Dell Technologies provides common validated 4G and 5G NFVi and [edge computing](#) solutions that are open and integrated with both commercial and open source partners.

We would like to thank our partners on the [EU Horizon 2020](#) program, [SliceNet](#) and [Telenor](#), for their help developing this PoC. The SliceNet project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 761913.



To learn more about the TeleHealth collaboration effort or all our NFV, Edge, 5G and IoT solutions come visit the Dell Technologies booth at **MWC 2019 in Barcelona, Hall 3 – Stand 3M11**, from Feb 25-28, or watch the [video series](#).