Multimedia MC Communication and Collaboration Network Application

SUMMARY

The critical communications platform follows cloud-native design principles, allowing exploitation and exper-imentation of 5G modern features (NFV, slicing, Multi-Access Edge Computing). It is composed of several loosely coupled and stateless micro services, that can work together or independently, and that constitute light Containerized Network Function (CNF) workloads.

This backend is completed by a client vertical applica-tion (considering the deployment options, this is the part of the UC that goes to the vertical domain, whereas the rest is delegated – Hybrid model), that can run on android smartphones. There is no restriction or de-pendency. The system can be deployed on any container runtime engine, or leverage modern orchestration frameworks, like Kubernetes.

RECOMMENDATIONS

The system recommendations are the following:

- 1vCPU and 1GB RAM.
- Bandwidth Rx: Around 500kpbs per video stream and per user for SD stream 15fps / Around 5Mpbs per video stream and per user for FHD stream 30fps.
- Bandwidth Tx: Around 500kpbs per video stream for SD stream 15fps / Around 5Mpbs per video stream for FHD stream 30fps.
- The application includes a KPI server recording real time media performance audio/video, that shall be addressed by REST API.

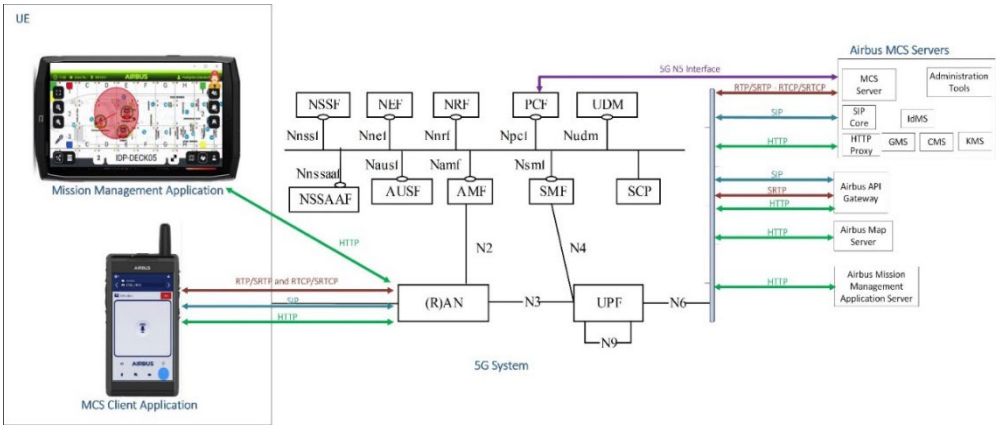
DEPLOYMENT

Within the context of 5G-EPICENTRE the Network Application does not include a cartography server, and needs to be connected to the Internet to load background maps (nonetheless, a cache can be exploited). It is fully interoperable with diverse protocols allowing to enrol diverse devices in the system (including those of third parties). In that case, the servers must be reachable from outside the private network.

The Network Application presents external interfaces, thus allowing third party vertical applications to be built on top of it. In that case, for example in the frame-work of the third-party experimentation.

Finally, ADS media microservices can work with mixed protocols, Transmission Control Protocol (TCP) and User Datagram Protocol (UDP), potentially increasing performance and QoE (not mandatory).

In order to exploit this on Kubernetes infrastructure, the feature gate MixedProtocolLBService must be enabled.



5G-EPICENTRE's Multimedia MC Communication and Collaboration vertical system - specific architecture

This project has received funding from the European Union's Horizon 2020 Innovation Action programme under Grant Agreement No 101016521.

CONTACT

For more information, do not hesitate to visit the website https://www.5gepicentre.eu/ and/or contact the 5G-EPICENTRE team.

Contact the 5G-EPICENTRE team by filling in the **form** provided. Apply **here**!

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MICROSERVICES OF MCX APPLICATION

The present section showcases the list and a short description of the various microservices of the Multimedia MC Communication and Collaboration Network Application:

- **Identity Management Function (IdMF):**

Responsible for authenticating an MCPTT client in the system. For testing purposes, the server can accept any new registration.

- **Situation Management Function (SMF)**

Responsible for managing the situation information: status, locations, etc.

- **Audio Signalisation Function (ASF):**

handles floor control for audio communications.

- **Audio Media Function (AMF):**

handles real-time packets for audio communications.

- **Video Signalisation Function (VSF):**

handles control for video communications.

- **Video Media Function (VMF):**

handles real-time packets for video communications.

- **Data Management Function (DMF):**

handles non real-time data streams.

- **KPI Function (KPIF):**

Records KPI related to communications.

The vertical application used to demonstrate the Network Application composed of the above services is a Web-front Server (WFS), e.g., Web User Interface (UI) for client.

The abbreviations shown in Figure 4 are explained below and are also included in the list of abbreviations.

- AMF: Access and Mobility Management Function
- AUSF: Authentication Server Function
- CMS: Configuration Management Server
- GMS: Group Management Server
- KMS: Key Management Server
- NEF: Network Exposure Function
- NRF: Network Repository Function
- NSSAAF: Network Slice-Specific Authentication and Authorization Function
- NSSF: Network Slicing Selection Function
- PCF: Point Control Function
- RAN: Radio Access Network
- SCP: Secure Copy Protocol
- SIP: Session Initiation Protocol
- SMF: Situation Management Function
- UPF: User Plane Function

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