**Agenda item:** 10.5

**Source:** Qualcomm Inc.

**Title: Architectural Considerations for iRTCW**

**Document for** Discussion andAgreement

# Introduction

In this contribution, we identify relevant WebRTC functions in the context of iRTCW.

# Identified Functions

## 2.1 General

We have agreed on 4 different collaboration scenarios for iRTCW at the SA4-118e meeting. The collaboration scenarios are listed here for convenience:

1. 5G support for OTT WebRTC: in this scenario the WebRTC session runs completely over the top. However, the MNO may offer support in form of QoS allocation, bitrate recommendations, and QoE report collection based on request by the UE.
2. MNO-provided trusted WebRTC functions: in this scenario the MNO offers trusted support functions such as ICE servers to the WebRTC application on the UE.
3. MNO-facilitated WebRTC services: the MNO may host and facilitate WebRTC sessions by providing a trusted WebRTC signaling server, which may also offer 5G network assistance.
4. Inter-operable WebRTC services: collaboration scenario 3 is extended with functions to support MNO to MNO inter-operability.

Based on the documented collaboration scenarios, we identify the following functions and describe their roles.

## 2.2 Potential 3GPP-defined Functions

### 2.2.1 General

These functions will be discussed and possible confirmed in the context of the architecture that will be defined by the 5G\_AREA WI.

### 2.2.2 Provisioning Server

The provisioning server may enable an application provider to perform provisioning of the following functionalities:

* QoS support provisioning for WebRTC sessions
* Charging provisioning for WebRTC sessions
* Collection of consumption and QoE metrics data provisioning related to WebRTC sessions
* Offering ICE functionality provisioning such as STUN and TURN servers
* Offering WebRTC signaling servers provisioning, potentially with interoperability to other signaling servers

The provisioning server may not be relevant to all collaboration scenarios and some of the 5G support functionality may be offered without application provider provisioning.

### 2.2.3 Configuration Server

The configuration server stores WebRTC-related configuration information and makes them accessible to the UE. It stores information and recommendations to operate network-assisted WebRTC sessions over 5G.

The configuration information may consist of static information such as the following:

* Recommendations for media configurations
* Configurations of STUN and TURN server locations
* Configuration about consumption and QoE reporting
* Discovery information for WebRTC signaling and data channel servers and their capabilities

### 2.2.4 Media Session Handler (MSH)

The MSH is an entity running on the UE, which assists with the 5G integration of the WebRTC application. It exchanges, on behalf of the application, information about the WebRTC sessions with the network.

The MSH receives information about a new WebRTC session from the application. It relays the information to the Support Function. It also receives events and other network information about the WebRTC session from the Support Function, which it may relay to the application.

### 2.2.5 Network Support Function

The support functionality includes the following:

* Network Support Function receives information about a WebRTC session and its state
* Network Support Function requests QoS allocation for a starting or modified session
* Network Support Function receives notification about changes to the QoS allocation for the ongoing WebRTC session
* Network Support Function exchanges information about the WebRTC session with the trusted STUN/TURN/Signaling Server, e.g. to identify a WebRTC session and associate it with a QoS template

## 2.3 WebRTC Functions

### 2.3.1 Trusted ICE Functions

The MNO may offer trusted ICE functions to the WebRTC application to be used during the WebRTC ICE gathering phase. These functions may be STUN and TURN servers that facilitate NAT and Firewall traversal.

The MNO-operated trusted ICE functions may assist with the 5G integration of the WebRTC application. This could be done by triggering network assistance to starting or ongoing WebRTC sessions.

## 2.4 iRTCW-defined Functions

### 2.4.1 Trusted WebRTC Signaling Server

The trusted WebRTC signaling server is used to setup and manage MNO-operated WebRTC applications. They offer a standardized signaling protocol for the session setup to both parties of the WebRTC session. The WebRTC signaling server will handle the offer/answer exchange and will have access to the SDP in both directions.

The WebRTC signaling server may use that knowledge to offer network assistance and other 5G features to the endpoints of the WebRTC session.

2.4.2 Inter-working Function

This function provides inter-working functionality to enable MNO-facilitated WebRTC sessions that involve end-points across different MNOs. They may for example provide cross-network signaling functionality to allow WebRTC signaling server that are hosted in different networks to communicate, in order to establish and manage the WebRTC sessions.

### 2.4.2 Trusted Media Server

A media server may be offered by the MNO to support WebRTC sessions. It may offer a wide range of functionality such as:

* a content server that serves content to the WebRTC application, e.g. through a data channel
* media processing functionality: may be used by the WebRTC application as a relay that performs some media processing function such as transcoding, recording, 3D reconstruction, etc.
* scene composition functionality: the server may compose a 3D scene and distribute it to several point-to-point WebRTC sessions
* MCU functionality: the server may offer multi-party conferencing functionality to merge a number of point-to-point WebRTC sessions
* SFU (Selective Forwarding Unit) functionality: the server may offer the selection, copy, and forwarding functionality of IP steams produced by multiple WebRTC endpoints (i.e., participants).

# Mapping to Collaboration Scenarios

The following table provides an initial mapping of the identified functions to the collaboration scenarios:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Functions/CS | **Collaboration Scenario 1** | **Collaboration Scenario 2** | **Collaboration Scenario 3** | **Collaboration Scenario 4** |
| **Provisioning Server** | Optional | Optional | Optional | Optional |
| **Configuration Server** | Optional | Required | Required | Required |
| **MSH** | Required | Optional | Optional | Optional |
| **Network Support Function** | Required | Required | Optional (maybe fulfilled by WebRTC Signaling Server) | Optional |
| **Trusted ICE Function** | N/A | Required | Optional | Optional |
| **Trusted WebRTC Signaling Server** | N/A | N/A | Required | Required |
| **Trusted Media Server** | N/A | Optional | Optional | Optional |

# Proposal

We propose to agree the identified functions and their classification and document them in the iRTCW PD.