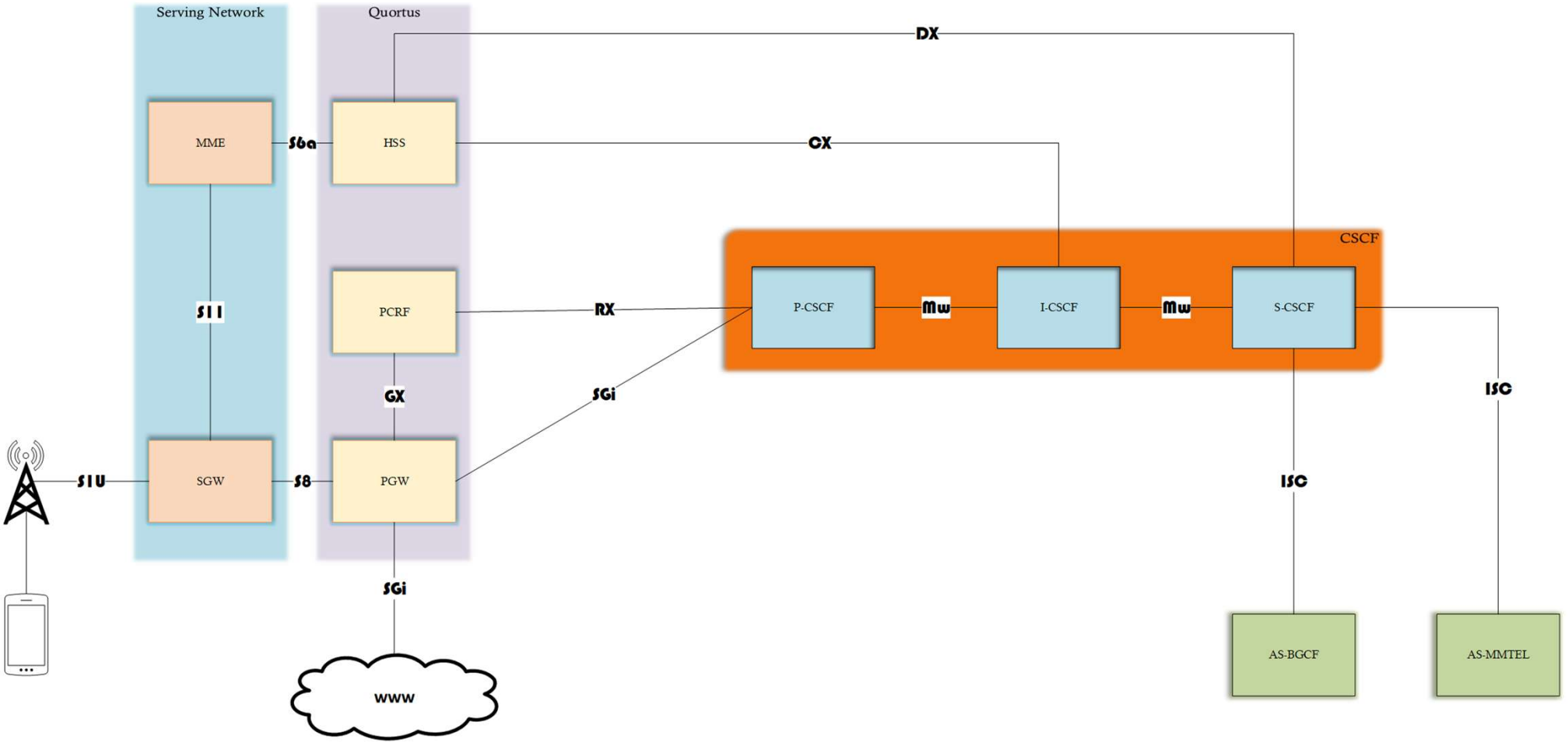
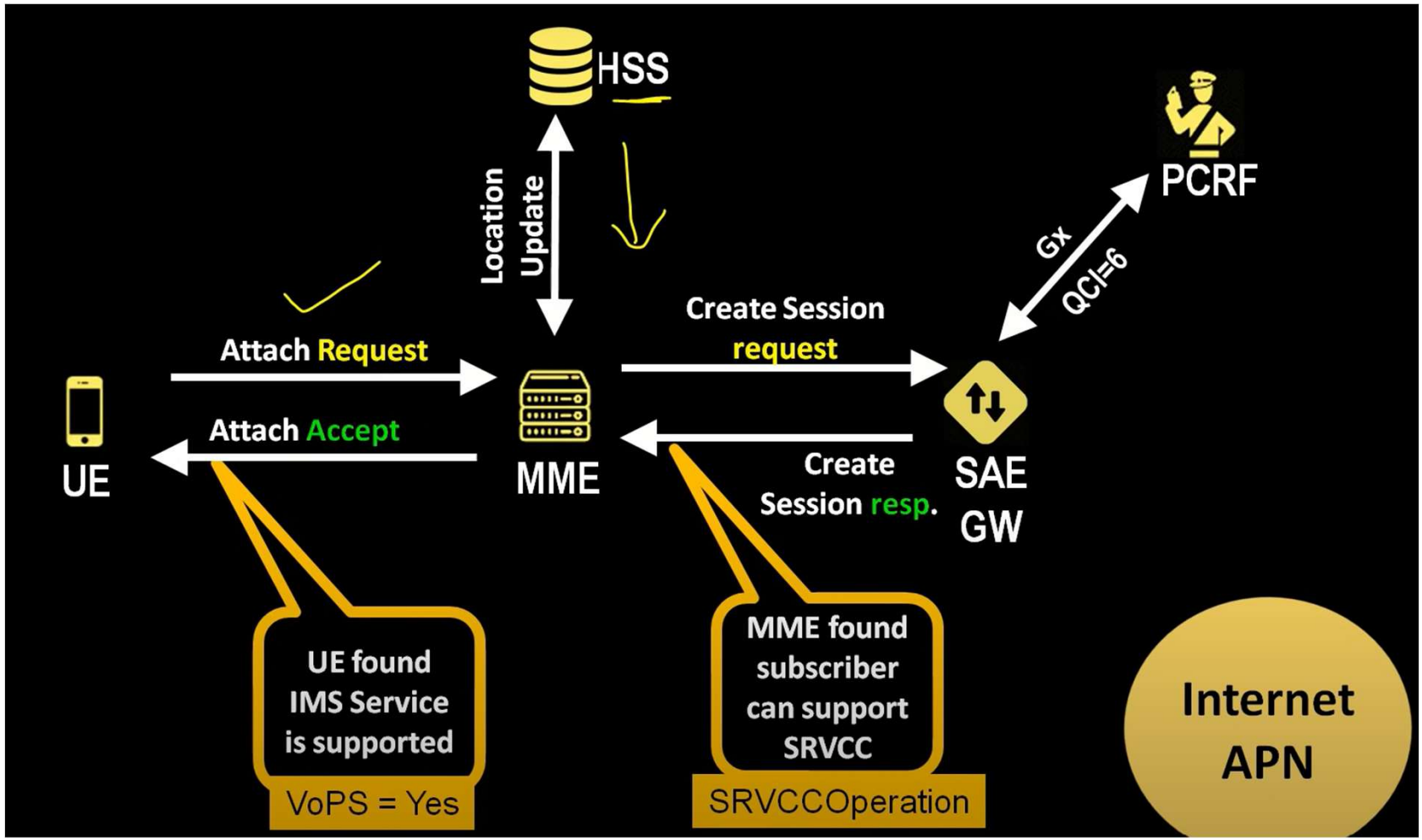
VoLTE using S8HR

VoLTE using S8HR is essentially the same as VoLTE



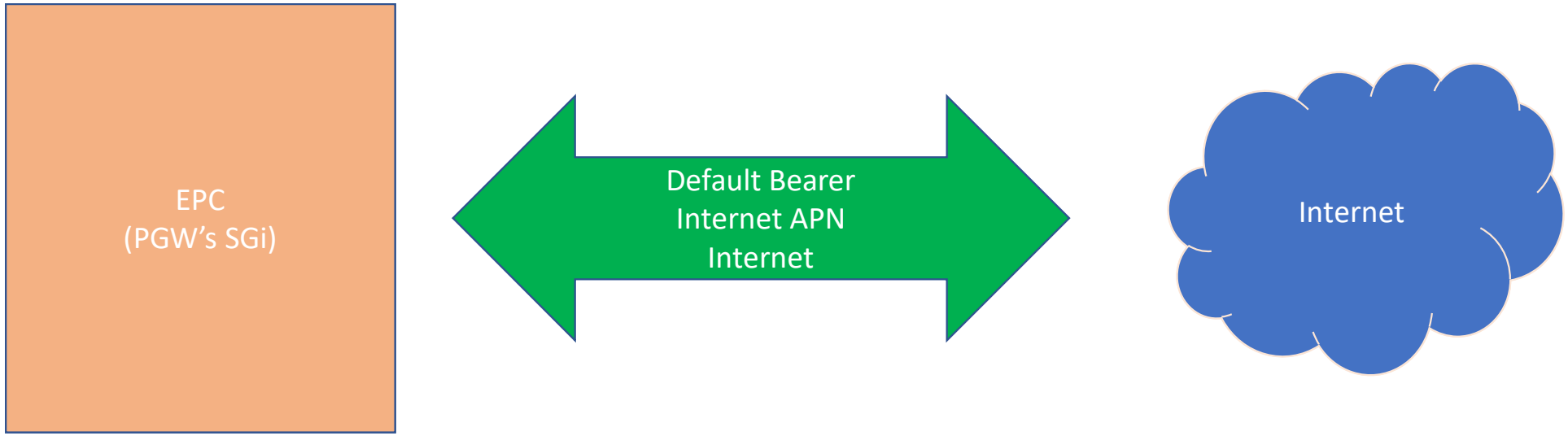
5 things that must happen before a VoLTE call can be made

1. A successful LTE Attach


HSS
Location Update
PCRF
Gx
QCI=6
Create Session request
Attach Request
Attach Accept
UE
MME
Create Session resp.
SAE GW
UE found IMS Service is supported
VoPS = Yes
MME found subscriber can support SRVCC
SRVCCOperation
Internet APN

2. A default bearer (Internet)

Make note that this default bearer has a QCI & Priority 6-9
Best effort

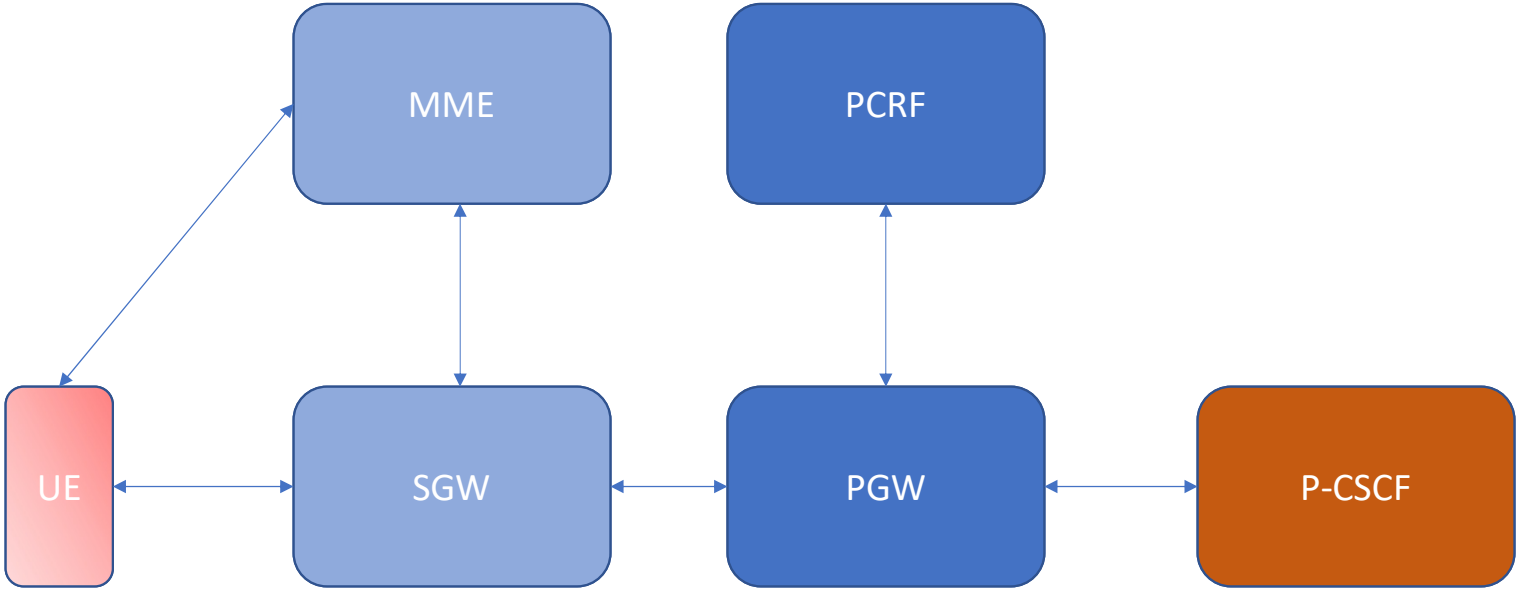


5 things that must happen before a VoLTE call can be made

1. LTE Attach
2. Default Bearer (Internet)

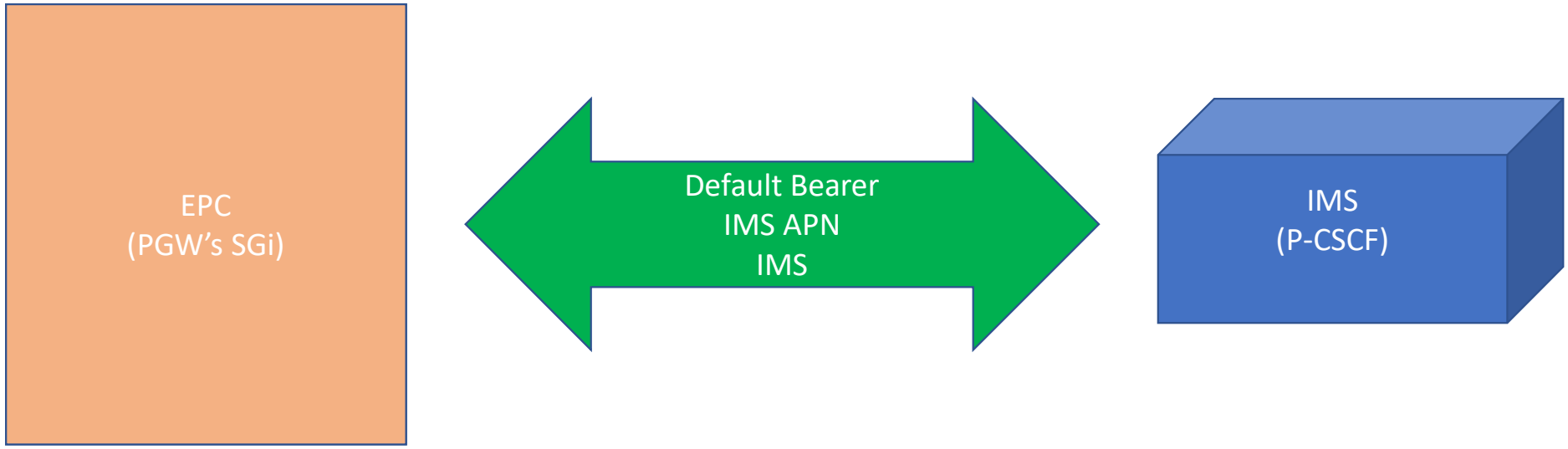
3. A default bearer (IMS)

UE sends a PDN Connection Request to MME
Note that the MME doesn't have to send an additional update location request to HSS
The PDN Connection Request is forwarded to the SGW/PGW
The PGW uses the GX interface to get parameters for the 2nd default bearer (QCI & Priority)



The PGW responds to MME's 2nd default bearer request
The 2nd default bearer request is activated with the P-CSCF's IP returned via PCO option
The default bearer for IMS is now established

Make note that this default bearer has a QCI 5 with a priority of 1. It too is non-GBR.
This is how any SIP messages delivered to the UE. The PGW & P-CSCF provide the tunnel between the EPC & IMS core.
The core sees these messages as user plane data
The UE recognizes these messages as SIP messages



5 things that must happen before a VoLTE call can be made

1. LTE Attach
2. Default Bearer (Internet)
3. Default Bearer (IMS)

4. SIP Registration

1st Attempt

The UE iniates and sends a SIP REGISTER message to P-CSCF

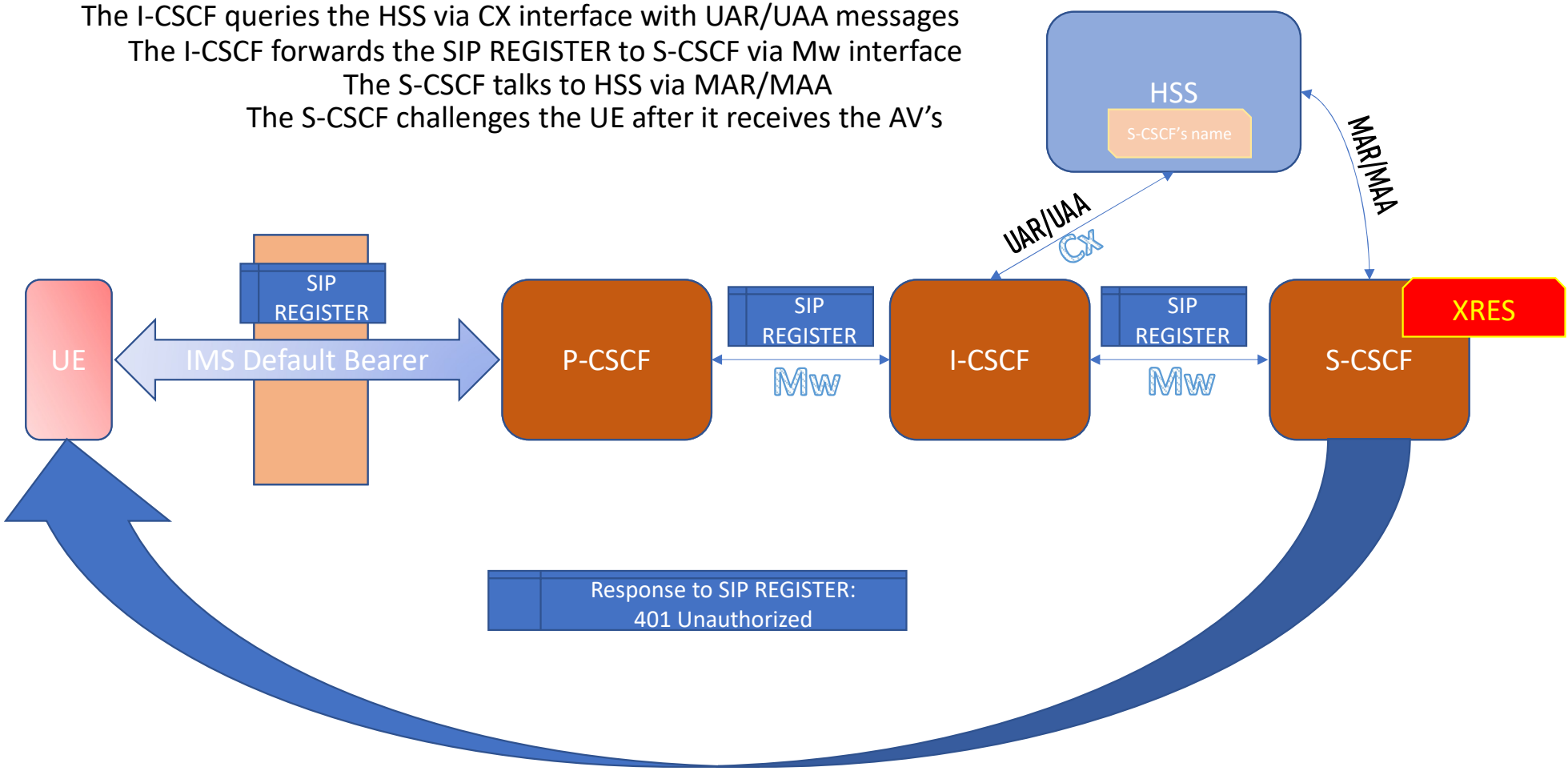
The P-CSCF forwards the SIP REGISTER to the I-CSCF

The I-CSCF queries the HSS via CX interface with UAR/UAA messages

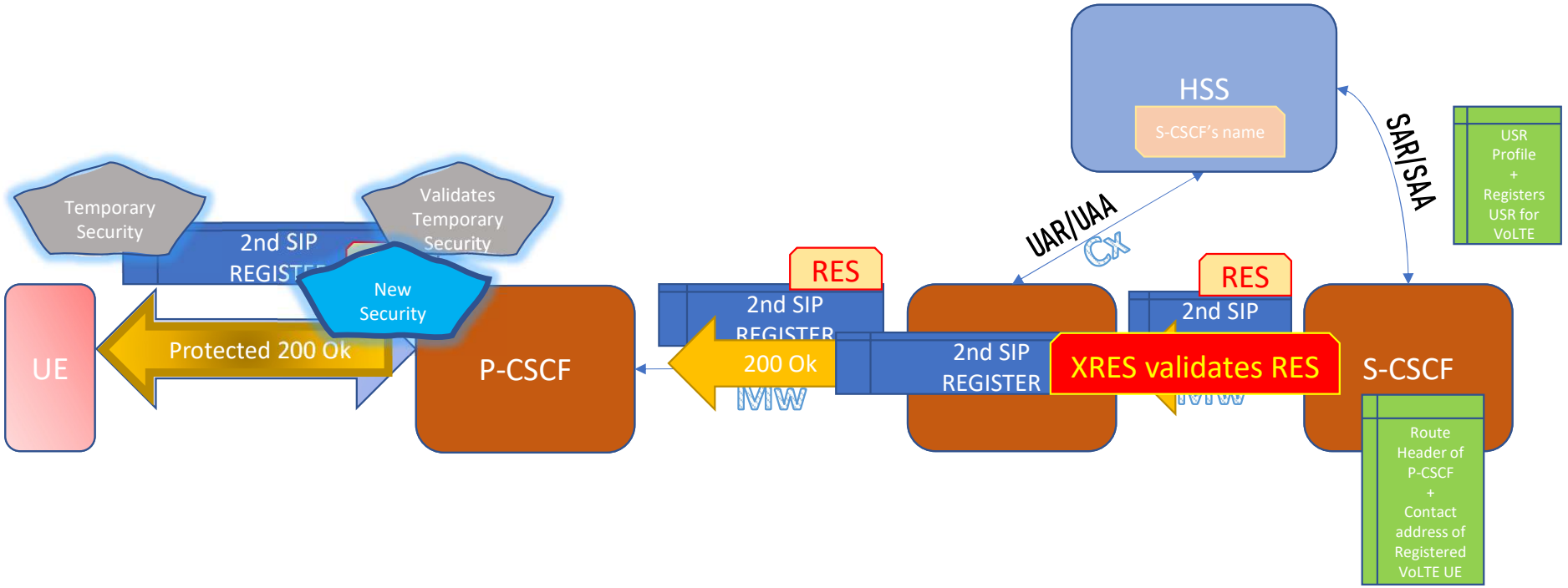
The I-CSCF forwards the SIP REGISTER to S-CSCF via Mw interface

The S-CSCF talks to HSS via MAR/MAA

The S-CSCF challenges the UE after it receives the AV's



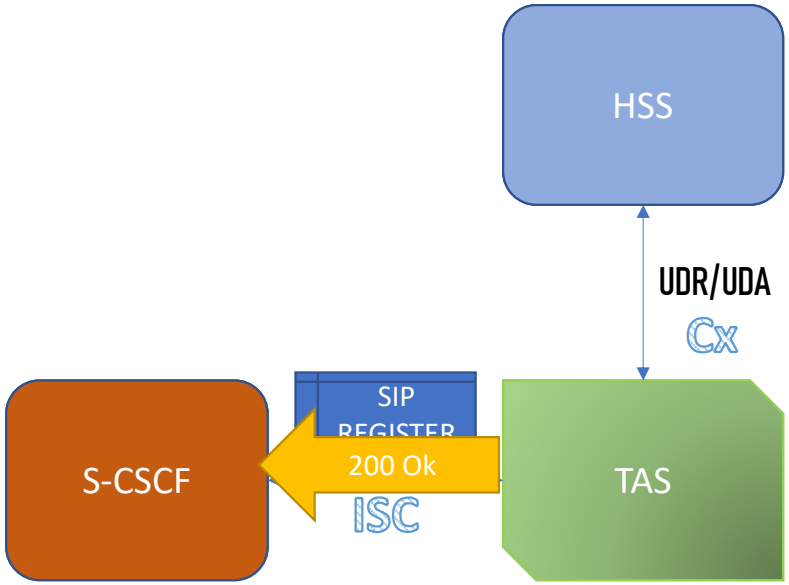
2nd Attempt


HSS
S-CSCF's name
UAR/UAA
Cx
SAR/SAA
USR Profile + Registers USR for VoLTE
Temporary Security
Validates Temporary Security
2nd SIP REGISTER
New Security
Protected 200 Ok
UE
P-CSCF
RES
2nd SIP REGISTER
200 Ok
IMW
2nd SIP REGISTER
RES
2nd SIP
XRES validates RES
S-CSCF
Route Header of P-CSCF + Contact address of Registered VoLTE UE

5 things that must happen before a VoLTE call can be made

1. LTE Attach
2. Default Bearer (Internet)
3. Default Bearer (IMS)
4. VoLTE Registration

5. TAS (AS-MMTel) Registration


HSS
UDR/UDA
Cx
SIP
S-CSCF
200 Ok
TAS
ISC

5 things that must happen before a VoLTE call can be made

1. LTE Attach
2. Default Bearer (Internet)
3. Default Bearer (IMS)
4. VoLTE Registration
5. TAS Registration