VIAVI Test Proposals for
RIC-assisted Dynamic Traffic Steering
Use Cases Design and Verifications

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Feb 19 2020

Purpose of this material

VIAVI sharing our proposals to discuss with AT&T and members of the O-RAN SC team - on how we can apply our testing tools to help design and validate RIC-assisted use cases – starting with the dynamic traffic steering use cases proposed by AT&T

VIAVI has listed a few options for discussion and alignment purposes
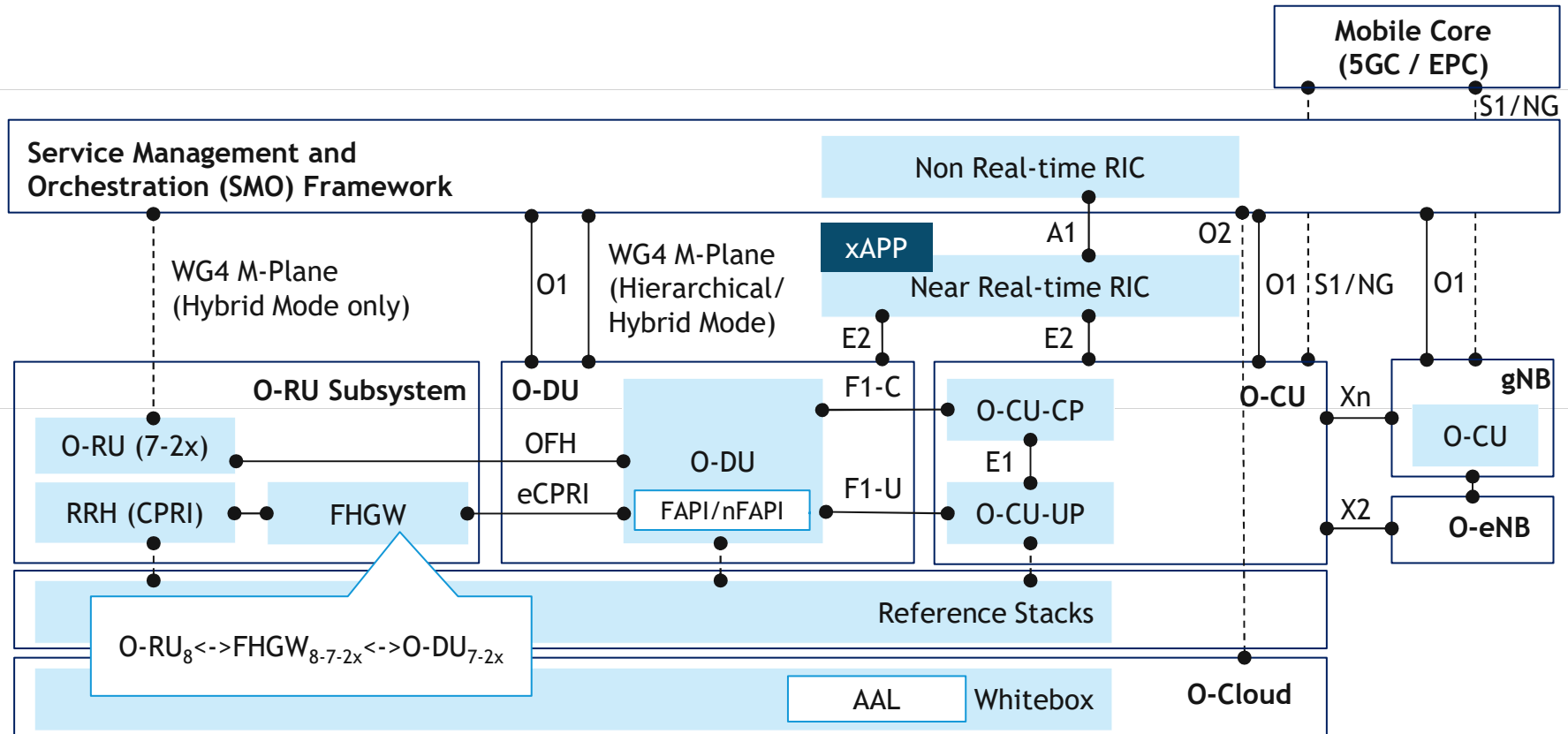
High Level Requirements (based on our understanding)

1. RIC assisted use cases such as dynamic traffic steering design, validation and optimization, will require meaningful and repeatable stats to be reported over the E2 interface (near time RIC) and A1 interface (non real time RIC – if used)

2. In order to have the O-CU(s) and O-DU(s) report the required stats over the E2 interface, Stateful 5G NR UEs, Slice-aware, QoS-aware (5QI) application traffic sessions will be required to be emulated and provided as an active stimulus to these O-RAN components
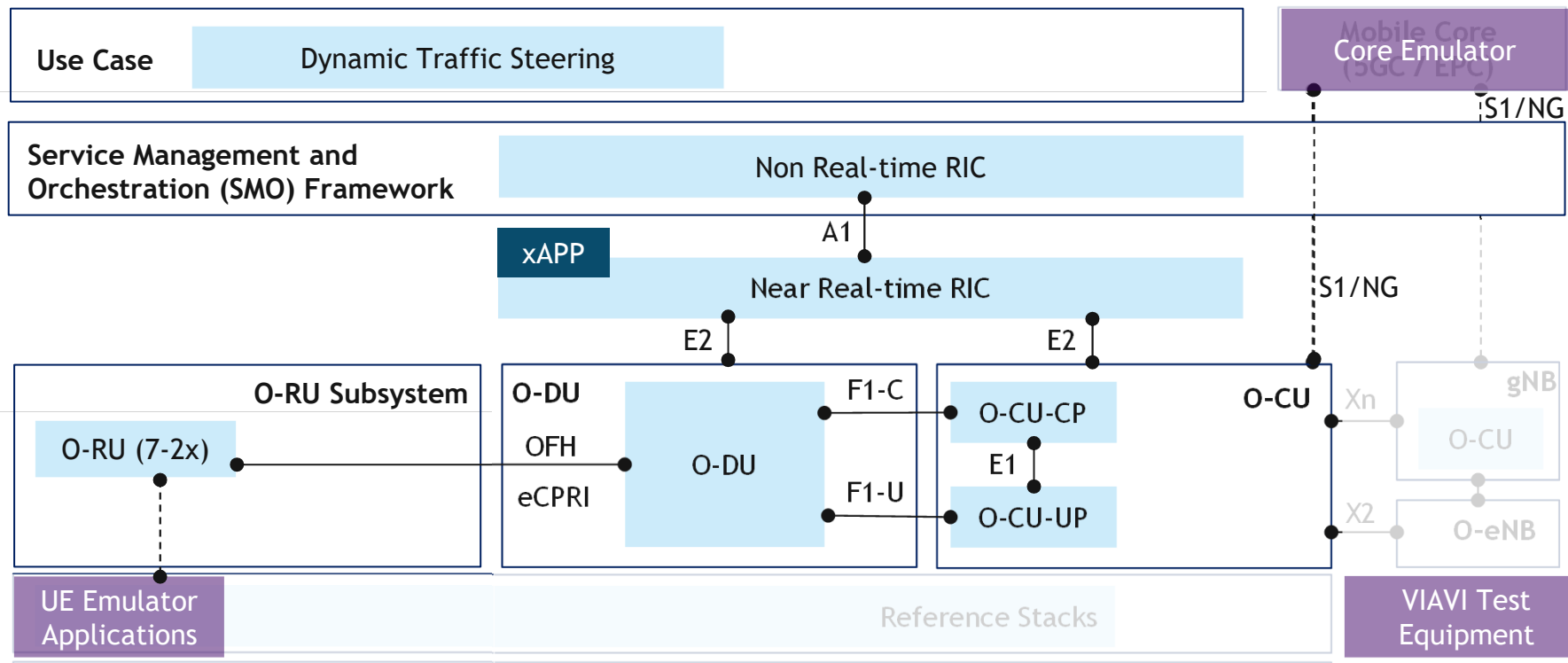
UE emulator and traffic emulator are ideal for this testing as the emulated sessions are always stateful, repeatable and easily setup and programmable esp. if needing to emulate

- One or more UEs with each UE (or each groups of UEs)
- Configurable capabilities, mobility/QoS profiles, channel conditions and others
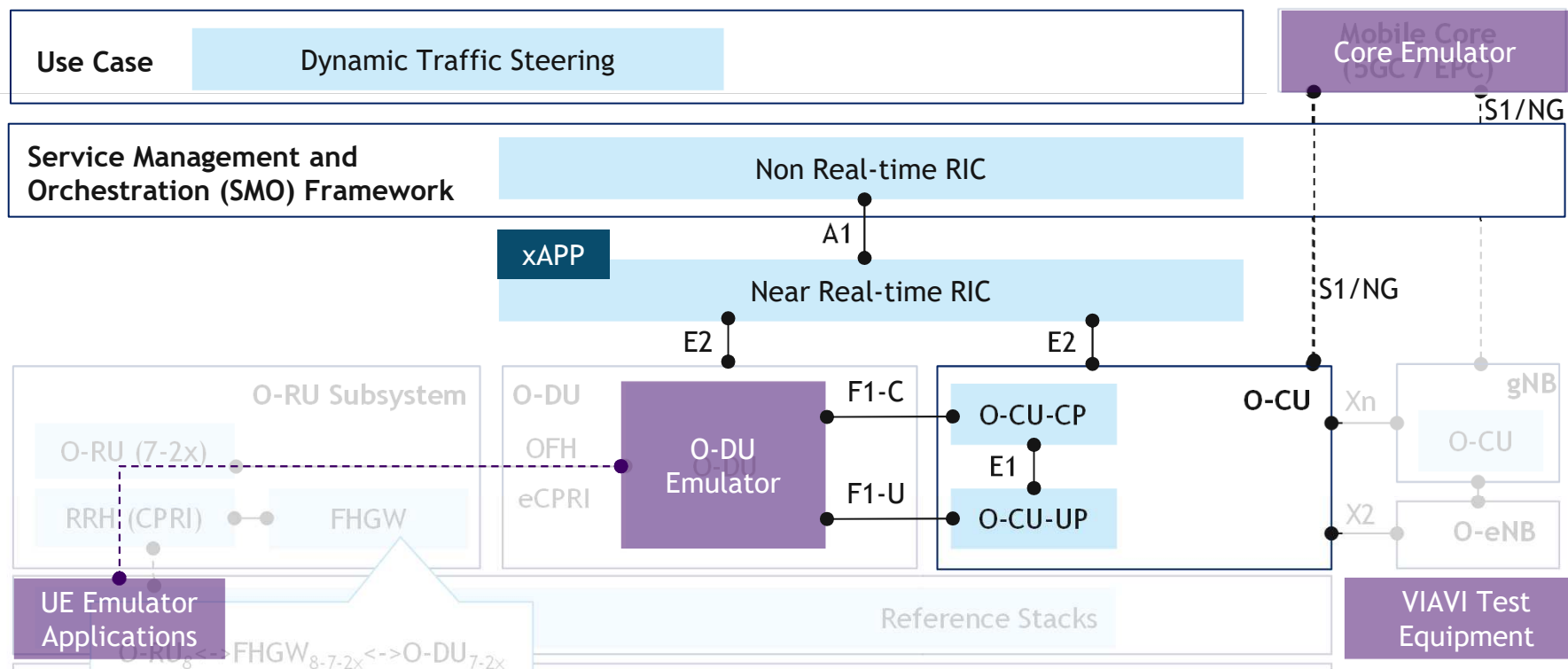
O-RAN High Level Architecture

O-RAN RIC-assisted Dynamic Traffic Steering Use Case – Potential Test Setup #1

Use Case	Dynamic Traffic Steering

Service Management and Orchestration (SMO) Framework

Non Real-time RIC

Core Emulator
Mobile Core (5GC / EPC)

S1/NG

A1

xAPP

Near Real-time RIC

E2   E2   S1/NG

O-RU Subsystem   **O-DU**   F1-C   **O-CU**   Xn   gNB
                                                                                    O-CU
O-RU (7-2x)   OFH   O-DU   O-CU-CP
                            eCPRI   E1
                                          F1-U   O-CU-UP   X2   O-eNB

UE Emulator Applications   Reference Stacks   VIAVI Test Equipment
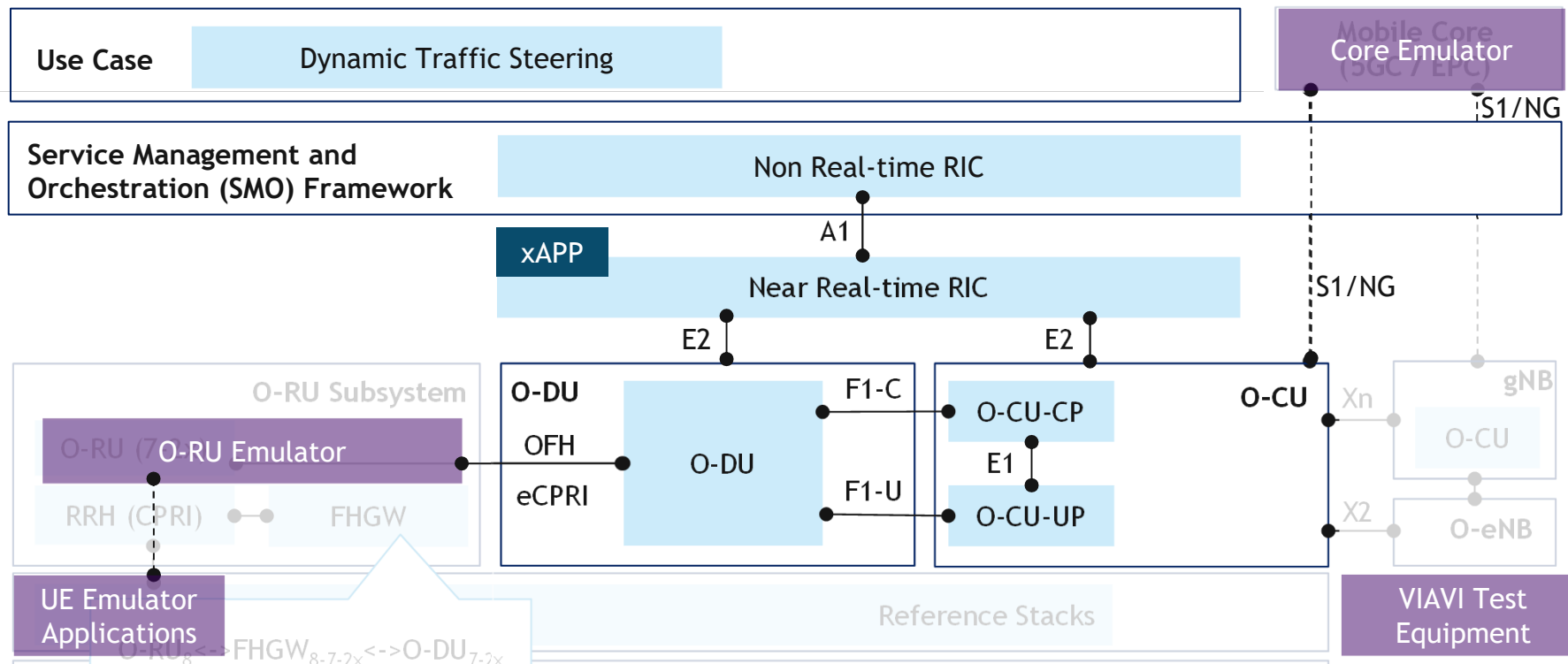
This setup will require however a fully functional and interoperable system (O-RU+O-DU+O-CU)

O-RAN RIC-assisted Dynamic Traffic Steering Use Case – Proposed Test Setup #2

Use Case	Dynamic Traffic Steering

Core Emulator (Mobile Core (5GC / EPC))

S1/NG

Service Management and Orchestration (SMO) Framework

Non Real-time RIC

A1

xAPP

Near Real-time RIC

S1/NG

E2

E2

O-RU Subsystem

O-DU

F1-C

O-CU

gNB

Xn

O-RU (7-2x)

OFH

O-DU Emulator

O-CU-CP

O-CU

eCPRI

E1

RRH (CPRI)

FHGW

F1-U

O-CU-UP

X2

O-eNB

UE Emulator Applications

O-RU$_8$<->FHGW$_{8-7-2x}$<->O-DU$_{7-2x}$

Reference Stacks

VIAVI Test Equipment

This is the simplified test setup which we believe can better fit your needs as only the O-CU is required
Focus will be on dynamic traffic steering xApp design verification and optimization

O-RAN RIC-assisted Dynamic Traffic Steering Use Case – Alternative Test Setup #3

Use Case	Dynamic Traffic Steering

Core Emulator
(5GC / EPC)

S1/NG

Service Management and Orchestration (SMO) Framework

Non Real-time RIC

A1

xAPP

Near Real-time RIC

S1/NG

E2

E2

O-RU Subsystem

O-DU

F1-C

O-CU

Xn

gNB

O-RU (7 | O-RU Emulator

OFH

O-DU

O-CU-CP

O-CU

eCPRI

E1

RRH (CPRI)

FHGW

F1-U

O-CU-UP

X2

O-eNB

UE Emulator Applications

Reference Stacks

VIAVI Test Equipment

O-RU$_8$<->FHGW$_{8-7-2x}$<->O-DU$_{7-2x}$

This can be the next stage test setup when the O-DU comes online and has been proven to interoperate well with the O-CU – again the main objective is to focus on xApp design verification

Next steps

VIAVI is very interested to discuss and align with AT&T on the specifics of the test scenarios which would be required to help move forward with the RIC-assisted dynamic traffic steering use cases – design, validation and optimization

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