**3GPP TSG-SA WG6 Meeting #49-bis-e S6-222004**

**e-meeting, 22nd June – 1st July 2022 (revision of S6-221927)**

**Title: LS on Clarification of Edge Node Sharing**

**Response to:**

**Release: Release-18**

**Work Item: FS\_eEDGEAPP**

**Source: 3GPP SA6**

**To: GSMA OPG**

**Cc: 3GPP SA2, 3GPP SA**

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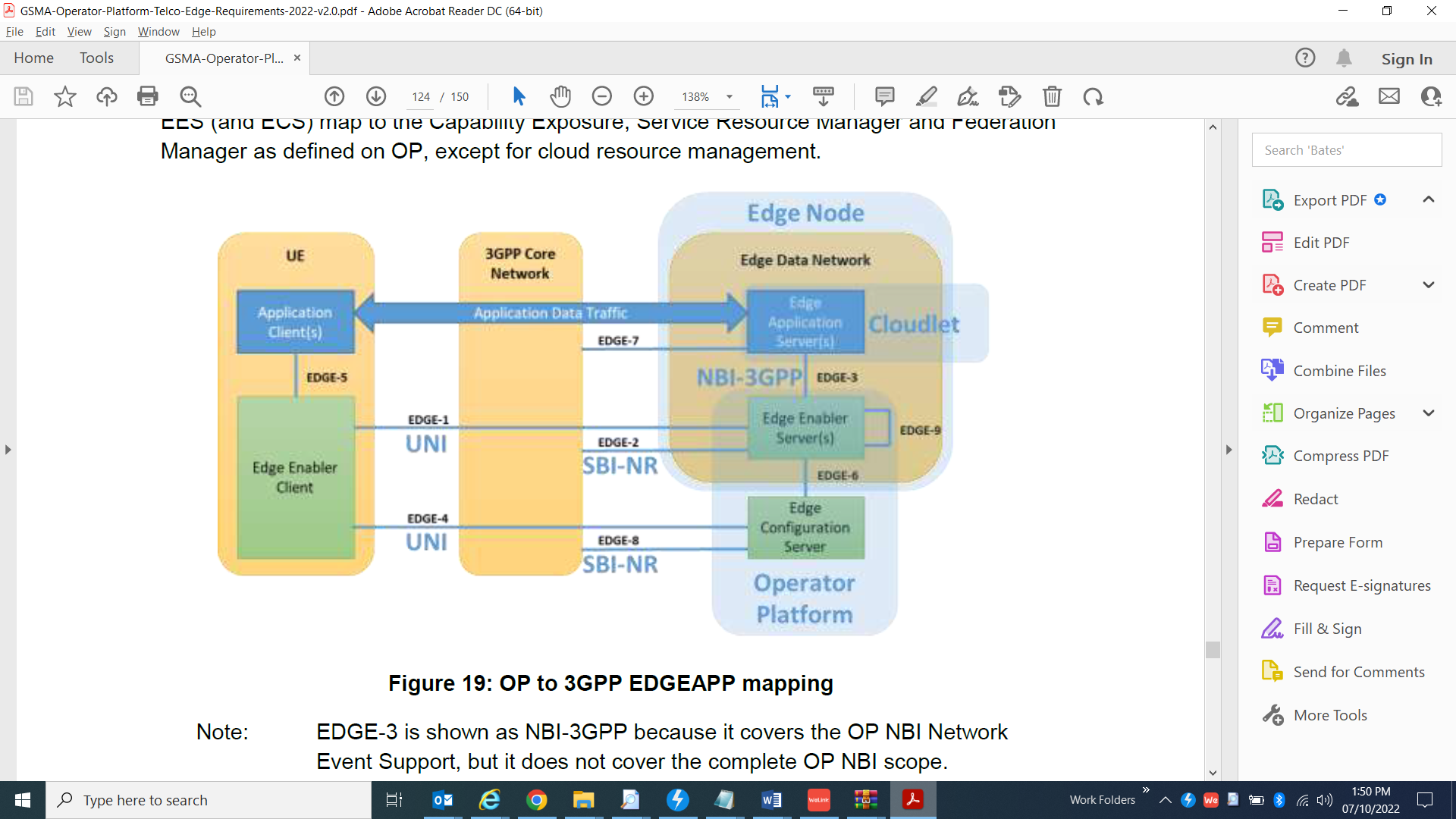
**Attachments:** None

# 1 Overall description

SA6 has specified edge enabling architecture (EDGEAPP) in 3GPP TS 23.558 in Rel.17. During Rel.18, eEDGEAPP study has captured Key Issue #22 (clause 4.22) in 3GPP TR 23.700-98 v1.0.1. This Key Issue is based on GSMA OPG requirements for Edge Node Sharing.

In Edge Node Sharing context, there are two separate actors or business entities defined by SA6 – PLMN operator and Edge Computing Service Provider (ECSP). It is possible that PLMN Operator and ECSP are same organization. For Edge Node Sharing aspects, SA6 mainly refer the clauses 3.3.5, 3.5.4.3.3, Annex A.2.1 and Annex A.2.2 specified in GSMA OPG Operator Platform Telco Edge Requirements (v2.0) – GSMA.OPG.02.

Clause A.2.1 in GSMA.OPG.02 captures OP to 3GPP EDGEAPP mapping:



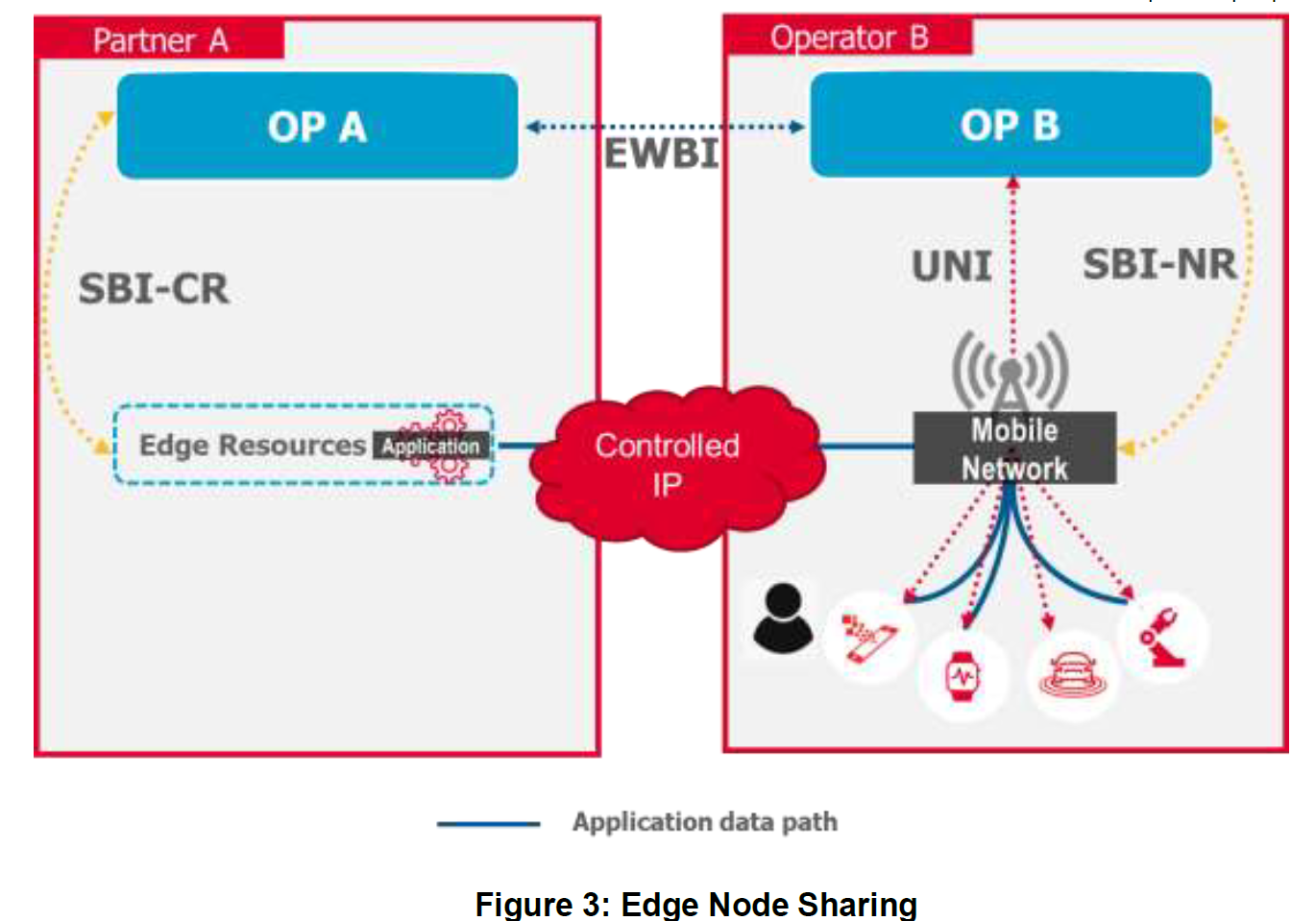
The illustration in Figure 19 of GSMA.OPG.02 shows Edge Enabler Server (EES) and Edge Configuration Server (ECS) are considered part of Operator Platform. Edge Application Server(s) and Edge Enabler Server(s) are shown to utilize the Edge Node.

Clause A.2.2 shows EDGE-9 interface as E/WBI (not shown in Figure 19).

Considering the above, SA6 would like to ask GSMA OPG for further clarification as the following:

GSMA OPG.02, clause 3.3.5 Edge Node Sharing mentions:

*“Two operators may decide to share edge nodes to maximise their edge presence. Using the figure below as an example, the mobile network of both operators covers the whole country. However, Partner A deploys edge sites in the country's North Region and operator B in the South Region. In this case, Operator B might deploy an application on Partner A's edge node while providing connectivity to the end-user over their own radio network”.*



*“Figure 3 above shows an end-user who is a subscriber of Operator B's OP services and is currently connected to Operator B's network in the country's north. Edge node sharing enables this end-user to access the Edge Cloud service, even though Operator B does not have their own edge resources in this Region; the Operator B Edge Cloud service is hosted on Partner A's edge node.”.*

In this context, the following aspects require further clarifications:

**Q1: Would GSMA OPG confirm the SA6 understanding that when the UE is located in the North Region, it is served by operator B’s PLMN when consuming an application on Partner A's edge node deployed in the North region?**

**Q2: Would GSMA OPG please provide the definition of and explain the relationship between edge node, edge sites and edge resources?**

**Q3: When UE further moves into the South Region, SA6 assumes that if the application is also deployed on Operator B’s edge node in the South Region, the UE can be served by the local application in Operator B’s edge node in the South Region. Would GSMA OPG please confirm the SA6 assumption?**

**Q4: When UE is served by Operator B’s mobile network in North region and its User Client is trying to discover edge application, is there a requirement that the User Client be provided information (other than Application Endpoint exposure towards User Clients (UC) via the UNI) about OP A by OP B? And if so, for what purpose?**

The questions above this line have no explicit objections but are still open for suggested changes. All changes above this line that are not highlighted in red have been accepted even though they are still open for discussion.

**Q5: Figure 3 shows that the UNI request is towards OP B, can UNI request for availing OP services be sent towards OP A of Partner A in edge node sharing case, directly?**

In addition, reading the following text from clause 3.5.4.3.3 in GSMA OPG requirement:

*"Edge node sharing is a scenario wherein an OP, when serving the UNI requests originating from (its own) UCs, decides to provide the application from the Edge nodes of a partner OP (where the application is available). Like the scenario discussed in section 3.3.5, this decision may be due to the Operator's policy controls, specific Application Provider restrictions, due to constraints originating from the federation agreement between the Operators and others. An E/WBI service is required to support the publishing of application and Availability Zone information to enable specific applications to be served from a Leading OP’s Edge Cloud in the following scenarios:*

*• In a roaming scenario where local breakout (i.e. data plane access to Edge Cloud resources in visited network) is not available, the applications need to be served from the Home OP for consumption by roaming UCs;*

*• In a non-roaming scenario where an OP needs to allow its own UCs, the consumption of applications published by a Partner OP served from that partner’s Edge Cloud."*

**Q6: Clarification is required on the following service consumption for edge node sharing scenarios:**

1. **It is possible that OP B will set certain limitation to allow only its own User Clients to consume the application deployed in its partner OP A?**
2. **Can the application in the partner OP A be consumed by any other User client (e.g. OP A's User Clients)?**
3. **Can UCs of OP B consume only application deployed by OP B in OP A?**
4. **Can UCs of OP B consume other applications also deployed in OP A?**

In SA6 context, Edge Computing Service Provider (which can be mapped to Operator Platform provider) can be a PLMN operator or a 3rd party (e.g. Hyper-scaler).

**Q7: Is it possible that the OP is a 3rd party in figure 3 in clause 3.3.5 of GSMA OPG.02 for the Edge Node Sharing case?**

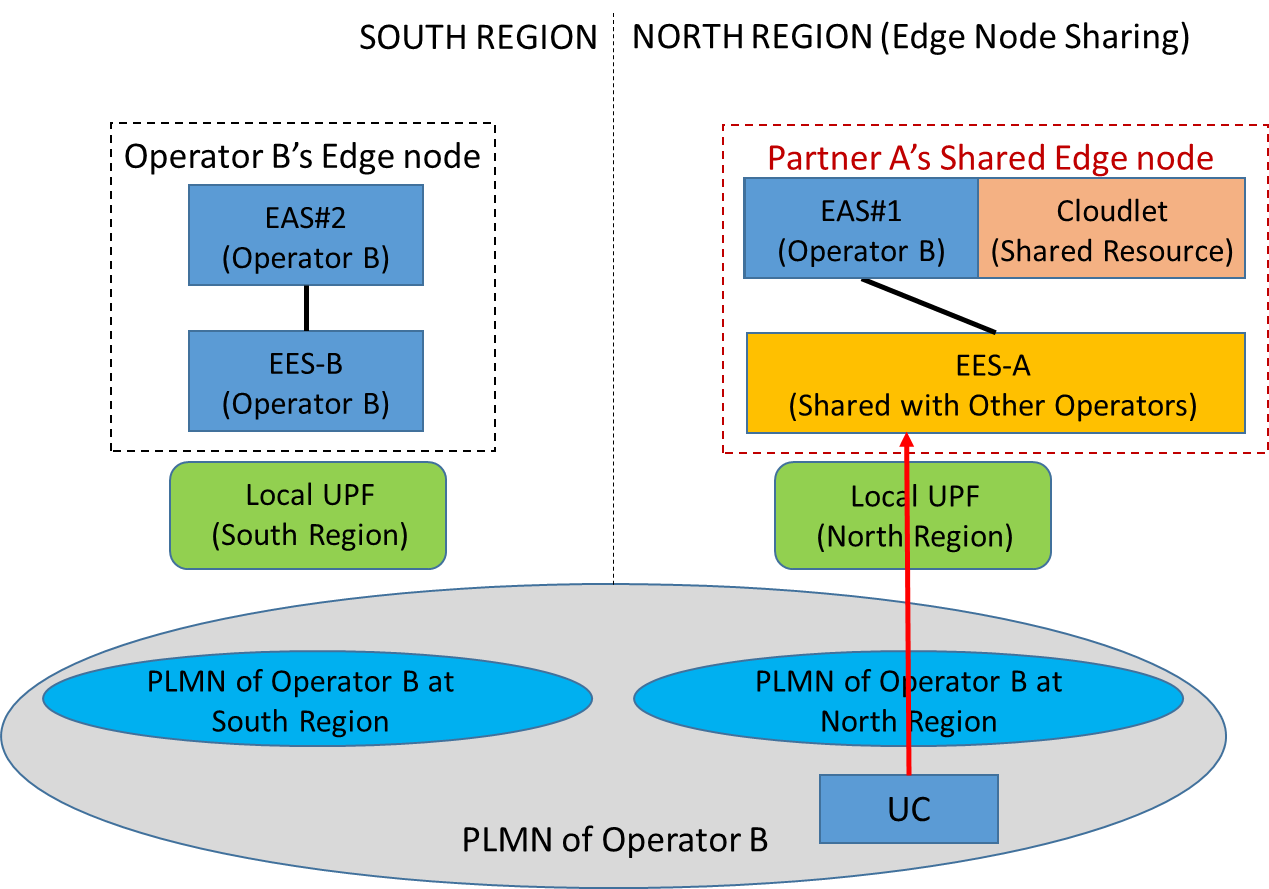
In clause 3.5.4.3.3, supported information for E/WBI is specified. Also, Annex A.2.2 specifies EDGE-9 interface as mapped to E/WBI.

**Q8: Are all information specified applicable over EDGE-9? If not, which information is not applicable over EDGE‑9?**

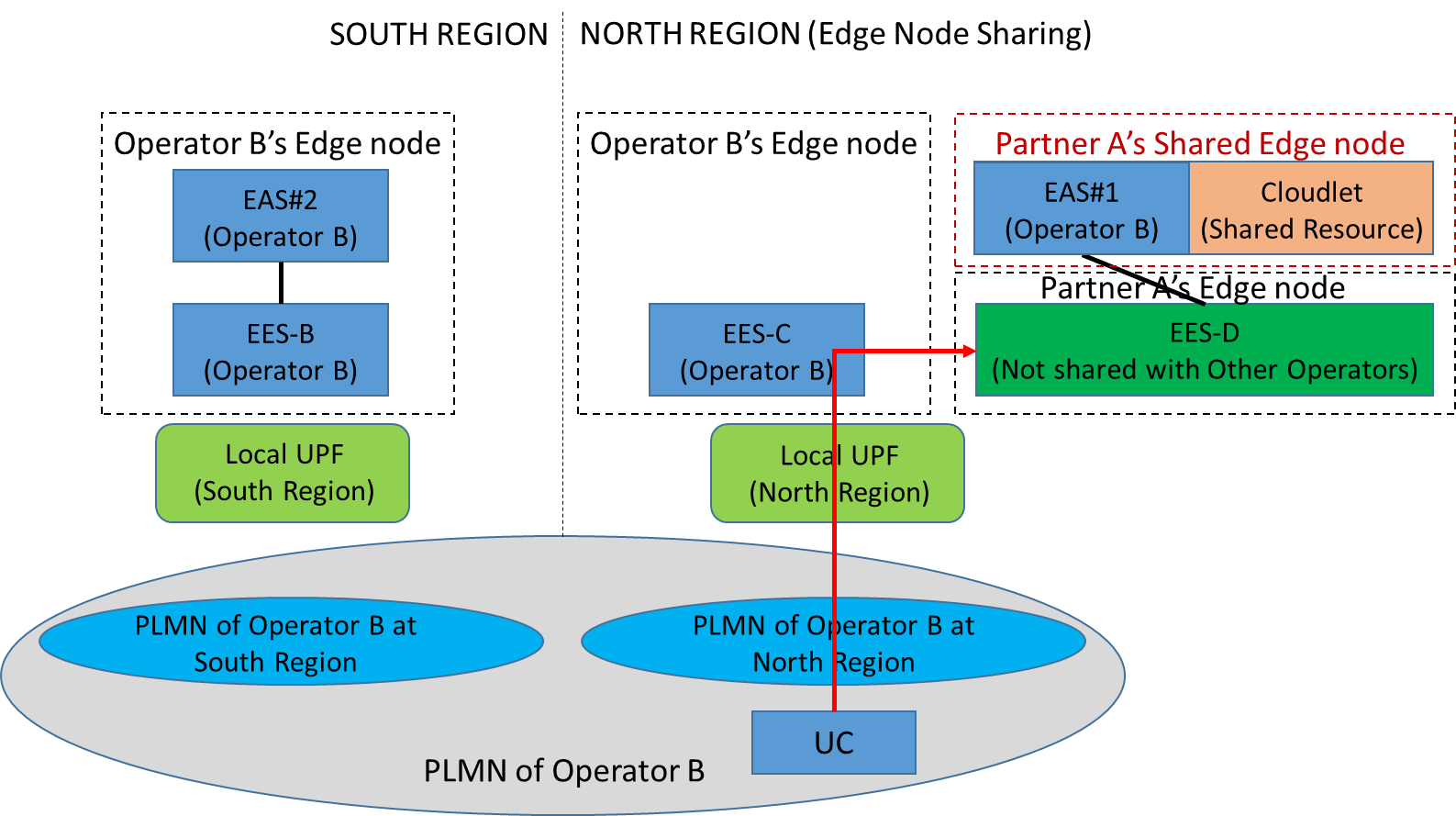
In addition, SA6 has another two different interpretations of Edge Node sharing deployment in figure 3 in GSMA OPG.02, clause 3.3.5

**Interpretation-1:** In North Region, the shared edge nodes in Partner A can contain both the resources for EAS deployment and EES services as it shown in figure 1-1 below. In this case, both the resources for EAS deployment and Edge platform services provided by EES‑A in Partner A are shared with Operator B. This enables UCs of Operator B to be able to directly connect to EES‑A to consume edge platform services like discovery of EAS#1 (as represented by Red line).

**Interpretation-2:** In North Region, the shared edge nodes only contain the resources for EAS deployment as shown in figure 1-2. In this case, operator B deploys its edge application (EAS#1) on the shared node in Partner A, but should deploy its own EES (EES‑C) on operator B‘s own Edge Node in the North region. The EES‑C deployed by Operator B interconnects via E/WBI (EDGE-9) with EES-D deployed by Partner A. This enables UCs of Operator B to be able to connect to EES‑C to consume edge platform services from EES‑D (only for Operator A) like discovery of EAS#1 (as represented by Red line).



**Figure 1-1: Deployment without Operator B’s edge node at Edge Node sharing location**



**Figure 1-2: Deployment with Operator B’s edge node at Edge Node sharing location**

**Q9: Which interpretation of the Edge Node Sharing deployment is the correct understanding? Interpretation‑1, or Interpretation‑2 or both? Also please clarify if any other deployments are possible.**

**Q10: If Operator B deploys its own EES (EES-C as shown in figure 1-1) South region and does not have any EES deployed in North region, then should Operator B’s UCs in North region have to connect to EES‑C first and then to EES‑D (e.g. after getting redirected to EES‑D by EES‑C) to consume edge platform services from EES-D like discover­ EAS#1?**

SA6 requests GSMA OPG to provide response to the above questions.

# 2 Actions

**To GSMA OPG**

**ACTION:** SA6 requests GSMA OPG to provide response to the questions in order to progress the work in SA6 for edge node sharing.

# 3 Dates of next TSG SA WG 6 meetings

SA6#50-e 22nd August – 31st August 2022 online meeting

SA6#51-e 10th October – 19th October 2022 online meeting