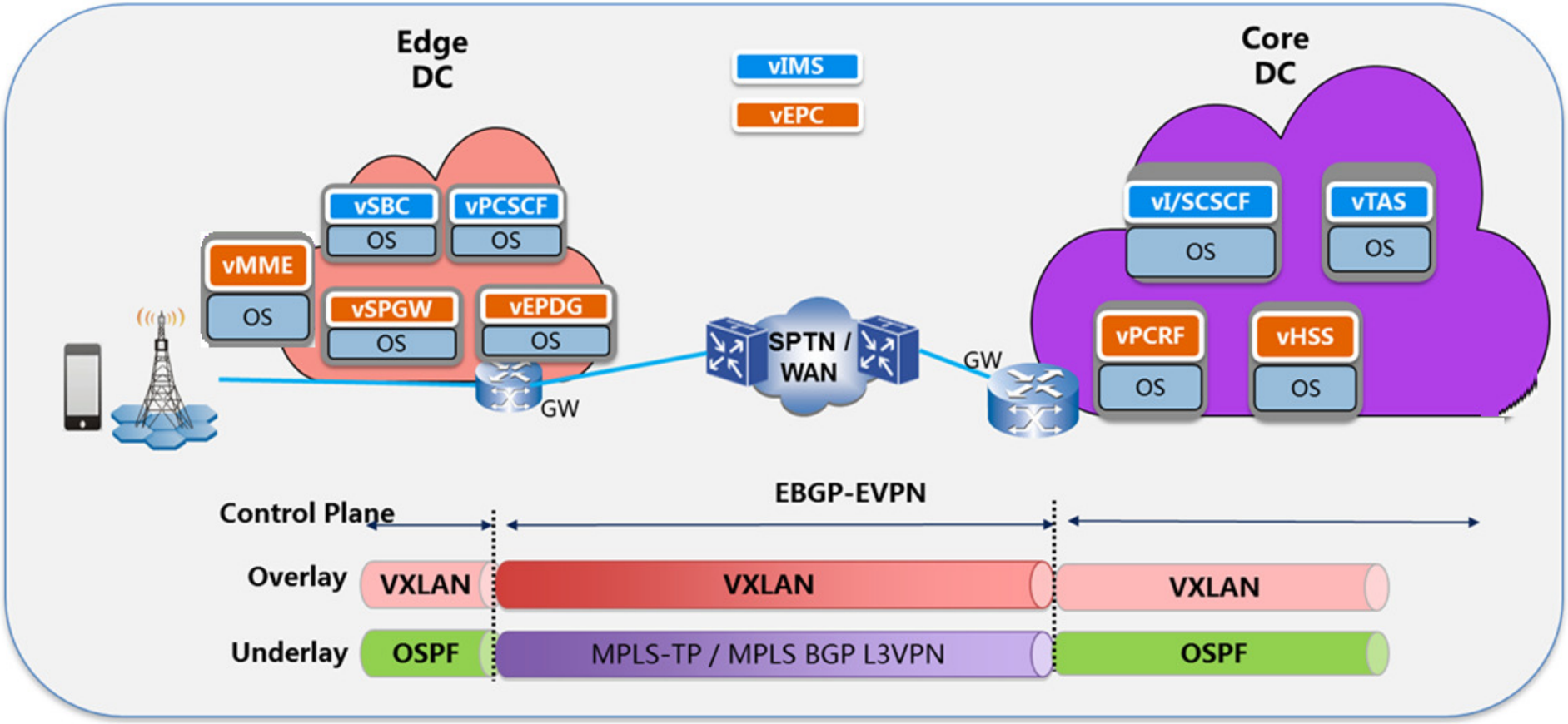
High Level Summary Points to Introduce the Sequence Diagrams

- The main SO participants in the sequence diagrams are a “service level” workflow, referred to as the “E2E Service Level Workflow” in the diagrams, and a “VNF-level” workflow referred to as the “Create VNF Instance BB”, where “BB” stands for “Building Block”.
- The VNF-level workflow execution threads across all the various VNF types share the same participant lifeline because they all are instances of the same generic SO BPMN based “building block” workflow. This building block’s runtime behavior is model-driven, where the model is an instance structure derived from the corresponding VNF’s TOSCA service template.
- In a similar manner, the E2E Service-level workflow is a generic SO BPMN based workflow whose runtime behavior is model-driven, where the model is an instance structure derived from the corresponding Service’s TOSCA service template.
- The functionality performed by the “Create VNF Instance BB” VNF-level SO workflow includes much of that which is performed by the “VF-C” participant in the “Instantiate” sequence diagram that appears in the “Workflows” section above on this wiki page. Thus one can think of the "Create VNF Instance BB" VNF-level SO workflow has having genericized this functionality and pulled it into the SO component.
- Recognizing that different Service Providers may want to model VoLTE differently, I have provided two different TOSCA modeling alternatives. The sequence diagrams are organized according to these TOSCA models. Note, however, that irrespective of the TOSCA model, the sequence diagrams look basically the same. This is intended to illustrate the point that the workflows are intended to be implemented in a “generic” manner, and not specific to any particular Service or VNF type. The model-driven behavior of ONAP as illustrated in the sequence diagrams would support either TOSCA modeling approach with no code impacts.
- The sequence diagrams assume that there is a private VPN already established in the WAN, and that network already has presence at each Cloud Zone via a set of pre-configured VLAN tags. Thus, all that is required is to assign one of these tags to each instantiated VNF, and to configure the Compute Host via HEAT to access this network via that VLAN tag.
- Note that the TOSCA models interpret the VoLTE network VNF architecture such that vMME is considered to be part of the vEPC “Edge”.

VoLTE Use Case Variation Used in These Examples

In the associated sequence diagrams, we assume that there is a private VPN already established in the WAN, and that network already has presence at each Cloud Zone via a set of pre-configured VLAN tags. All that is needed is to assign one of these tags to each instantiated VNF, and to configure the Compute Host via HEAT to access this network via that VLAN tag.



Note that this differs from the ONAP wiki diagram in that vMME has been moved to the Edge DC

Modeling Example A:
VoLTE Modeled as a Service

In this example “A”, VoLTE itself is modeled as a Service. Thus, creation of an instance of “VoLTE” would entail creating instances the vIMS Core and Edge as well as the vEPC Core and Edge. See modeling example “B” for an alternative approach.

Service Level

```
voLTE:
topology_template:
   node_templates:

      vMME:
      vSPGW:
      vEPDG:
      vPCRF:
      vHSS:
      vSBC:
      vPCSCF:
      vI/SCSCF:
      vTAS:

groups:
      vEPC_Edge:
        members [
          vMME
          vSPGW
          vEPDG  ]
      vEPC_Core:
        members [
          vPCRF
          vHSS   ]
      vIMS_Edge:
        members [
          vSBC
          vPCSCF   ]
      vIMS_Core:
        members [
          vI/SCSCF
          vTAS      ]
```

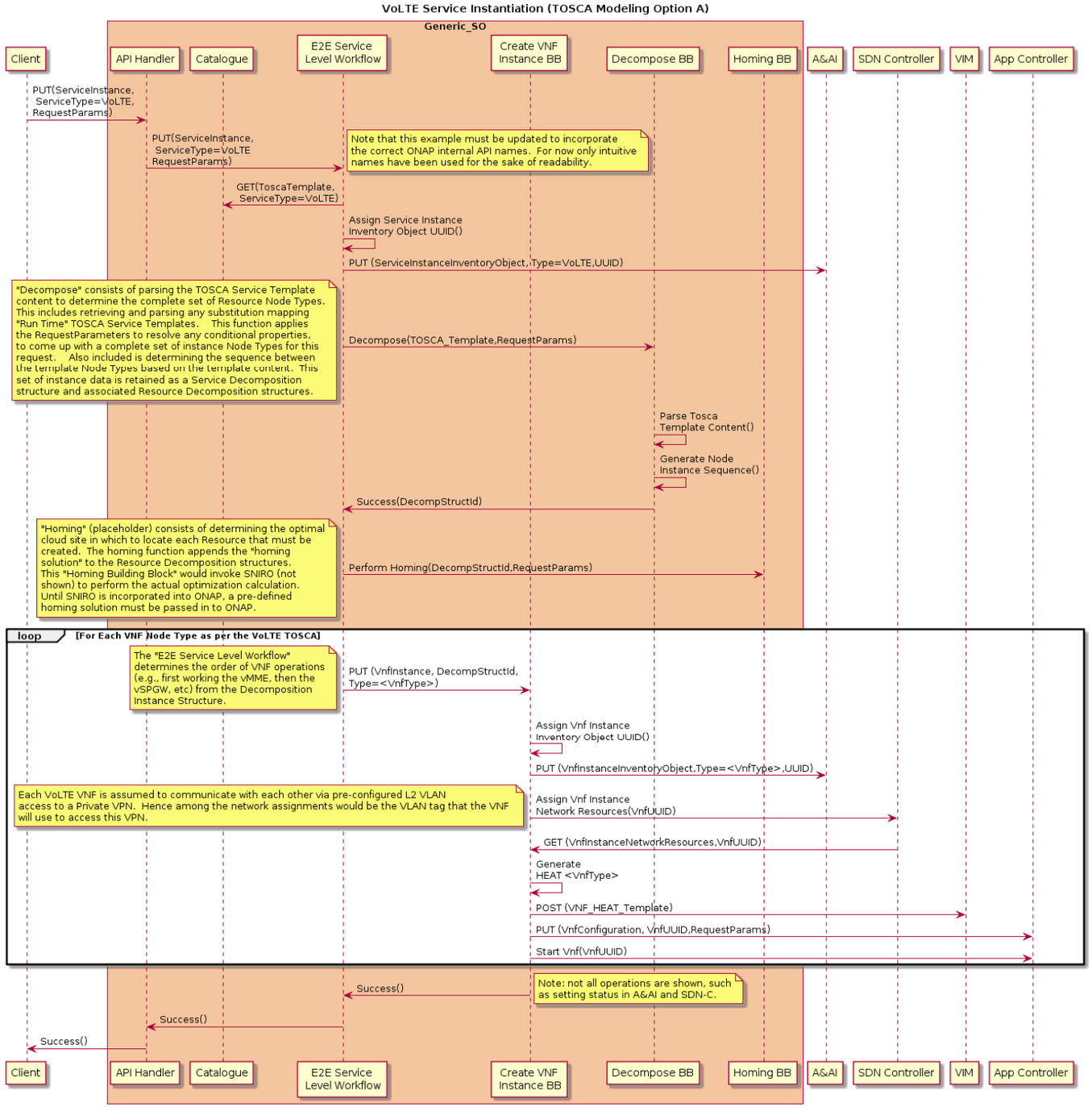
Depends On

VNF Level
(TOSCA or HEAT)

- vMME: (Service Template)
- vSPGW: (Service Template)
- vEPDG: (Service Template)
- vPCRF: (Service Template)
- vHSS: (Service Template)
- vSBC: (Service Template)
- vPCSCF: (Service Template)
- vI/SCSCF: (Service Template)
- vTAS: (Service Template)

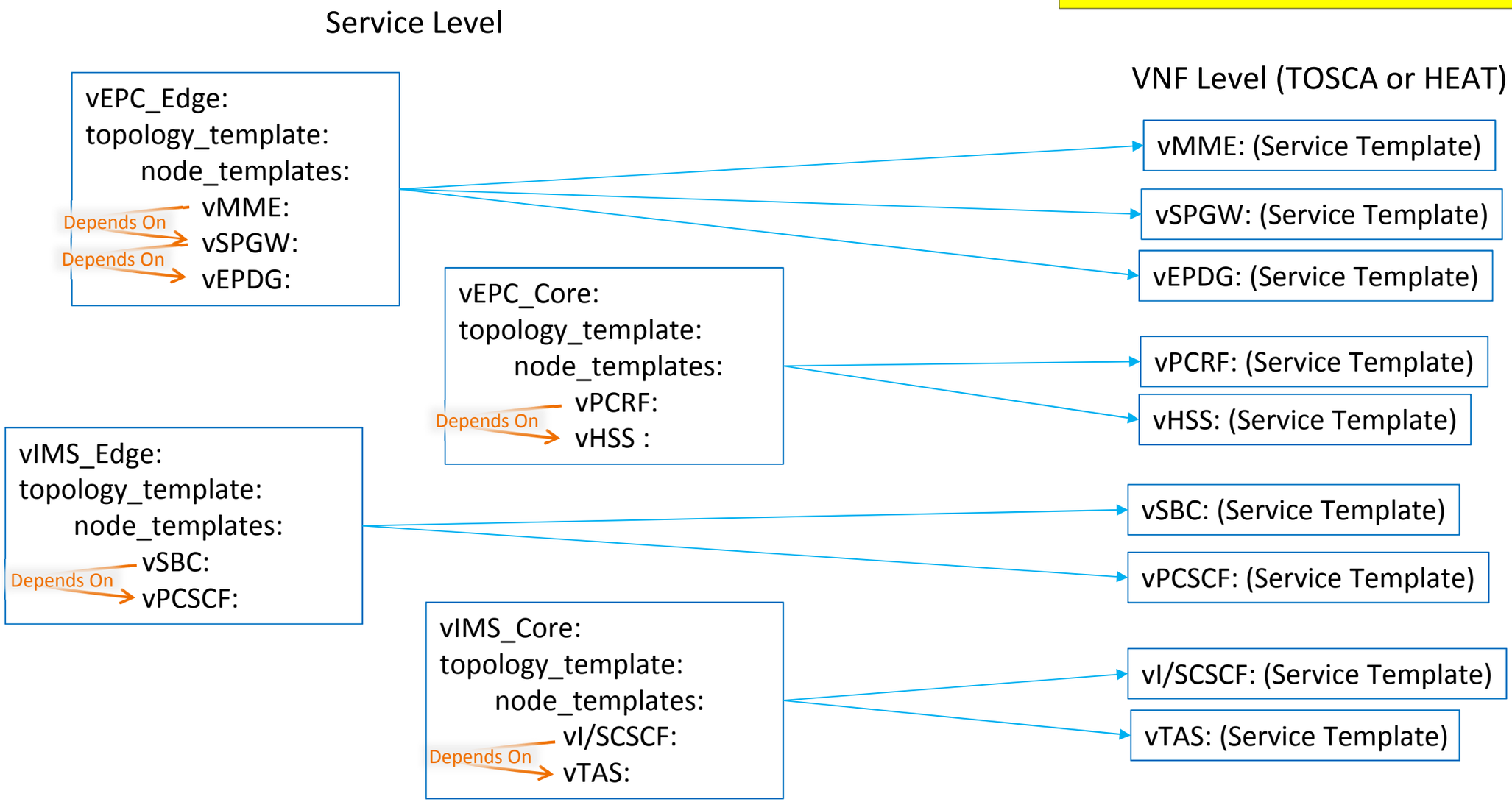
VoLTE Service Instantiation (TOSCA Modeling Example A)

This sequence diagram illustrates SO behavior driven from a VoLTE service instantiation request, assuming TOSCA modeling example A



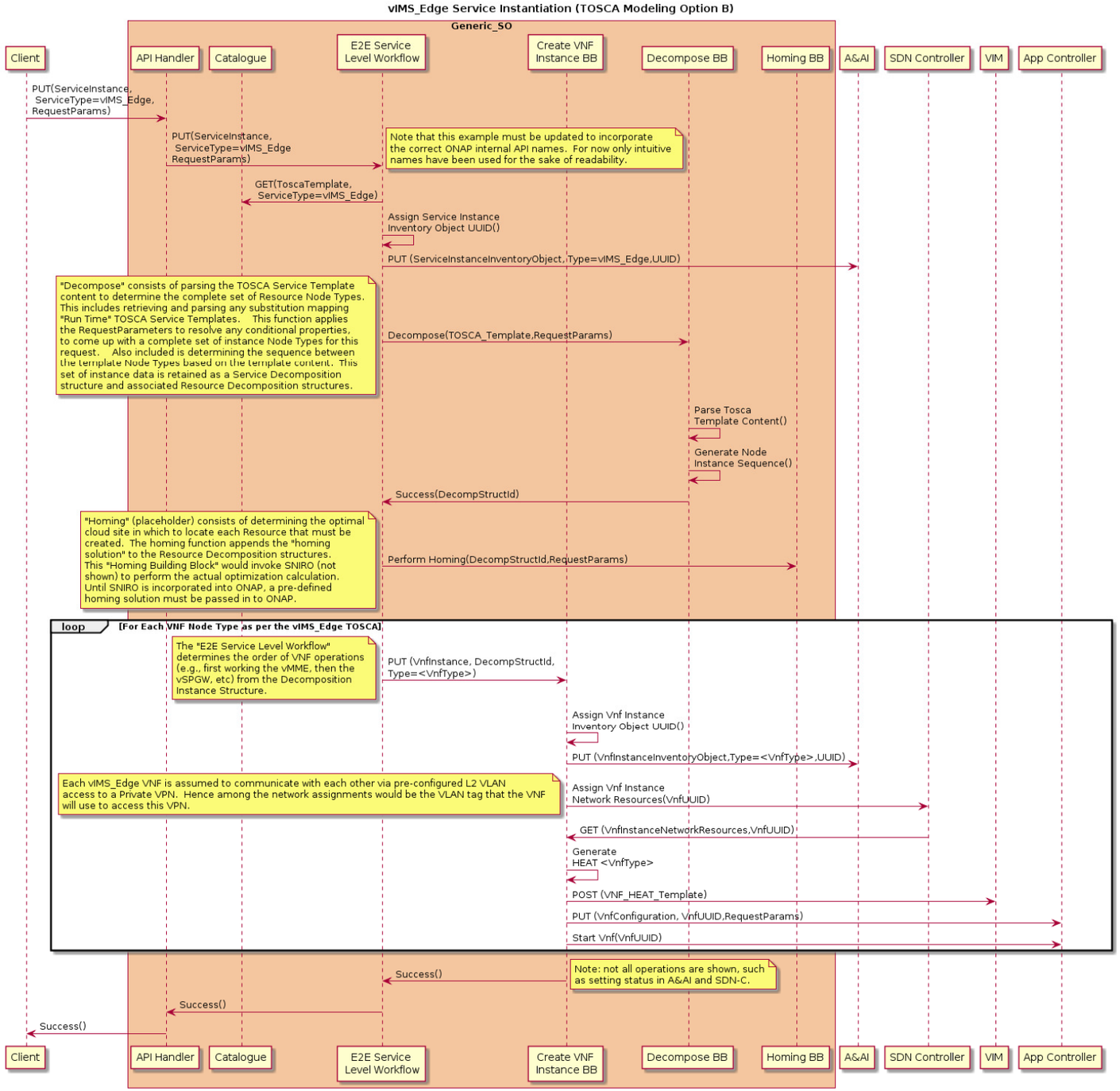
Modeling Example B:
vEPC and vIMS Edge/Core Modeled as Services

In this example "B", vIMS Core et al are modeled as individual Services. We want to show this example because we believe some service providers will want to reuse this infrastructure for wireline and so would not want to tightly couple them to a VoLTE Service.



vIMS Service Instantiation (TOSCA Modeling Example B)

This sequence diagram illustrates SO behavior driven from a vIMS service instantiation request, assuming TOSCA modeling example B.



vEPC Service Instantiation (TOSCA Modeling Example B)

This sequence diagram illustrates SO behavior driven from a vEPC service instantiation request, assuming TOSCA modeling example B.