High-level VNF Descriptors using NEMO

draft-aranda-nfvrg-recursive-vnf-00

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Rationale

- No one in a clean state of mind can read VNFDs easily
- There is no simple way of reusing tested VNFs to build more ellaborate VNFs
- This goes against one of the goodies of software design/production
  - RE-USABILITY
- Why?
  - It is easier to reuse things you understand

Easy vs. difficult

Easy to understand

```
      +-----------------------------+
      |                             |
mgt0  |     +----------------+      |   ge0
      |     |                |      |
   ---+-----+  Template VM   +------+------
      |     |                |      |
      |     +----+--------+--+      |
      |          |        |         |
      +----------+--------+---------+
                 |        |
               xe0       xe1
```

More difficult

```
vnf:
    name: TEMPLATE
    description: This is a template to help in the creation of
    # class: parent      # Optional. Used to organize VNFs
    external-connections:
    -   name:              mgmt0
        type:              mgmt
        VNFC:              TEMPLATE-VM
        local_iface_name:  mgmt0
        description:       Management interface
    -   name:              xe0
        type:              data
        VNFC:              TEMPLATE-VM
        local_iface_name:  xe0
        description:       Data interface 1
    -   name:              xe1
        type:              data
        VNFC:              TEMPLATE-VM
        local_iface_name:  xe1
        description:       Data interface 2
    -   name:              ge0
        type:              bridge
        VNFC:              TEMPLATE-VM
        local_iface_name:  ge0
        description:       Bridge interface
```

Alternative we propose

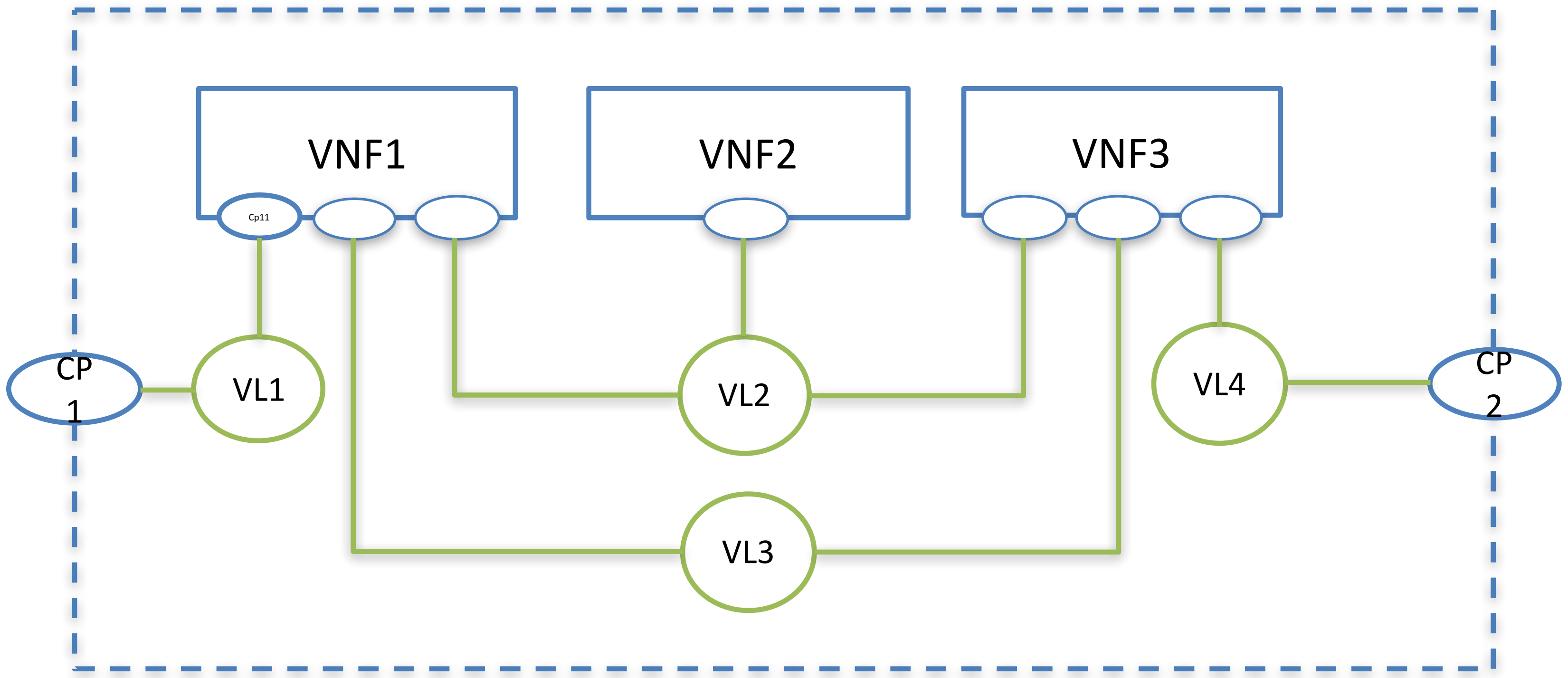
- Since VNFDs are not easy to understand
  - Why not use the nework modelling language NEMO?
- BoF last summer in Prague
- Human readable AND human **understandable**
- Structured like high-level programming languages

How would this work?

- VNFDs like those in OpenMANO are used as low level blocks
- NEMO allows us to describe VNFs
  - Service graphs (the relationships between the VNFCs) become more obvious using the Connection concept
- NodeModels can be reused:
  - Opening the door to recursiveness

This is what we want

- Find a way to describe the VNF as close as possible to this graph



  – see http://www.etsi.org/deliver/etsi_gs/NFV-MAN/001_099/001/01.01.01_60/gs_NFV-MAN001v010101p.pdf

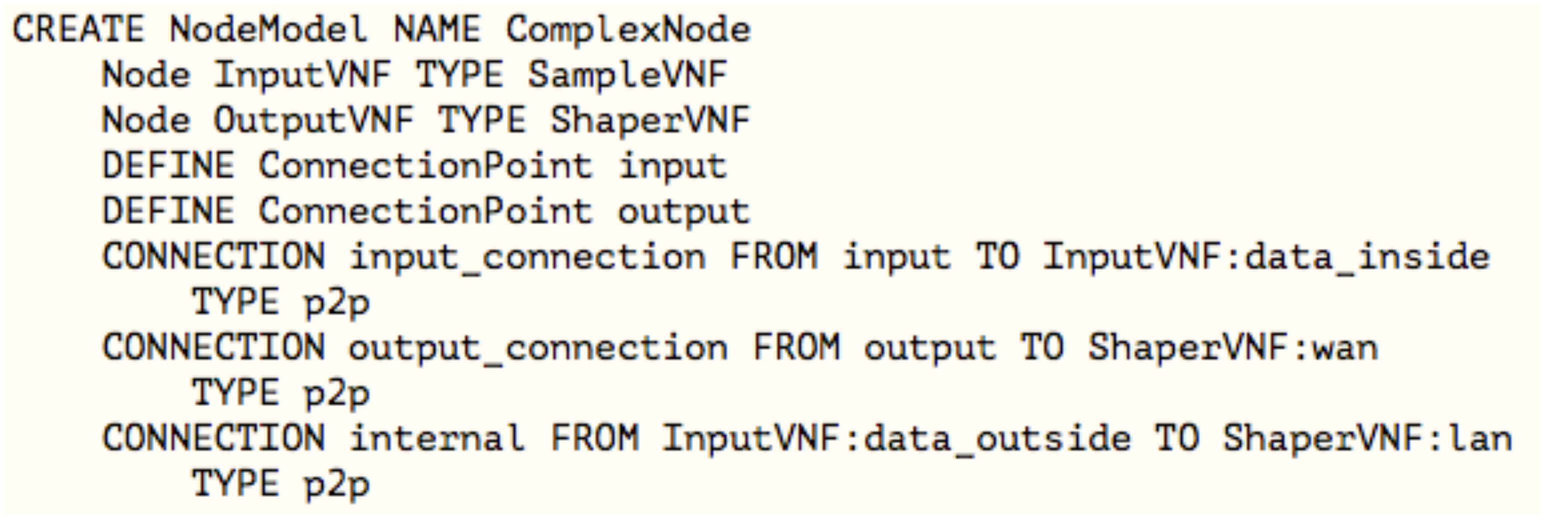
So let’s go step by step

- Import VNFD into NEMO
  - Most VNF producers will anyhow have a VNFD (for OSM, OpenMANO, etc.)
  - Requirement on NEMO: ConnectionPoint

```
CREATE NodeModel NAME SampleVNF
    IMPORT VNFD from https://github.com/nfvlabs/openmano.git
/openmano/vnfs/examples/dataplaneVNF1.yaml
    DEFINE ConnectionPoint data_inside as VNFD:ge0
    DEFINE ConnectionPoint data_outside as VNFD:ge1
```

Step by step (2)

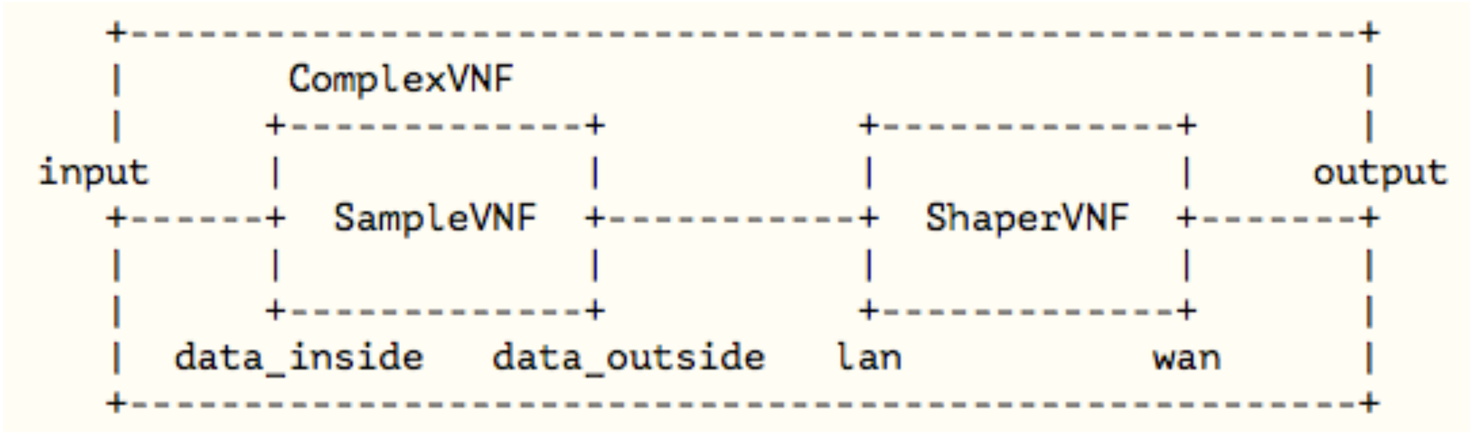
- Use the imported NodeModels to build more complex functionality:
  - Requirement on NEMO: Connection to define the service graph



```
CREATE NodeModel NAME ComplexNode
    Node InputVNF TYPE SampleVNF
    Node OutputVNF TYPE ShaperVNF
    DEFINE ConnectionPoint input
    DEFINE ConnectionPoint output
    CONNECTION input_connection FROM input TO InputVNF:data_inside
        TYPE p2p
    CONNECTION output_connection FROM output TO ShaperVNF:wan
        TYPE p2p
    CONNECTION internal FROM InputVNF:data_outside TO ShaperVNF:lan
        TYPE p2p
```

And from here…

- Use NodeModels to create even more complex models once these are tested and prove to fullfil your requirements
- Made easy when you understand what you read



```
    +------------------------------------------------------+
    |       ComplexVNF                                     |
    |      +-------------+           +-------------+       |
 input     |             |           |             |     output
    +------+  SampleVNF  +-----------+  ShaperVNF  +-------+
    |      |             |           |             |       |
    |      +-------------+           +-------------+       |
    |  data_inside   data_outside   lan           wan      |
    +------------------------------------------------------+
```

S U P E R F L U I D I T Y

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