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Virtualization YANG Service Model (VYSM)
draft-shyti-netmod-vysm-00.txt

Abstract

This document provides a specification of the Network Function Virtualization (NFV) YANG service model. The NFV service module serves as a base framework for managing an universal Customer-Premises Equipment (uCPE) NFV subsystem from the Orchestrator.

Status of This Memo

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[1.](#) **Introduction**

Network Function Virtualization is a technology that allows to virtualize the network services running on dedicated hardware. This technology became a base for universal Customer-Premises Equipment(uCPE). The uCPE - is x86 universal hardware (whitebox) that has a hypervisor. In other words, uCPE is a host that may run multiple Virtual Machines with guest OSs. Each Guest OS may represent a Physical Network Function. To manage from an Orchestrator the Network Function Virtualization Infrastructure inside the uCPE, the VNF YANG service model (VYSM) was developed.

[2.](#) **Terminology**

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [[RFC2119](#)].

Link - is an entity that enables link layer communication of nodes.

Port - node connector to the link.

[3.](#) **NFV service module Tree Diagram overview**

This section provides an overview of the NFV service MAY be made with "pyang" utility. The figure below presents the Tree diagram of the NFV service module.


```

module: ietf-nfv-service
  +--rw virtualization* [name]
    +--rw name          string
    +--rw device*       string
    +--rw links* [link]
      | +--rw link      string
    +--rw interfaces* [interface]
      | +--rw interface string
      | +--rw ports* [port]
      |   +--rw port    string
      |   +--rw link?   -> ../../../../links/link
    +--rw switches* [switch]
      | +--rw switch    string
      | +--rw ports* [port]
      |   +--rw port    string
      |   +--rw name?   string
      |   +--rw link?   -> ../../../../links/link
    +--rw vms* [vm]
      +--rw vm          string
      +--rw ports* [port]
        | +--rw port    string
        | +--rw name?   string
        | +--rw link?   -> ../../../../links/link
      +--rw ram?        string
      +--rw cpu?        string
      +--rw storages* [id]
        +--rw id        string
        +--rw location? string

```

4. Specification of the NFV service model

This section presents the specification of the NFV service model.

```

<CODE BEGINS> file "ietf-nfv-service@2018-07-01.yang"
module ietf-nfv-service {

  namespace "urn:ietf:params:xml:ns:yang:nfv-service";
  prefix nfv-service;

  organization
    "Ecole Polytechnique/Telecom ParisTech/SFR";

  contact
    "Dmytro Shytiy
    EMail:ietf.dmytro@shytiy.net";

  description
    "This is a Network Function Virtualization (NFV) YANG
    service model.";

```



```
    revision 2018-07-01 {
        description
            "Initial revision.";
        reference
            "draft-shytyi-netmod-vysm-00";
    }

list virtualization {
    key name;
    leaf name {
        type string;
        description "Name of the instance of the service";
    }

    // may replace this with other ways of referring to the devices.
    leaf-list device {
        type string;
        description "List of the devices in available in the
            orchestrator";
    }
}

list links{
    key link;
    leaf link{
        type string;
        description "Name of the virtual link from the pool
            of the links";
    }
    description "Pool of the virtual links that connect VMs and
        Interfaces";
}

list interfaces{
    key interface;
    leaf interface{
        type string;
        description "Name of physical interface";
    }
    list ports{
        key port;
        leaf port{
            type string;
            description "Name of the connector";
        }
        leaf link{
            type leafref{
                path "../..../links/link";
            }
            description "Link that is connected to
```



```
        the port via connector";
    }
    description "Set of the connectors the
    physical interface has";
}
description "Set of physical interfaces";
}
list switches{
    key switch;
    leaf switch{
        type string;
        description "Name of the forwarding domain";
    }
    list ports{
        key port;
        leaf port{
            type string;
            description "Name of the connector";
        }
        leaf name{
            type string;
            description "Name of the subconnector";
        }
        leaf link{
            type leafref{
                path "../..../links/link";
            }
            description "Link that is connected to the
            switch via port";
        }
        description "Set of the connectors the
        forwarding domain has";
    }
    description "Set of the forwarding domains";
}

list vms{
    key vm;
    leaf vm{
        type string;
        description "Name of the Virtual Machine";
    }
    list ports{
        key port;
        leaf port{
            type string;
            description "Name of the connector";
        }
    }
}
```



```
    }
    leaf name{
        type string;
        description "Name of the subconnector";
    }
    leaf link{
        type leafref{
            path "../.../links/link";
        }
        description "Link that connects the
        VM with a switch or      Interface
        via connector";
    }
    description "Set of Virtual Machine connectors";
}

leaf ram{
    type string;
    description "Amount of memory to allocate for
    the Guest OS";
}
leaf cpu{
    type string;
    description "Amount of cpus to allocate for the
    Guest OS";
}
list storages{
    key id;
    leaf id{
        type string;
        description "Name of the Storage";
    }
    leaf location{
        type string;
        description "External location where
        the image is saved.";
    }
    description "Virtual storge of the image
    for the Virtual Machine";
}
description "Set of the Virtual Machines configured
on the universal Customer-Premises Equipment";
}
description "This is an RFS skeleton service";
}
}
}
<CODE ENDS>
```


5. Security Considerations

At this time, no security considerations are addressed by this memo.

6. IANA Considerations

No request to IANA at this time.

7. Acknowledgements

At this time, no acknowledgements are addressed by this memo.

8. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), DOI 10.17487/RFC2119, March 1997, <<https://www.rfc-editor.org/info/rfc2119>>.

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