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DC aware TE topology model
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Abstract

   This document proposes the extension of the TE topology model for
   including information related to data center resource capabilities.

Status of This Memo

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1. Introduction

   More and more service providers are deploying cloud computing
   facilities in order to host different kinds of services and
   applications. Such facilities can be generally referred as
   Datacenter Points of Presence (DC-PoPs). Those DCs will consist on a
   number of servers and networking elements for connecting all of them
   with the transport network. Depending on the number of servers in
   the data center, there will be distinct capabilities in terms of
   CPUs, memory and storage available for deploying and running the
   aforementioned services.

   In such distributed and interconnected DC-PoPs, both computing and
   topological information are of interest for determining the optimal
   DC where to deploy a given service or application.

   This document propose a DC-aware extension for the topology model.

2. Datacenter information

   The relevant information for datacenter capabilities can be described
   in different ways. One potential manner is to describe resource
   capabilities such as CPU, memory, storage, etc. This can be done in
   terms of total, used and free capacity for each of the parameters of
   interest. Another form of populating the information is by
   describing those resource capabilities as a bundled, usually referred
   as quota or flavor. In this respect, reference bundles such as the
   ones proposed by the Common Network Function Virtualisation
   Infrastructure Telecom Taskforce (CNTT) [CNTT].

   Additional information can refer to the management capabilities of
   the compute infrastructure, such as hypervisor details or
   virtualization technologies available.

   Finally, all can be complemented with information related to the
   networking details for reaching the aforementioned compute
   capabilities (IP addressed, bandwidth, etc).

[3](#). **Model structure**

```
module: ietf-dcpop-dc
    +--rw dcpop
       +--rw dc* [id]
       |  +--rw hypervisor* [id]
       |  |  +--rw ram
       |  |  |  +--rw total?   uint32
       |  |  |  +--rw used?    uint32
       |  |  |  +--rw free?    uint32
       |  |  +--rw disk
       |  |  |  +--rw total?   uint32
       |  |  |  +--rw used?    uint32
       |  |  |  +--rw free?    uint32
       |  |  +--rw vcpu
       |  |  |  +--rw total?   uint16
       |  |  |  +--rw used?    uint16
       |  |  |  +--rw free?    uint16
       |  |  +--rw instance*   -> /dcpop/dc/instance/id
       |  |  +--rw id          string
       |  |  +--rw name?       string
       |  +--rw instance* [id]
       |  |  +--rw flavor
       |  |  |  +--rw disk?    uint32
       |  |  |  +--rw ram?     uint32
       |  |  |  +--rw vcpus?   uint16
       |  |  |  +--rw id?      string
       |  |  |  +--rw name?    string
       |  |  +--rw image
       |  |  |  +--rw checksum    string
       |  |  |  +--rw size        uint32
       |  |  |  +--rw format
       |  |  |  |  +--rw container?   enumeration
       |  |  |  |  +--rw disk?        enumeration
       |  |  |  +--rw id?          string
       |  |  |  +--rw name?        string
       |  |  +--rw hypervisor?   -> /dcpop/dc/hypervisor/id
       |  |  +--rw port*         -> /dcpop/dc/network/subnetwork/port/id
       |  |  +--rw project?      string
       |  |  +--rw status?       enumeration
       |  |  +--rw id            string
       |  |  +--rw name?         string
       |  +--rw image* [id]
       |  |  +--rw checksum    string
       |  |  +--rw size        uint32
       |  |  +--rw format
       |  |  |  +--rw container?   enumeration
       |  |  |  +--rw disk?        enumeration
```

```
        |  |   +--rw id            string
        |  |   +--rw name?         string
        |  +--rw flavor* [id]
        |  |   +--rw disk?     uint32
        |  |   +--rw ram?      uint32
        |  |   +--rw vcpus?    uint16
        |  |   +--rw id        string
        |  |   +--rw name?     string
        |  +--rw dc-monitoring-param* [name]
        |  |   +--rw name             string
        |  |   +--rw value-string?    string
        |  +--rw network* [id]
        |  |   +--rw subnetwork* [id]
        |  |   |   +--rw port* [id]
        |  |   |   |   +--rw ip-address?   inet:ip-address
        |  |   |   |   +--rw instance?     -> /dcpop/dc/instance/id
        |  |   |   |   +--rw project?      string
        |  |   |   |   +--rw status?       enumeration
        |  |   |   |   +--rw id            string
        |  |   |   |   +--rw name?         string
        |  |   |   +--rw project?   string
        |  |   |   +--rw status?    enumeration
        |  |   |   +--rw id         string
        |  |   |   +--rw name?      string
        |  |   +--rw dhcp-agent* [id]
        |  |   |   +--rw enabled?   boolean
        |  |   |   +--rw pools* [ip-address]
        |  |   |   |   +--rw ip-address    inet:ip-address
        |  |   |   +--rw project?   string
        |  |   |   +--rw status?    enumeration
        |  |   |   +--rw id         string
        |  |   |   +--rw name?      string
        |  |   +--rw project?       string
        |  |   +--rw status?        enumeration
        |  |   +--rw id             string
        |  |   +--rw name?          string
        |  |   +--rw dcpop-ref?     -> /dcpop/dcpop-id
        |  +--rw ap*                     -> /actn-vn:actn/ap
  /access-point-list/access-point-id
        |  +--rw dcpop-ref?                -> /dcpop/dcpop-id
        |  +--rw id                     string
        |  +--rw name?                  string
        +--rw dcpop-id?   string
```

[4]. Security Considerations

The data-model in this document does not have any security
implications. The model is designed to be accessed via NETCONF
[RFC6241], thus the security considerations for the NETCONF protocol
are applicable here.

[5]. IANA Considerations

This draft does not include any IANA considerations

[6]. References

[CNTT]   "Common NFVI for Telco Reference Model, Release 4.0",
            September 2020,
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[RFC6241]   Enns, R., Ed., Bjorklund, M., Ed., Schoenwaelder, J., Ed.,
            and A. Bierman, Ed., "Network Configuration Protocol
            (NETCONF)", RFC 6241, DOI 10.17487/RFC6241, June 2011,
            <https://www.rfc-editor.org/info/rfc6241>.

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