EVE metadata service

Motivation

In order to support network metadata we have to rely on services, installed in the VM of user. The most common tool for instance initialization is cloud-init. There are set of images supporting it out-of-the-box: https://docs.openstack.org/image-guide/obtain-images.html. It supports several DataStores (from cloud), and as a variant of datasource we can use OpenStack one. It is open source and documented.

loud-init OpenStack DataSource requirements

In order to start communication with OpenStack DataSource, cloud-init do some checks of environment:

- Maybe OpenStack if
  - **non-x86 cpu architecture**: because DMI data is buggy on some arches
- Is OpenStack **if x86 architecture and ANY** of the following
  - **/proc/1/environ**: Nova-lxd contains *product_name=OpenStack Nova*
  - **DMI product_name**: Either *Openstack Nova* or *OpenStack Compute*
  - **DMI chassis_asset_tag** is *OpenTelekomCloud*, *SAP CCloud VM*, *OpenStack Nova* (since 19.2) or *OpenStack Compute* (since 19.2)

We can set product_name in smbios for our VMs to tell cloud-init to fire communication with endpoints.

Also we should take into account, that there are an order of DataSource observation inside cloud-init. By default NoCloud (drive we use now) has priority (the order is here).

So, with both DataStores activated:

```
root@1a831fa7-c50b-4693-a16e-fb8171f1b69e:~# grep Datasource /var/log/cloud-init-output.log
Cloud-init v. 20.4-0ubuntu1~20.10.1 finished at Tue, 09 Mar 2021 07:10:44 +0000. Datasource DataSourceNoCloud [seed=/dev/sr0][dsmode=net].  Up 22.97 seconds
```

With manually removed NoCloud drive:

```
ubuntu@niceshamir:~$ grep Datasource /var/log/cloud-init-output.log
Cloud-init v. 20.4-0ubuntu1~20.10.1 finished at Tue, 09 Mar 2021 07:25:26 +0000. Datasource DataSourceOpenStack [net,ver=2].  Up 23.16 seconds
```

loud-init OpenStack DataSource endpoints

OpenStack metadata serves several endpoints https://docs.openstack.org/nova/latest/user/metadata.html#metadata-openstack-format:

- http://169.254.169.254/openstack/{version}/meta_data.json - contains (among other fields) public_keys, hostname, devices (disk, nic)
- http://169.254.169.254/openstack/{version}/network_data.json - contains information about networks, dns service and links (which will be configured inside VM)
- http://169.254.169.254/openstack/{version}/user_data - contains script to run inside VM
- http://169.254.169.254/openstack/{version}/vendor_data2.json - data, which independent from VM deployments (we can omit it now)
- http://169.254.169.254/openstack - contains versions of OpenStack metadata

Those endpoints should be accessible from VM and serve separate information for different VMs.

Cloud-init EC2 DataStore

We can also try to implement EC2-compatible datastore described here: https://docs.openstack.org/nova/latest/user/metadata.html#ec2-compatible-metadata. It will be called in case of image has no OpenStack datasource inside and forced to skip check (Cirros image for example).