ERICSSON

Preparation of Kickstart Server

Cloud Execution Environment

INSTALLATION INSTRUCTIONS

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Contents

1 Introduction

This document is part of the installation flow for the Cloud Execution Environment (CEE). For the complete installation flow, refer to section *Installation Flow* in *CEE Installation*.

This document describes the preparation of the kickstart server that is used for the CEE SW installation process.

Note: It is also possible to configure an installation laptop and use it as kickstart server for the installation of CEE. In this case, transfer IP and VLAN settings from this document to your environment, and make sure to configure the server interfaces and the switch appropriately.

The supported operating system for the installation is Ubuntu Linux.

The preparations can be performed in an office environment, while the connections to the Data Center (DC) described in Section 4 on page 10 have to be performed on-site.

In case the installation has to be restarted, refer to Section 5 on page 11.

2 Prerequisites

This section describes the prerequisites that must be fulfilled before vFuel can be installed.

2.1 Hardware and Software Required

The following SW is required:

- CEE SW release tarball:
  - `cee-CXC1737883_4-<release>.tar`
  - `cee-CXC1737883_4-<release>.tar.md5`
  - `cee-CXC1737883_4-<release>.tar.sha1`

The above archive files are referred to as `CEE_<RELEASE>.tar`, `CEE_<RELEASE>.tar.md5`, and `CEE_<RELEASE>.tar.sha1` further in this document.

The following files are needed to install vFuel on the kickstart server and are part of the tar archive:

Table 1 Files Required for Kickstart Server

File Required	Information
`cee-CXC1737883_4-<release>.iso`	Bootable install media
`install_vfuel.sh`	Shell script file
`config.yaml`	Configuration file templates needed for vFuel installation

2.2 Tools

This section describes tools required for the procedure.

2.2.1 Common HW Tools

A computer used as a kickstart server, or an installation laptop is required, with the below minimum requirements.

Note: For larger deployments (three or more BSP subracks, or eight or more HP blades or Dell servers) it is recommended to use a kickstart server instead of an installation laptop.

- 64-bit x86 CPU with two physical cores, hyperthreading enabled (exposing four CPUs to host OS). There must be at least two vCPUs assigned to vFuel.
- Recommended RAM requirements:

HW Platform	Number of Subracks or Blades	Recommended RAM Requirements
BSP	One or two subracks	8 GB, from which at least 3 GB is assigned to vFuel
	Three or more subracks	12 GB, from which at least 6 GB is assigned to vFuel
HP and Dell	One to seven blades or servers	8 GB, from which at least 3 GB is assigned to vFuel
	Eight or more blades or servers	12 GB, from which at least 6 GB is assigned to vFuel

- Free disk space on the kickstart server for vFuel, minimum of 49 GiB is required.
- Virtualization feature (VT-x) must be supported and enabled.
- For CEE regions that use HP and Dell HW:
  - One 1 Gbps Ethernet NIC
  - One RJ45-RJ45 cat6 Ethernet cable
- For CEE regions that use BSP HW:
  - Two 1 Gbps Ethernet NICs
  - Two TSR 491 603 (DensiShield-RJ45) cables
  - If the preparations are done away from the BSP, two RJ45-RJ45 cat6 Ethernet cables
- Internet connectivity
- Switch

The respective values for CPU, RAM, and disk space for vFuel must be checked in the `config.yaml`.

2.2.2 Tools for Linux Kickstart Server

The computer needs to have an Ubuntu operating system installed. Ubuntu 14.04 was used in verification of this document.

Additional software package requirements needed for Linux installation are described in Table 2.

2.3 Installation Data

The following data is needed:

- Account for Linux kickstart server: username and password of a user with sudo privileges.
- Initial vFuel root user password (used for installation only).
- `config.yaml`: a template `config.yaml` file from the tarball updated with deployment-specific data. For more information, refer to *Configuration File Guide*.
- All other deployment-specific YAML files configured according to *Configuration File Guide*.

- *IP and VLAN plan*, updated with customer and site-specific values. This plan among others, specifies:
  - IP address for the kickstart server in network `fuel_ctrl_sp`
  - IP addresses for vFuel in networks `fuel_ctrl_sp` and in case of HP and Dell `subrack_ctrl_sp`.

  Note: All examples in this document use the default values from the document *IP and VLAN plan*. The actual customer-defined addresses must be used when performing the steps in this document.

  Temporary IP addresses are needed in the customer network during the installation. These addresses must not interfere with the customer network.

2.4 Time Required

The expected execution time for the complete the kickstart server procedure is about 1.5 hours.

3 Prepare Kickstart Server

This section describes how to prepare and test the kickstart server.

If a kickstart server for CEE SW installation is already available, continue with the instructions of the documents *SW Installation in Multi-Server Deployment* or *SW Installation in Single Server Deployment*.

3.1 System Setup

Prepare the kickstart server by executing the below steps.

1. Enable virtualization technology (VT-x) in BIOS settings of the kickstart server. Refer to the documentation of BIOS/laptop manufacturer for details.
2. Log on to the Linux kickstart server and change root shell:

   ```
   sudo su
   ```

3. Verify that the correct local time and date has been set by using the command:

date

If the time and date is not correct, set time and date by using the command:

date -s "mmm dd hh:mm:ss yyyy"

mmm is month: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, or Dec.
dd is day of month: 01 - 31
hh:mm:ss is hours: 00 - 23, minutes: 00 - 59 and seconds: 00 - 59
yyyy is the year with four digits, such as 2016

4. Check the required packages listed in Table 2 using the command:

   dpkg -l | grep *<package name>*

   In case a package is not installed, use the command (internet connectivity is required):

   apt-get install *<package name>*

   In case a version is lower than required, use the command (internet connectivity is required):

   apt-get upgrade *<package name>*

Table 2 Required Packages for Ubuntu 14.04 LTS

Package Required	Version this Document Was Tested with
python-yaml	3.10-4ubuntu0.1
python-netaddr	0.7.10-1ubuntu1.1
ruby	1:1.9.3.4
libvirt-bin	1.2.2-0ubuntu13.1.16
genext2fs	1.4.1-4build1
virtinst	0.600.4-3ubuntu2
qemu-utils	2.0.0+dfsg-2ubuntu1.22
qemu-system-x86	2.0.0+dfsg-2ubuntu1.22
qemu-kvm	2.0.0+dfsg-2ubuntu1.22
sshpass	1.05-1
vlan	1.9-3ubuntu10

5. Based on the hardware, continue the preparation steps in Section 3.2 on page 5 or Section 3.3 on page 6.

3.2 Network Preparation in case of non-BSP Hardware

1. Connect the kickstart server to any Ethernet switch.

2. Configure the Ethernet network interface. The default IP address of the kickstart server is `192.168.0.19` in the `fuel_ctrl_sp` network, based on the default *IP and VLAN plan*. Replace the default IP address with your site specific value.

   For more information on the default and site-specific *IP and VLAN plan*, see Section 2.3 on page 3.

   a. Configure the network interface by setting the contents of `/etc/network/interfaces`:

      ```
      iface eth0 inet static
          address 192.168.0.19
          netmask 255.255.255.0
      ```

      Ensure that `eth0` configuration is explicitly written in `/etc/network/interfaces`.

      Note: Refer to your site-specific *IP and VLAN Plan*, and ensure that this IP address is not in conflict with other IP addresses in the DHCP pool of `fuel_ctrl_sp` network.

      Sourced contents, for example, source `/etc/network/interfaces.d/*.cfg` cannot be handled by `libvirt`. Add content to file as it is described.

   b. Apply changes:

      `ifdown eth0`

      `ifup eth0`

   c. Check if the interface can be detected by `libvirt`:

      `virsh iface-list --all`

      The response must contain `eth0` with `active` state.

   d. Check the interface with the command:

      `ip a`

      The IP address of `eth0` must be 192.168.0.19.

3. Continue the installation process in Section 3.4 on page 8.

3.3 Network Preparation in case of BSP Hardware

1. Set the Ethernet network interfaces and `br-fw-admin` bridge.

   For BSP HW, the kickstart server must have two `eth` interfaces. These are referred as `eth0` and `eth1` in this document. This process was tested with Dell laptop internal motherboard Ethernet port (`eth0`) and one additional USB 3.0 to Gigabit LAN adapter (`eth1`).

2. Connect two Ethernet interfaces to any Ethernet switch.

3. Find `shelf_mgmt` and `fuel_ctrl_sp` related sections from `config.yaml`.

   The following `config.yaml` contents serve as input for the next steps:

```
...
       shelf_mgmt:
          ip: 192.168.2.2
          name: cee_ctrl_sp
          lct_ip: 10.0.10.2
          passwd: ett,30
          username: advanced
...
       name: fuel_ctrl_sp
       mos_name: fuelweb_admin
       tag: 4028
       cidr: 192.168.0.11/24
       dhcp_pool_start: 192.168.0.20
       dhcp_pool_end: 192.168.0.253
```

4. Copy the below interface definition to `/etc/network/interfaces`.

```
auto eth0
 iface eth0 inet manual

 auto eth1
 iface eth1 inet manual

 auto br-fw-admin
 iface br-fw-admin inet static
     address 192.168.0.19
     netmask 255.255.255.0
     bridge_ports eth0.4028 eth1
     bridge_stp on
     bridge_fd 5

 auto br-fw-admin
 iface br-fw-admin inet static
     address 10.0.10.19
     netmask 255.255.255.0
```

   Modify **bold** emphasized values.

Ensure that the following conditions are met when selecting values:

- The first bridge address (192.168.0.19 in example above) must be the IP address of the kickstart server in `fuel_ctrl_sp` network. Refer to your site-specific *IP and VLAN Plan*, and ensure that this IP address is not in conflict with other IP addresses in the DHCP pool of `fuel_ctrl_sp` network. VLAN tag must be equal to the `fuel_ctrl_sp` tag (4028 in example above).
- The second bridge address (10.0.10.19) should be in the same network as `lct_ip`.

Note: For values, refer to your site-specific *IP and VLAN Plan*, and ensure that IP addresses are not in conflict with other IP addresses.

5. Reboot the kickstart server to apply changes.
6. Check if the interface can be detected by `libvirt` by executing the following command:

   `virsh iface-list --all`

   `br-fw-admin` must be in `active` state.

3.4 Install vFuel in Libvirt Managed VM

In the Linux kickstart server, do the following:

3.4.1 Unpack Release tar

1. Copy the `CEE_<RELEASE>.tar`, `CEE_<RELEASE>.tar.md5`, and `CEE_<RELEASE>.tar.sha1` files to a directory.
2. Validate the integrity of the tarball by using the following commands:

   `md5sum -c CEE_<RELEASE>.tar.md5`

   `sha1sum -c CEE_<RELEASE>.tar.sha1`

   If the result is `CEE_<RELEASE>.tar: OK` for both commands, continue with the next step.
   If the result is failure, contact next level of maintenance support.
3. Unpack the tar file using the command:

   `tar -xvf CEE_<RELEASE>.tar`

3.4.2 Install vFuel

The steps below must be executed with a user with sudo privileges.

1. Check the privileges of the current user:

groups

Response must contain `sudo libvirtd`.

2. Check if the `.ssh` directory exists:

   ls -ld ~/.ssh

   In case the `.ssh` directory is missing, create one and set permissions:

   mkdir ~/.ssh

   chmod 700 ~/.ssh

3. Create a new `config.yaml` in the `CEE_RELEASE/` directory using vi Editor and paste the content of the site-specific `config.yaml`.

4. Change working directory:

   cd CEE_RELEASE/scripts

5. Perform either of the below commands:

   - In case of non-BSP hardware:

     ./install_vfuel.sh --iface eth0

   - In case of BSP hardware:

     ./install_vfuel.sh --iface br-fw-admin

   Note: The `install_vfuel.sh` script cannot be executed as root. Do not change to root shell with `sudo su` before starting it.

6. Log in to Fuel using initial vFuel server root user password.

   ssh root@192.168.0.11

7. Check vFuel logs by executing the following command:

   tail -n1 /var/log/puppet/bootstrap_admin_node.log

   The response must be as follows:

   ```
   Fuel node deployment complete!
   ```

   If an error message is shown, contact next level of support.

3.5 Change vFuel password

1. Change the Fuel default root password to customer-specific value.

   a. Execute the following command in Fuel master as root:

```
passwd
```

b. Provide customer-specific password.

3.6 Fuel Synchronization

Fuel is a non-redundant component, therefore creating a Fuel backup and keeping a copy of it outside of CEE is highly recommended to make disaster recovery possible. Perform a synchronization as described in *Fuel Synchronization*.

4 Connect to DC

The connections in this section have to be done on-site.

- In case of non-BSP multi-server hardware, connect the kickstart server to the allocated and configured port of Extreme control switch A with the LAN cable.
- In case of single server deployment, make the connections according to Table 3.
- In case of BSP hardware, make the connections according to Table 4.

Table 3 Connections to Single Server

Server	Server Port	Untagged VLAN	Tagged VLAN	Switch Port
Dell Single Server	iDRAC	subrack_ctrl_sp		a
	eth0	fuel_ctrl_sp	cee_ctrl_sp	b
	eth1		cee_om_sp, tenant_3582, tenant_3583, tenant_n	c
Fuel	iDRAC	subrack_ctrl_sp		d
	eth0	fuel_ctrl_sp	cee_ctrl_sp, subrack_ctrl_sp	e

Table 4 Connections to BSP HW

Kickstart server interface (Linux)	Port on SCXB-L in Subrack 0	VLAN
eth0	GE-1	tagged
eth1	E-DBG	untagged

5 Troubleshooting

In case the installation has to be restarted on Linux kickstart server, follow these steps:

1. Delete the `known_hosts` file:

   `rm ~/.ssh/known_hosts`

2. Make sure that the Ethernet interface (in case of BSP both Ethernet interfaces) is connected to a switch so the bridge `br-fw-admin` is `up`.

3. Run the script with the following option:

   `./install_vfuel.sh --iface br-fw-admin`

Note: The first execution of the script generates bridge `br-fw-admin`. Therefore `--iface br-fw-admin` option is to be used for both BSP and non-BSP hardware. The `--iface eth0` option is not suitable.