

Getting Started /Sample test process

This doc describes how to install and deploy INF **bare metal All-in-one Duplex** deployment configuration on two HP ProLiant DL380p Gen8 servers.

1 Installation for the first server from the O-RAN INF ISO image

- The INF ISO image can be downloaded from [inf-image-aio-installer-intel-corei7-64.iso](#) or build yourself from source
 - Please see the [Developer-Guide](#) file for how to build the image.
 - The Image is a live ISO image with CLI installer

1.1 Burn the image to the USB device

- Assume the the usb device is /dev/sdX here
- `$ sudo dd if=/path/to/inf-image-aio-installer-intel-corei7-64.iso of=/dev/sdX bs=1M`

1.2 Install the first server (controller-0)

- Reboot the target from the USB device.

Boot Order

Virtual Floppy/USB key: None

Virtual CD/DVD-ROM: None

Server Boot Order

Hard Disk Drive

Network Device 1

CD/DVD Drive

Floppy Drive

USB Storage Device

Up

Down

Apply

One-Time Boot Status

Current One-Time Boot Option:

USB Storage Device

Select One-Time Boot Option:

USB Storage Device

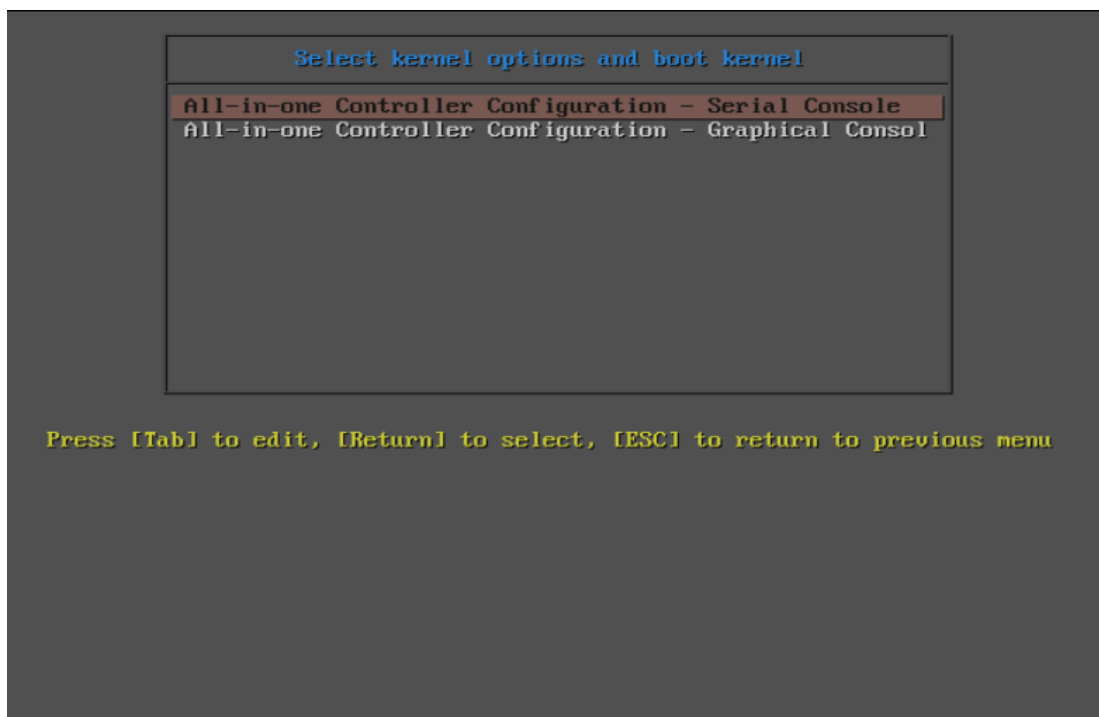
Apply

Additional Options

Boot to System RBSU

Server Reset

- Select "All-in-one Graphics console" or "All-in-one Serial console install" and press ENTER



- Start the auto installation

```
Starting Anaconda
Starting installer, one moment...
anaconda 28.22.11-1 for OpenEmbedded nodistro.0 started.
* installation log files are stored in /tmp during the installation
* shell is available on TTY2 and in second TMUX pane (ctrl+b, then press 2)
* if the graphical installation interface fails to start, try again with the
  inst.text bootoption to start text installation
* when reporting a bug add logs from /tmp as separate text/plain attachments
07:26:25 Running pre-installation scripts
07:26:25 Running pre-installation scripts
07:26:32 Not asking for UNC because of an automated install
07:26:32 Not asking for UNC because of an automated install
07:26:32 Not asking for UNC because text mode was explicitly asked for in kickst
art
07:26:32 Not asking for UNC because text mode was explicitly asked for in kickst
art
Starting automated install.....
```

```
=====
Progress
```

```
.
Setting up the installation environment
```

```
.
Configuring storage
```

```
..
Creating ext4 on /dev/sda4
Creating lvm pv on /dev/sda5
Creating ext4 on /dev/mapper/cgts--vg-scratch--lv
Creating ext4 on /dev/mapper/cgts--vg-log--lv
Creating ext4 on /dev/sda3
Creating biosboot on /dev/sda1
```

```
..
Running pre-installation scripts
```

```
.
Discovering realm to join
```

```
.
Running pre-installation tasks
```

```
....
Installing.
```

```
Starting package installation process
```

```
Downloading packages
```

```
Installing libxml2-dev.corei7_64 (3503/5648)
```

```
Installing packagegroup-core-lsb-perl.noarch (3504/5648)
```

```
Installing packagegroup-core-full-cmdline-extended.noarch (3505/5648)
```

```
Installing kernel-module-xt-tee-5.0.19-rt11-yocto-preempt-rt.corei7_64_intel_com  
mon (3506/5648)
```

```
Installing kernel-module-nfcmrwl-spi-5.0.19-rt11-yocto-preempt-rt.corei7_64_inte  
l_common (3507/5648)
```

```
Installing kernel-module-8021q-5.0.19-rt11-yocto-preempt-rt.corei7_64_intel_com  
mon (3508/5648)
```

```
Installing packagegroup-base-wifi.intel_corei7_64 (3509/5648)
```

```
Installing kernel-module-vfio-mdev-5.0.19-rt11-yocto-preempt-rt.corei7_64_intel_  
common (3510/5648)
```

```
Installing kernel-module-fake1b-5.0.19-rt11-yocto-preempt-rt.corei7_64_intel_com  
mon (3511/5648)
```

```
Installing kernel-module-drbd-5.0.19-rt11-yocto-preempt-rt.corei7_64_intel_commo  
n (3512/5648)
```

```
Installing kernel-module-osd-5.0.19-rt11-yocto-preempt-rt.corei7_64_intel_commo  
(3513/5648)
```

```
Installing kernel-module-ahci-platform-5.0.19-rt11-yocto-preempt-rt.corei7_64_in  
tel_common (3514/5648)
```

```
Installing kernel-module-cmtp-5.0.19-rt11-yocto-preempt-rt.corei7_64_intel_commo  
n (3515/5648)
```

```
Installing kernel-module-amdgpu-5.0.19-rt11-yocto-preempt-rt.corei7_64_intel_com  
mon (3516/5648)
```

```
Verifying xorgproto-dev.corei7_64 (5642/5648)
Verifying xprop.corei7_64 (5643/5648)
Verifying xtrans-dev.corei7_64 (5644/5648)
Verifying xz.corei7_64 (5645/5648)
Verifying xz-dev.corei7_64 (5646/5648)
Verifying zeromq.corei7_64 (5647/5648)
Verifying zip.corei7_64 (5648/5648)
```

```
.
```

```
Configuring storage
```

```
.
```

```
Installing boot loader
```

```
.
```

```
Performing post-installation setup tasks
```

```
.
```

```
Configuring installed system
```

```
.....
```

```
Writing network configuration
```

```
.
```

```
Creating users
```

```
....
```

```
Configuring addons
```

```
.
```

```
Generating initramfs
```

- It will reboot automatically after installation

GNU GRUB version 2.02

*OpenEmbedded GNU/Linux, with Linux 5.0.19-rt11-yocto-preempt-rt

Use the ↑ and ↓ keys to select which entry is highlighted.
Press enter to boot the selected OS, 'e' to edit the commands
before booting or 'c' for a command-line.

```
Booting 'OpenEmbedded GNU/Linux, with Linux 5.0.19-rt11-yocto-preempt-rt'

Loading Linux 5.0.19-rt11-yocto-preempt-rt ...
Loading initial ramdisk ...
early console in extract_kernel
input_data: 0x00000000026a13b1
input_len: 0x000000000a459e1
output: 0x0000000001000000
output_len: 0x00000000020b5e18
kernel_total_size: 0x000000000202c000
trampoline_32bit: 0x0000000000091000
booted via startup_32()
Physical KASLR using RDTSC...
Virtual KASLR using RDTSC...

Decompressing Linux... Parsing ELF... Performing relocations... done.
Booting the kernel.
```

```
Release E-Release (5.0) localhost tty1
```

```
-----
W A R N I N G *** W A R N I N G *** W A R N I N G *** W A R N I N G ***
-----
```

THIS IS A PRIVATE COMPUTER SYSTEM.

This computer system including all related equipment, network devices (specifically including Internet access), are provided only for authorized use. All computer systems may be monitored for all lawful purposes, including to ensure that their use is authorized, for management of the system, to facilitate protection against unauthorized access, and to verify security procedures, survivability and operational security. Monitoring includes active attacks by authorized personnel and their entities to test or verify the security of the system. During monitoring, information may be examined, recorded, copied and used for authorized purposes. All information including personal information, placed on or sent over this system may be monitored. Uses of this system, authorized or unauthorized, constitutes consent to monitoring of this system. Unauthorized use may subject you to criminal prosecution. Evidence of any such unauthorized use collected during monitoring may be used for administrative, criminal or other adverse action. Use of this system constitutes consent to monitoring for these purposes.

localhost login:

2 Configuration and initialize the bootstrap

2.1 First Login with "sysadmin/sysadmin" and change password

```
THIS IS A PRIVATE COMPUTER SYSTEM.
This computer system including all related equipment, network devices
(specifically including Internet access), are provided only for authorized use.
All computer systems may be monitored for all lawful purposes, including to
ensure that their use is authorized, for management of the system, to
facilitate protection against unauthorized access, and to verify security
procedures, survivability and operational security. Monitoring includes active
attacks by authorized personnel and their entities to test or verify the
security of the system. During monitoring, information may be examined,
recorded, copied and used for authorized purposes. All information including
personal information, placed on or sent over this system may be monitored. Uses
of this system, authorized or unauthorized, constitutes consent to monitoring
of this system. Unauthorized use may subject you to criminal prosecution.
Evidence of any such unauthorized use collected during monitoring may be used
for administrative, criminal or other adverse action. Use of this system
constitutes consent to monitoring for these purposes.

localhost login: sysadmin
Password:
You are required to change your password immediately (administrator enforced)
Changing password for sysadmin.
Current password:
New password:
Retype new password:
localhost:~$ _
```

2.2 Set OAM network before bootstrap

```
export OAM_DEV=en03
export CONTROLLER0_OAM_CIDR=128.224.210.110/24
export DEFAULT_OAM_GATEWAY=128.224.210.1
sudo ip address add $CONTROLLER0_OAM_CIDR dev $OAM_DEV
sudo ip link set up dev $OAM_DEV
sudo ip route add default via $DEFAULT_OAM_GATEWAY dev $OAM_DEV
```

2.3 Login the server through SSH with "sysadmin"

2.4 Prepare the localhost.yml for bootstrap

```
cat << EOF > localhost.yml
system_mode: duplex
management_subnet: 192.168.18.0/24
management_start_address: 192.168.18.2
management_end_address: 192.168.18.50
management_gateway_address: 192.168.18.1
external_oam_subnet: 128.224.210.0/24
external_oam_gateway_address: 128.224.210.1
external_oam_floating_address: 128.224.210.110
external_oam_node_0_address: 128.224.210.111
external_oam_node_1_address: 128.224.210.112
EOF
```

2.5 Run the ansible bootstrap

```
ansible-playbook /usr/share/ansible/stx-ansible/playbooks/bootstrap.yml -vvv
```

After the bootstrap successfully finish, it will show as following:

```
PLAY RECAP *****
localhost                : ok=257  changed=151  unreachable=0    failed=0    skipped=214  rescued=0    ignored=0
```

2.6 Congiure controller-0

- Acquire admin credentials:

```
source /etc/platform/openrc
```

```
controller-0:~$ source /etc/platform/openrc
[sysadmin@controller-0 ~(keystone_admin)]$
```

- Configure the OAM and MGMT interfaces of controller-0 and specify the attached networks:

```
OAM_IF=eno3
```

```
MGMT_IF=eno1
```

```
system host-if-modify controller-0 lo -c none
```

```
[sysadmin@controller-0 ~(keystone_admin)]$ OAM_IF=eno3
[sysadmin@controller-0 ~(keystone_admin)]$ MGMT_IF=eno1
[sysadmin@controller-0 ~(keystone_admin)]$ system host-if-modify controller-0 lo -c none
+-----+-----+
| Property      | Value                                |
+-----+-----+
| ifname        | lo                                   |
| iftype        | virtual                             |
| ports         | []                                   |
| imac          | 00:00:00:00:00:00                   |
| imtu          | 1500                                |
| ifclass       | None                                |
| aemode        | None                                |
| schedpolicy   | None                                |
| txhashpolicy  | None                                |
| uuid          | 08c95952-892b-40b5-b17a-7d2ad46e725c |
| ihost_uuid    | 16afe3a2-ba50-46b8-9fd7-09010059e8b9 |
| vlan_id       | None                                |
| uses          | []                                   |
| used_by       | []                                   |
| created_at    | 2020-11-17T00:30:45.265032+00:00    |
| updated_at    | 2020-11-17T01:03:39.031612+00:00    |
| sriov_numvfs  | 0                                    |
| sriov_vf_driver | None                                |
+-----+-----+
```

```
IFNET_UUIDS=$(system interface-network-list controller-0 | awk '{if ($6=="lo") print $4;}')
```

```
for UUID in $IFNET_UUIDS; do
```

```
    system interface-network-remove ${UUID}
```

done

```
[sysadmin@controller-0 ~(keystone_admin)]$ IFNET_UUIDS=$(system interface-network-list controller-0 | awk '{if ($6=="lo") print $4;}')
[sysadmin@controller-0 ~(keystone_admin)]$ for UUID in $IFNET_UUIDS; do
>   system interface-network-remove ${UUID}
> done
Deleted Interface Network: 0bf11f1b-4fc6-4e97-b896-3d6393a3744e
Deleted Interface Network: a62d95f6-ad4e-4779-bfc0-6a885067f8d8
```

system host-if-modify controller-0 \$OAM_IF -n oam0

```
[sysadmin@controller-0 ~(keystone_admin)]$ system host-if-modify controller-0 $OAM_IF -n oam0
+-----+-----+
| Property      | Value                                |
+-----+-----+
| ifname        | oam0                                |
| iftype        | ethernet                            |
| ports         | [u'eno3']                           |
| imac          | 24:6e:96:5d:0c:b2                   |
| imtu          | 1500                                |
| ifclass       | None                                 |
| aemode        | None                                 |
| schedpolicy   | None                                 |
| txhashpolicy  | None                                 |
| uuid          | d8a048fa-67ef-43ac-8166-671be93caa30 |
| ihost_uuid    | 16afe3a2-ba50-46b8-9fd7-09010059e8b9 |
| vlan_id       | None                                 |
| uses          | []                                   |
| used_by       | []                                   |
| created_at    | 2020-11-17T00:28:32.365863+00:00    |
| updated_at    | 2020-11-17T01:03:45.090904+00:00    |
| sriov_numvfs  | 0                                    |
| sriov_vf_driver | None                                |
| accelerated   | [True]                              |
+-----+-----+
```

system host-if-modify controller-0 \$MGMT_IF -n pxeboot0


```
[sysadmin@controller-0 ~(keystone_admin)]$ system host-if-modify controller-0 $MGMT_IF -n pxeboot0
```

Property	Value
ifname	pxeboot0
iftype	ethernet
ports	[u'eno1']
imac	24:6e:96:5d:0c:92
imtu	1500
ifclass	None
aemode	None
schedpolicy	None
txhashpolicy	None
uuid	23b5e923-1e53-4e70-a975-542d8380b7f2
ihost_uuid	16afe3a2-ba50-46b8-9fd7-09010059e8b9
vlan_id	None
uses	[]
used_by	[]
created_at	2020-11-17T00:28:32.612230+00:00
updated_at	2020-11-17T01:03:47.341003+00:00
sriov_numvfs	0
sriov_vf_driver	None
accelerated	[True]

```
system host-if-modify controller-0 oam0 -c platform
```

```
[sysadmin@controller-0 ~(keystone_admin)]$ system host-if-modify controller-0 oam0 -c platform
```

Property	Value
ifname	oam0
iftype	ethernet
ports	[u'eno3']
imac	24:6e:96:5d:0c:b2
imtu	1500
ifclass	platform
aemode	None
schedpolicy	None
txhashpolicy	None
uuid	d8a048fa-67ef-43ac-8166-671be93caa30
ihost_uuid	16afe3a2-ba50-46b8-9fd7-09010059e8b9
vlan_id	None
uses	[]
used_by	[]
created_at	2020-11-17T00:28:32.365863+00:00
updated_at	2020-11-17T01:03:49.368879+00:00
sriov_numvfs	0
sriov_vf_driver	None
accelerated	[True]

system interface-network-assign controller-0 oam0 oam

```
[sysadmin@controller-0 ~(keystone_admin)]$ system interface-network-assign controller-0 oam0 oam
```

Property	Value
hostname	controller-0
uuid	3c8bd181-d3f3-4e14-8e89-75a3432db1e4
ifname	oam0
network_name	oam

system host-if-modify controller-0 pxeboot0 -c platform

```
[sysadmin@controller-0 ~(keystone_admin)]$ system host-if-modify controller-0 pxeboot0 -c platform
```

Property	Value
ifname	pxeboot0
iftype	ethernet
ports	[u'eno1']
imac	24:6e:96:5d:0c:92
imtu	1500
ifclass	platform
aemode	None
schedpolicy	None
txhashpolicy	None
uuid	23b5e923-1e53-4e70-a975-542d8380b7f2
ihost_uuid	16afe3a2-ba50-46b8-9fd7-09010059e8b9
vlan_id	None
uses	[]
used_by	[]
created_at	2020-11-17T00:28:32.612230+00:00
updated_at	2020-11-17T01:03:53.143795+00:00
sriov_numvfs	0
sriov_vf_driver	None
accelerated	[True]

```
system interface-network-assign controller-0 pxeboot0 pxeboot
```

```
[sysadmin@controller-0 ~(keystone_admin)]$ system interface-network-assign controller-0 pxeboot0 pxeboot
```

Property	Value
hostname	controller-0
uuid	6c55622d-2da4-4f4e-ab5e-f8e06e03af7c
ifname	pxeboot0
network_name	pxeboot

```
system host-if-add -V 18 controller-0 mgmt0 vlan pxeboot0
```

```
[sysadmin@controller-0 ~(keystone_admin)]$ system host-if-add -V 18 controller-0 mgmt0 vlan pxeboot0
```

Property	Value
ifname	mgmt0
iftype	vlan
ports	[]
imac	24:6e:96:5d:0c:92
imtu	1500
ifclass	None
aemode	None
schedpolicy	None
txhashpolicy	None
uuid	119bdb85-1e24-44ff-b527-fe8f167b0ad3
ihost_uuid	16afe3a2-ba50-46b8-9fd7-09010059e8b9
vlan_id	18
uses	[u'pxeboot0']
used_by	[]
created_at	2020-11-17T01:03:57.303000+00:00
updated_at	None
sriov_numvfs	0
sriov_vf_driver	None
accelerated	[True]

```
system interface-network-assign controller-0 mgmt0 mgmt
```

```
[sysadmin@controller-0 ~(keystone_admin)]$ system interface-network-assign controller-0 mgmt0 mgmt
```

Property	Value
hostname	controller-0
uuid	2e93ef03-e9ee-457a-8667-05b52b7109a5
ifname	mgmt0
network_name	mgmt

```
system host-if-add -V 19 controller-0 cluster0 vlan pxeboot0
```

```
[sysadmin@controller-0 ~(keystone_admin)]$ system host-if-add -V 19 controller-0 cluster0 vlan pxeboot0
```

Property	Value
ifname	cluster0
iftype	vlan
ports	[]
imac	24:6e:96:5d:0c:92
imtu	1500
ifclass	None
aemode	None
schedpolicy	None
txhashpolicy	None
uuid	6a620c8e-4f7b-4f74-a9f4-2a91d3ae9756
ihost_uuid	16afe3a2-ba50-46b8-9fd7-09010059e8b9
vlan_id	19
uses	[u'pxeboot0']
used_by	[]
created_at	2020-11-17T01:04:02.613518+00:00
updated_at	None
sriov_numvfs	0
sriov_vf_driver	None
accelerated	[True]

system interface-network-assign controller-0 cluster0 cluster-host

```
[sysadmin@controller-0 ~(keystone_admin)]$ system interface-network-assign controller-0 cluster0 cluster-host
```

Property	Value
hostname	controller-0
uuid	fb8b6be6-1618-4662-b063-b1e8d340aa48
ifname	cluster0
network_name	cluster-host

- Configure NTP Servers for network time synchronization:

system ntp-modify ntpservers=0.pool.ntp.org,1.pool.ntp.org

```
[sysadmin@controller-0 ~(keystone_admin)]$ system ntp-modify ntpservers=0.pool.ntp.org,1.pool.ntp.org
```

Property	Value
uuid	3206cf01-c64a-457e-ac66-b8224c9684c3
ntpervers	0.pool.ntp.org,1.pool.ntp.org
isystem_uuid	cc79b616-d24e-4432-a953-85c9b242cb3a
created_at	2020-11-17T00:27:23.529571+00:00
updated_at	None

Then check the interfaces status

```
[sysadmin@controller-0 ~(keystone_admin)]$ system host-if-list controller-0
```

uuid	name	class	type	vlan id	ports	uses i/f	used by i/f	attributes
119bdb85-1e24-44ff-b527-fe8f167b0ad3	mgmt0	platform	vlan	18	[]	[u'pxeboot0']	[]	MTU=1500
23b5e923-1e53-4e70-a975-542d8380b7f2	pxeboot0	platform	ethernet	None	[u'eno1']	[]	[u'mgmt0', u'cluster0']	MTU=1500
6a620c8e-4f7b-4f74-a9f4-2a91d3ae9756	cluster0	platform	vlan	19	[]	[u'pxeboot0']	[]	MTU=1500
d8a048fa-67ef-43ac-8166-671be93caa30	oam0	platform	ethernet	None	[u'eno3']	[]	[]	MTU=1500

- Add an OSD on controller-0 for Ceph:

```
system host-disk-list controller-0
```

```
system host-disk-list controller-0 | awk 'VdevVbdb/{print $2}' | xargs -i system host-stor-add controller-0 {}
```

```
system host-disk-list controller-0 | awk 'VdevVsdcd/{print $2}' | xargs -i system host-stor-add controller-0 {}
```

```
system host-stor-list controller-0
```

```
[sysadmin@controller-0 ~(keystone_admin)]$ system host-disk-list controller-0
```

uuid	device_no	device_	device_	size_	available_	rpm	serial_id	device_path
	de	num	type	gib	gib			
8e2a719a-fa5a-4c25-89af-70a23fb7b238	/dev/sda	2048	HDD	893.	644.726	Undetermined	00c66a07604fa8de2500151b14604609	/dev/disk/by-path/pci-0000:86:00.0-scsi-0:2:0:0
				75				
61b6f262-a51f-4310-aeac-373b1c1bbbc2	/dev/sdb	2064	HDD	1117.	1117.247	Undetermined	00c6b9139b76a8de2500151b14604609	/dev/disk/by-path/pci-0000:86:00.0-scsi-0:2:1:0
				25				
81a7f4f9-dd3a-49b5-80d9-e1953aa43c79	/dev/sdc	2080	HDD	1117.	1117.247	Undetermined	0053be63c794a8de2500151b14604609	/dev/disk/by-path/pci-0000:86:00.0-scsi-0:2:2:0
				25				
4879b381-8e9f-48f3-84e2-f9c6a94bbfe0	/dev/sdd	2096	HDD	1117.	0.0	Undetermined	0065482503bca8de2500151b14604609	/dev/disk/by-path/pci-0000:86:00.0-scsi-0:2:3:0
				25				

```
[sysadmin@controller-0 ~(keystone_admin)]$ system host-disk-list controller-0 | awk '/\/dev\/sdb/{print $2}' | xargs -i system host-stor-add controller-0 {}
```

Property	Value
osdid	0
function	osd
state	configuring-on-unlock
journal_location	0816c72f-a4f0-49ea-9a95-0f02c880717c
journal_size_gib	1024
journal_path	/dev/disk/by-path/pci-0000:86:00.0-scsi-0:2:1:0-part2
journal_node	/dev/sdb2
uuid	0816c72f-a4f0-49ea-9a95-0f02c880717c
ihost_uuid	16afe3a2-ba50-46b8-9fd7-09010059e8b9
idisk_uuid	61b6f262-a51f-4310-aeac-373b1c1bbbc2
tier_uuid	3af8c893-9dd4-40af-afc6-30bb79048448
tier_name	storage
created_at	2020-11-17T01:05:04.063823+00:00
updated_at	None

```
[sysadmin@controller-0 ~(keystone_admin)]$ system host-disk-list controller-0 | awk '/\/dev\/sdc/{print $2}' | xargs -i system host-stor-add controller-0 {}
```

Property	Value
osdid	1
function	osd
state	configuring-on-unlock
journal_location	7a0b3727-0e3f-4582-9415-56e44bb8f1e5
journal_size_gib	1024
journal_path	/dev/disk/by-path/pci-0000:86:00.0-scsi-0:2:2:0-part2
journal_node	/dev/sdc2
uuid	7a0b3727-0e3f-4582-9415-56e44bb8f1e5
ihost_uuid	16afe3a2-ba50-46b8-9fd7-09010059e8b9
idisk_uuid	81a7f4f9-dd3a-49b5-80d9-e1953aa43c79
tier_uuid	3af8c893-9dd4-40af-afc6-30bb79048448
tier_name	storage
created_at	2020-11-17T01:05:06.939798+00:00
updated_at	None

```
[sysadmin@controller-0 ~(keystone_admin)]$ system host-stor-list controller-0
```

uuid	function	osdid	state	idisk_uuid	journal_path	journal_node	journal_size_gib	tier_name
0816c72f-a4f0-49ea-9a95-0f02c880717c	osd	0	configuring-on-unlock	61b6f262-a51f-4310-aeac-373b1c1bbbc2	/dev/disk/by-path/pci-0000:86:00.0-scsi-0:2:1:0-part2	/dev/sdb2	1	storage
7a0b3727-0e3f-4582-9415-56e44bb8f1e5	osd	1	configuring-on-unlock	81a7f4f9-dd3a-49b5-80d9-e1953aa43c79	/dev/disk/by-path/pci-0000:86:00.0-scsi-0:2:2:0-part2	/dev/sdc2	1	storage

2.7 Unlock controller-0

system host-unlock controller-0

```
[sysadmin@controller-0 ~(keystone_admin)]$ system host-unlock controller-0
```

+-----+-----+-----+		
Property	Value	
+-----+-----+-----+		
action	none	
administrative	locked	
availability	online	
bm_ip	None	
bm_type	none	
bm_username	None	
boot_device	/dev/disk/by-path/pci-0000:86:00.0-scsi-0:2:0:0	
capabilities	{u'stor_function': u'monitor'}	
clock_synchronization	ntp	
config_applied	6aa15fb4-8cb3-494e-b94e-95f85b560f22	
config_status	None	
config_target	c6ae9b2d-a3c4-4751-a79e-5487ba81ed82	
console	ttyS0,115200	
created_at	2020-11-17T00:28:01.983673+00:00	
hostname	controller-0	
id	1	
install_output	graphical	
install_state	None	
install_state_info	None	
inv_state	inventoried	
invprovision	provisioning	
location	{}	
mgmt_ip	192.168.18.3	
mgmt_mac	24:6e:96:5d:0c:92	
operational	disabled	
personality	controller	
reserved	False	
rootfs_device	/dev/disk/by-path/pci-0000:86:00.0-scsi-0:2:0:0	
serialid	None	
software_load	19.12	
subfunction_avail	online	
subfunction_oper	disabled	
subfunctions	controller,worker,lowlatency	
task	Unlocking	
threat	False	

lboot	false	
ttys_dcd	None	
updated_at	2020-11-17T01:05:07.015414+00:00	
uptime	3496	
uuid	16afe3a2-ba50-46b8-9fd7-09010059e8b9	
vim_progress_status	None	
+-----+-----+-----+		

Controller-0 will reboot to apply configuration changes and come into service. This can take 5-10 minutes, depending on the performance of the host machine.

Once the controller comes back up, check the status of controller-0

```
source /etc/platform/openrc
```

```
system host-list
```

```
controller-0:~$ source /etc/platform/openrc
[sysadmin@controller-0 ~(keystone_admin)]$ system host-list
+---+-----+-----+-----+-----+-----+
| id | hostname | personality | administrative | operational | availability |
+---+-----+-----+-----+-----+-----+
| 1 | controller-0 | controller | unlocked | enabled | available |
+---+-----+-----+-----+-----+-----+
```

2 Installation for the second server (controller-1)

2.1 Power on the controller-1 server and force it to network boot

Boot

Power

Chat

Keyboard

Screen

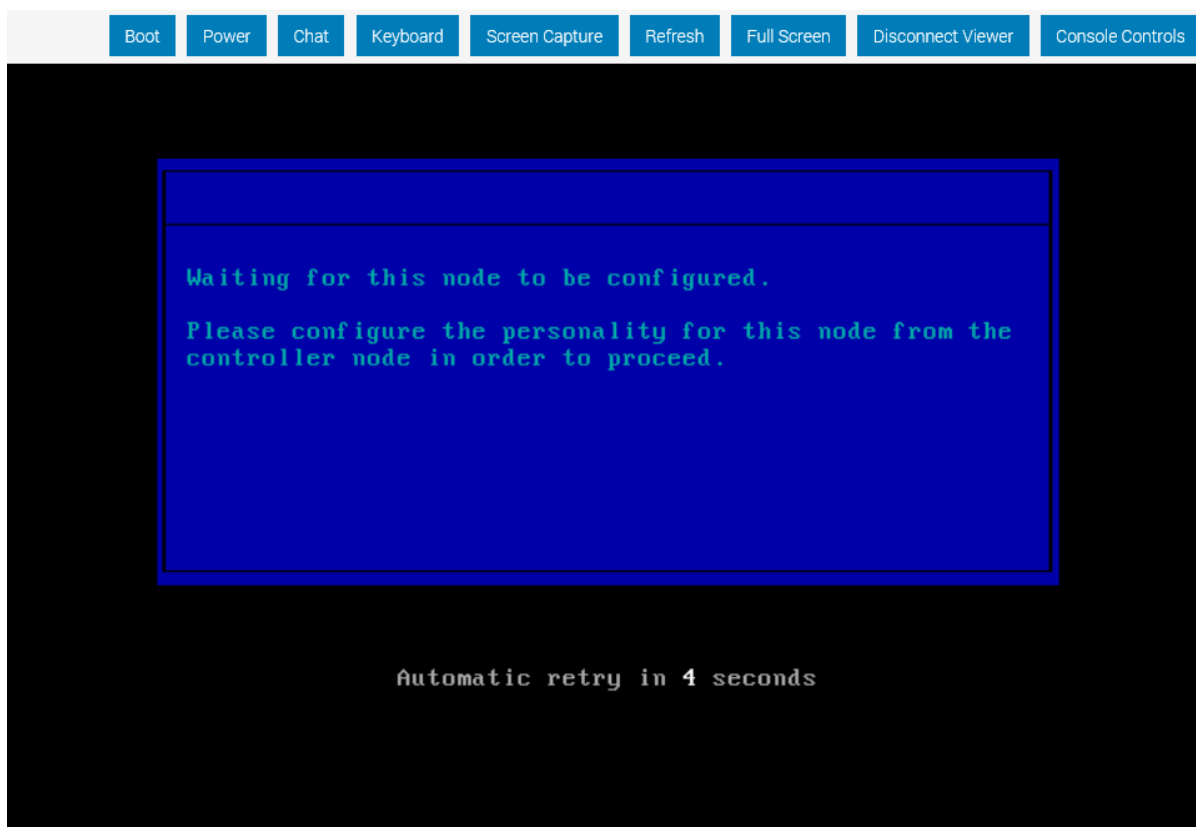
Boot Controls

- Normal Boot
 - ✓ PXE
 - BIOS Setup
 - Local Floppy/Primary Removable Media
 - Local CD/DVD
 - Hard Disk Drive
 - Virtual Floppy
 - Virtual CD/DVD/ISO
 - Local SD Card
 - Lifecycle Controller
 - BIOS Boot Manager
 - UEFI Device Path
 - UEFI HTTP
-

Cancel



2.2 As controller-1 boots, a message appears on its console instructing you to configure the personality of the node



2.3 On the console of controller-0, list hosts to see newly discovered controller-1 host (hostname=None)

`system host-list`

```
[sysadmin@controller-0 ~(keystone_admin)]$ system host-list
+---+-----+-----+-----+-----+-----+
| id | hostname | personality | administrative | operational | availability |
+---+-----+-----+-----+-----+-----+
| 1 | controller-0 | controller | unlocked | enabled | degraded |
| 2 | None | None | locked | disabled | offline |
+---+-----+-----+-----+-----+-----+
```

2.4 Using the host id, set the personality of this host to 'controller':

`system host-update 2 personality=controller`

```
[sysadmin@controller-0 ~(keystone_admin)]$ system host-update 2 personality=controller
```

+-----+		
Property	Value	
+-----+		
action	none	
administrative	locked	
availability	offline	
bm_ip	None	
bm_type	None	
bm_username	None	
boot_device	/dev/sda	
capabilities	{}	
clock_synchronization	ntp	
config_applied	None	
config_status	None	
config_target	None	
console	ttyS0,115200	
created_at	2020-11-17T10:17:44.387813+00:00	
hostname	controller-1	
id	2	
install_output	text	
install_state	None	
install_state_info	None	
inv_state	None	
invprovision	None	
location	{}	
mgmt_ip	192.168.18.4	
mgmt_mac	24:6e:96:5d:38:ee	
operational	disabled	
personality	controller	
reserved	False	
rootfs_device	/dev/sda	
serialid	None	
software_load	19.12	
subfunction_avail	not-installed	
subfunction_oper	disabled	
subfunctions	controller,worker,lowlatency	
task	None	
tboot	false	
ttys_dcd	None	
updated_at	None	
uptime	0	
uuid	f069381d-9743-49cc-bf8b-eb4bd3972203	

```
| vim_progress_status | None |
+-----+-----+
```

2.5 Wait for the software installation on controller-1 to complete, for controller-1 to reboot, and for controller-1 to show as locked/disabled /online in 'system host-list'.

This can take 5-10 minutes, depending on the performance of the host machine.

```
[root@controller-0 hieradata(keystone_admin)]$ system host-list
+---+-----+-----+-----+-----+-----+
| id | hostname | personality | administrative | operational | availability |
+---+-----+-----+-----+-----+-----+
| 1 | controller-0 | controller | unlocked | enabled | available |
| 2 | controller-1 | controller | locked | disabled | online |
+---+-----+-----+-----+-----+-----+
```

2.6 Configure controller-1

OAM_IF=en03

MGMT_IF=en01

system host-if-modify controller-1 \$OAM_IF -n oam0

system host-if-modify controller-1 oam0 -c platform

system interface-network-assign controller-1 oam0 oam

system host-if-add -V 19 controller-1 cluster0 vlan pxeboot0

system interface-network-assign controller-1 cluster0 cluster-host

system host-if-list controller-1

system host-disk-list controller-1

system host-disk-list controller-1 | awk 'VdevVbdb/{print \$2}' | xargs -i system host-stor-add controller-1 {}

system host-disk-list controller-1 | awk 'VdevVcdc/{print \$2}' | xargs -i system host-stor-add controller-1 {}

system host-stor-list controller-1

2.7 Unlock controller-1

system host-unlock controller-1

```
[sysadmin@controller-0 ~(keystone_admin)]$ system host-unlock controller-1
```

+-----+		
Property	Value	
+-----+		
action	none	
administrative	locked	
availability	online	
bm_ip	None	
bm_type	None	
bm_username	None	
boot_device	/dev/sda	
capabilities	{u'stor_function': u'monitor'}	
clock_synchronization	ntp	
config_applied	None	
config_status	Config out-of-date	
config_target	9747e0ce-2319-409d-b75c-2475bc5065ac	
console	ttyS0,115200	
created_at	2020-11-22T12:58:11.630526+00:00	
hostname	controller-1	
id	3	
install_output	text	
install_state	None	
install_state_info	None	
inv_state	inventoried	
invprovision	unprovisioned	
location	{}	
mgmt_ip	192.168.18.4	
mgmt_mac	24:6e:96:5d:38:ee	
operational	disabled	
personality	controller	
reserved	False	
rootfs_device	/dev/sda	
serialid	None	
software_load	19.12	
subfunction_avail	online	
subfunction_oper	disabled	
subfunctions	controller,worker,lowlatency	
task	Unlocking	
tboot	false	
ttys_dcd	None	
updated_at	2020-11-22T15:13:09.716324+00:00	
uptime	752	
uuid	63c930c7-2195-4d5a-870c-be610fd6b4fc	

vim_progress_status	None
---------------------	------

system host-list

```
[root@controller-0 hieradata(keystone_admin)]$ system host-list
```

id	hostname	personality	administrative	operational	availability
1	controller-0	controller	unlocked	enabled	available
2	controller-1	controller	unlocked	enabled	available

3 High Availability status show

sm-dump

Use the sm-dump to show the status of 2 controller, it shows that services on controller-0 are in **active** mode, and services on controller-1 are in **standby** mode.


```
[root@controller-0 ~(keystone_admin)]# sm-dump
```

```
-Service_Groups-----  
oam-services                active          active  
controller-services        active          active  
cloud-services             active          active  
patching-services         active          active  
directory-services         active          active  
web-services               active          active  
storage-services           active          active  
storage-monitoring-services active          active  
vim-services               active          active  
-----
```

```
-Services-----  
oam-ip                      enabled-active  enabled-active  
management-ip              enabled-active  enabled-active  
drbd-pg                     enabled-active  enabled-active  
drbd-rabbit                 enabled-active  enabled-active  
drbd-platform              enabled-active  enabled-active  
pg-fs                       enabled-active  enabled-active  
rabbit-fs                   enabled-active  enabled-active  
nfs-mgmt                    enabled-active  enabled-active  
platform-fs                 enabled-active  enabled-active  
postgres                    enabled-active  enabled-active  
rabbit                      enabled-active  enabled-active  
platform-export-fs          enabled-active  enabled-active  
platform-nfs-ip             enabled-active  enabled-active  
sysinv-inv                  enabled-active  enabled-active  
sysinv-conductor            enabled-active  enabled-active  
mtc-agent                   enabled-active  enabled-active  
hw-mon                      enabled-active  enabled-active  
dnsmasq                     enabled-active  enabled-active  
fm-mgr                      enabled-active  enabled-active  
keystone                    enabled-active  enabled-active  
open-ldap                   enabled-active  enabled-active  
snmp                        enabled-active  enabled-active  
lighttpd                    enabled-active  enabled-active  
horizon                     enabled-active  enabled-active  
patch-alarm-manager          enabled-active  enabled-active  
mgr-restful-plugin           enabled-active  enabled-active  
ceph-manager                enabled-active  enabled-active  
vim                          enabled-active  enabled-active  
vim-api                     enabled-active  enabled-active  
vim-webserver               enabled-active  enabled-active  
haproxy                     enabled-active  enabled-active  
pxeboot-ip                  enabled-active  enabled-active  
drbd-extension              enabled-active  enabled-active  
extension-fs                enabled-active  enabled-active  
extension-export-fs          enabled-active  enabled-active  
etcd                        enabled-active  enabled-active  
drbd-etcd                   enabled-active  enabled-active  
etcd-fs                     enabled-active  enabled-active  
barbican-api                enabled-active  enabled-active  
barbican-keystone-listener  enabled-active  enabled-active  
barbican-worker             enabled-active  enabled-active  
cluster-host-ip             enabled-active  enabled-active  
docker-distribution          enabled-active  enabled-active  
dockerdistribution-fs        enabled-active  enabled-active  
drbd-dockerdistribution      enabled-active  enabled-active  
ceph-mon                    enabled-active  enabled-active  
cephmon-fs                  enabled-active  enabled-active  
drbd-cephmon                 enabled-active  enabled-active  
ceph-osd                     enabled-active  enabled-active  
helmrepository-fs            enabled-active  enabled-active
```

helmrepository-13	enabled-active	enabled-active
registry-token-server	enabled-active	enabled-active

controller-1:~# sm-dump

```
-Service_Groups-----
oam-services                standby      standby
controller-services         standby      standby
cloud-services              standby      standby
patching-services           standby      standby
directory-services          active       active
web-services                active       active
storage-services            active       active
storage-monitoring-services standby      standby
vim-services                standby      standby
-----
```

```
-Services-----
oam-ip                      enabled-standby disabled
management-ip              enabled-standby disabled
drbd-pg                    enabled-standby enabled-standby
drbd-rabbit                enabled-standby enabled-standby
drbd-platform              enabled-standby enabled-standby
pg-fs                      enabled-standby disabled
rabbit-fs                  enabled-standby disabled
nfs-mgmt                   enabled-standby disabled
platform-fs                enabled-standby disabled
postgres                   enabled-standby disabled
rabbit                     enabled-standby disabled
platform-export-fs         enabled-standby disabled
platform-nfs-ip            enabled-standby disabled
sysinv-inv                 enabled-standby disabled
sysinv-conductor           enabled-standby disabled
mtc-agent                  enabled-standby disabled
hw-mon                     enabled-standby disabled
dnsmasq                    enabled-standby disabled
fm-mgr                     enabled-standby disabled
keystone                   enabled-standby disabled
open-ldap                  enabled-active enabled-active
snmp                       enabled-standby disabled
lighttpd                   enabled-active enabled-active
horizon                     enabled-active enabled-active
patch-alarm-manager        enabled-standby disabled
mgr-restful-plugin         enabled-active enabled-active
ceph-manager               enabled-standby disabled
vim                         enabled-standby disabled
vim-api                    enabled-standby disabled
vim-webserver              enabled-standby disabled
haproxy                    enabled-standby disabled
pxeboot-ip                 enabled-standby disabled
drbd-extension             enabled-standby enabled-standby
extension-fs               enabled-standby disabled
extension-export-fs        enabled-standby disabled
etcd                       enabled-standby disabled
drbd-etcd                  enabled-standby enabled-standby
etcd-fs                    enabled-standby disabled
barbican-api               enabled-standby disabled
barbican-keystone-listener enabled-standby disabled
barbican-worker            enabled-standby disabled
cluster-host-ip           enabled-standby disabled
docker-distribution        enabled-standby disabled
dockerdistribution-fs      enabled-standby disabled
drbd-dockerdistribution    enabled-standby enabled-standby
ceph-mon                   enabled-standby disabled
cephmon-fs                 enabled-standby disabled
drbd-cephmon               enabled-standby enabled-standby
ceph-osd                   enabled-active enabled-active
helmrepository-fs          enabled-standby disabled
registry-token-server      enabled-standby disabled
-----
```

