



Configure NetApp H615c (Manual Deployment)

NetApp Solutions

Kevin Hoke
May 24, 2021

This PDF was generated from https://docs.netapp.com/us-en/netapp-solutions/ai/hciai_edge_netapp_h615cmanual_deployment.html on October 21, 2021. Always check docs.netapp.com for the latest.

Table of Contents

- Configure NetApp H615c (Manual Deployment) 1
 - Install Ubuntu 18.04.4 LTS 1
 - Configure Networking for Data and Management Access 1

Configure NetApp H615c (Manual Deployment)

In this solution, the NetApp H615c compute nodes are configured as Kubernetes worker nodes. The Inferencing workload is hosted on these nodes.

Deploying the compute nodes involves the following tasks:

- Install Ubuntu 18.04.4 LTS.
- Configure networking for data and management access.
- Prepare the Ubuntu instances for Kubernetes deployment.

Install Ubuntu 18.04.4 LTS

The following high-level steps are required to install the operating system on the H615c compute nodes:

1. Download Ubuntu 18.04.4 LTS from [Ubuntu releases](#).
2. Using a browser, connect to the IPMI of the H615c node and launch Remote Control.
3. Map the Ubuntu ISO using the Virtual Media Wizard and start the installation.
4. Select one of the two physical interfaces as the `Primary network interface` when prompted.

An IP from a DHCP source is allocated when available, or you can switch to a manual IP configuration later. The network configuration is modified to a bond-based setup after the OS has been installed.

5. Provide a hostname followed by a domain name.
6. Create a user and provide a password.
7. Partition the disks according to your requirements.
8. Under Software Selection, select `OpenSSH server` and click Continue.
9. Reboot the node.

Configure Networking for Data and Management Access

The two physical network interfaces of the Kubernetes worker nodes are set up as a bond and VLAN interfaces for management and application, and NFS data traffic is created on top of it.



The inferencing applications and associated containers use the application network for connectivity.

1. Connect to the console of the Ubuntu instance as a user with root privileges and launch a terminal session.
2. Navigate to `/etc/netplan` and open the `01-netcfg.yaml` file.
3. Update the netplan file based on the network details for the management, application, and NFS traffic in your environment.

The following template of the netplan file was used in this solution:

```
# This file describes the network interfaces available on your system
```

```

# For more information, see netplan(5).
network:
  version: 2
  renderer: networkd
  ethernets:
    enp59s0f0: #Physical Interface 1
      match:
        macaddress: <<mac_address Physical Interface 1>>
      set-name: enp59s0f0
      mtu: 9000
    enp59s0f1: # Physical Interface 2
      match:
        macaddress: <<mac_address Physical Interface 2>>
      set-name: enp59s0f1
      mtu: 9000
  bonds:
    bond0:
      mtu: 9000
      dhcp4: false
      dhcp6: false
      interfaces: [ enp59s0f0, enp59s0f1 ]
      parameters:
        mode: 802.3ad
        mii-monitor-interval: 100
  vlans:
    vlan.3488: #Management VLAN
      id: 3488
      xref:{relative_path}bond0
      dhcp4: false
      addresses: [ipv4_address/subnet]
      routes:
        - to: 0.0.0.0/0
          via: 172.21.232.111
          metric: 100
          table: 3488
        - to: x.x.x.x/x # Additional routes if any
          via: y.y.y.y
          metric: <<metric>>
          table: <<table #>>
      routing-policy:
        - from: 0.0.0.0/0
          priority: 32768#Higher Priority than table 3487
          table: 3488
      nameservers:
        addresses: [nameserver_ip]
        search: [ search_domain ]

```

```

    mtu: 1500
vlan.3487:
  id: 3487
  xref:{relative_path}bond0
  dhcp4: false
  addresses: [ipv4_address/subnet]
  routes:
  - to: 0.0.0.0/0
    via: 172.21.231.111
    metric: 101
    table: 3487
  - to: x.x.x.x/x
    via: y.y.y.y
    metric: <<metric>>
    table: <<table #>>
  routing-policy:
  - from: 0.0.0.0/0
    priority: 32769#Lower Priority
    table: 3487
  nameservers:
    addresses: [nameserver_ip]
    search: [ search_domain ]
mtu: 1500    vlan.3491:
  id: 3491
  xref:{relative_path}bond0
  dhcp4: false
  addresses: [ipv4_address/subnet]
mtu: 9000

```

4. Confirm that the priorities for the routing policies are lower than the priorities for the main and default tables.
5. Apply the netplan.

```
sudo netplan --debug apply
```

6. Make sure that there are no errors.
7. If Network Manager is running, stop and disable it.

```
systemctl stop NetworkManager
systemctl disable NetworkManager
```

8. Add a host record for the server in DNS.
9. Open a VI editor to `/etc/iproute2/rt_tables` and add the two entries.

```
#
# reserved values
#
255      local
254      main
253      default
0        unspec
#
# local
#
#1       inr.ruhep
101      3488
102      3487
```

10. Match the table number to what you used in the netplan.

11. Open a VI editor to `/etc/sysctl.conf` and set the value of the following parameters.

```
net.ipv4.conf.default.rp_filter=0
net.ipv4.conf.all.rp_filter=0net.ipv4.ip_forward=1
```

12. Update the system.

```
sudo apt-get update && sudo apt-get upgrade
```

13. Reboot the system

14. Repeat steps 1 through 13 for the other Ubuntu instance.

[Next: Set Up the Deployment Jump and the Kubernetes Master Node VMs \(Manual Deployment\)](#)

Copyright Information

Copyright © 2021 NetApp, Inc. All rights reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means-graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system-without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

RESTRICTED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.277-7103 (October 1988) and FAR 52-227-19 (June 1987).

Trademark Information

NETAPP, the NETAPP logo, and the marks listed at <http://www.netapp.com/TM> are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.