∏ NetApp

3. Deploy NetApp HCI with the NetApp Deployment Engine

NetApp Solutions

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NDE delivers a simple and streamlined deployment experience for the NetApp HCI solution. A detailed guide to using NDE 1.6 to deploy your NetApp HCI system can be found here.

These steps begin after the nodes have been racked, and cabled, and the IPMI port has been configured on each node using the console. To Deploy the NetApp HCI solution using NDE, complete the following steps:

1. Access the out-of-band management console for one of the storage nodes in the cluster and log in with the default credentials ADMIN/ADMIN.
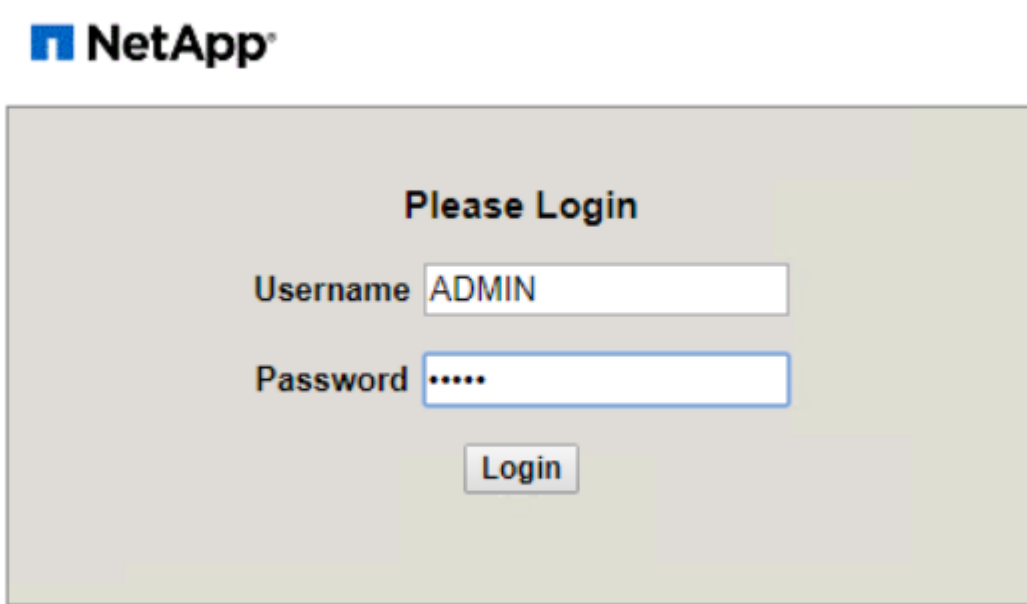
2. Click the Remote Console Preview image in the center of the screen to download a JNLP file launched by Java Web Start, which launches an interactive console to the system.

3. With the virtual console launched, a user can log in to the HCI storage node using the ADMIN/ADMIN username and password combination.

4. The Bond1G interface must have an IP, a netmask, and a gateway set statically; its VLAN set to 3480; and DNS servers defined for the environment.

```
Bond10G

   Method               : static

   Link Speed           : 50000

   IPv4 Address         :

   IPv4 Subnet Mask     :
                    --->

   IPv4 Gateway Address :
                    --->

   MTU                  : 9000
                    --->

   Bond Mode            : LACP    [ActivePassive, ALB, LACP]
                    --->

   LACP Rate            : Fast    [Fast, Slow]
                    --->

   Status               : UpAndRunning   [Down, Up, UpAndRunning]
                    --->

   Virtual Network Tag  :
                    --->

   Routes               : Number of routes: 0.
                    --->
```

> ℹ️ Select an IP that is within the subnet you intend to use for in-band management but not an IP you would like to use in production. NDE reconfigures the node with a production IP after initial access.

> ℹ️ This task must only be performed on the first storage node. Afterward, the other nodes in the infrastructure are discovered by the Automatic Private IP Address (APIPA) addresses assigned to each storage interface when left unconfigured.

5. The Bond 10G interface must have its MTU setting changed to enable jumbo frames and its bond mode changed to LACP.

```
Bond10G
    Method              : static

    Link Speed          : 50000

    IPv4 Address        :

    IPv4 Subnet Mask    :
                    --->
    IPv4 Gateway Address :
                    --->
    MTU                 : 9000
                    --->
    Bond Mode           : LACP    [ActivePassive, ALB, LACP]
                    --->
    LACP Rate           : Fast    [Fast, Slow]
                    --->
    Status              : UpAndRunning    [Down, Up, UpAndRunning]
                    --->
    Virtual Network Tag :
                    --->
    Routes              : Number of routes: 0.
                    --->
```

> ⓘ Configure each of the four storage nodes in the NetApp HCI solution this way. The NDE process is then able to discover all the nodes in the solution and configure them. You do not need to modify the Bond10g interfaces on the two compute nodes.

6. After completion, open a web browser and visit the IP address you configured for the management port to start NetApp HCI configuration with NDE.

7. On the Welcome to NetApp HCI page, click the Get Started button.

8. Check each associated box on the Prerequisites page and click Continue.

9. The next page presents End User Licenses for NetApp HCI and VMware vSphere. If you accept the terms, click I Accept at the end of each agreement and then click Continue.

10. Click Configure a New vSphere Deployment, select vSphere 6.5U2, and enter the Fully Qualified Domain Name (FQDN) of your vCenter Server. Then click Continue.

vSphere Configuration

You may elect to configure a new vSphere deployment or to join an existing vSphere deployment.

- ⦿ Configure a new vSphere deployment
  - ○ Configure Using vSphere Version 6.7 Update 1
  - ⦿ Configure Using vSphere Version 6.5 Update 2
- ○ Join and extend an existing vSphere deployment

If you have set up a DNS record for your new vCenter server, then configure your server using its fully qualified domain name and DNS server IP address:

⦿ Configure Using a Fully Qualified Domain Name   👍 *Best Practice!*

vCenter Server Fully Qualified Domain Name

anthos-vc.cie.netapp.com	✓

Note: The domain name must resolve to an unused IP address.

DNS Server IP Address

10.61.184.251	✓

If you have not set up a DNS record for your new vCenter server, you may configure using an IP address that we define:

○ Configure Using an IP Address ❓

Note: Once defined, the IP address cannot be changed.

[Back]   [Continue]

11. NDE asks for the credentials to be used in the environment. This is used for VMware vSphere, the NetApp Element storage cluster, and the NetApp Mnode, which provides management functionality for the cluster. When you are finished, click Continue.

Credentials

Define the user name and password that will be used for the storage cluster, vCenter, and the management node.

User Name

admin ✓

Password

••••••••• ✓ 👁

Password must contain:
- ✔ At least 8 characters
- ✔ No more than 20 characters
- ✔ 1 uppercase letter that is not the first character ❓
- ✔ 1 lowercase letter
- ✔ 1 of the following special characters: !@$
- ✔ Allowed characters: A-Z a-z 0-9 !@$
- ✔ 1 number that is not the last character ❓

Re-enter Password

••••••••• ✓

Back   Continue

12. NDE then prompts for the network topology used to cable the NetApp HCI environment. The validated solution in this document has been deployed using the two-cable option for the compute nodes, and the four-cable option for the storage nodes. Click Continue.

Network Topology

Select a compute node topology and a storage node topology appropriate for your hardware installation.

Compute Node Topology

○ 6 Cable Option

The 6 cable option provides dedicated ports for management (2 x 1/10 GbE), virtual machines (2 x 10/25 GbE) and storage (2 x 10/25 GbE).

☐ Use vSphere Distributed Switch? ❓

10/25 GbE Virtual Machine Ports
10/25 GbE Storage Ports
1/10 GbE Management Ports

A B C D E F

(H300E,H410C,H500E,H700E)

◉ 2 Cable Option

The 2 cable option provides shared management with ports for virtual machines and storage (2 x 10/25 GbE). The 2 cable option uses vSphere Distributed Switch. ❓

10/25 GbE Ports:
Management, Virtual Machines, and Storage

D E
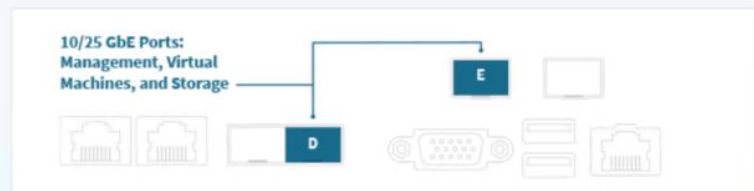
(H300E,H410C,H500E,H700E)

Storage Node Topology

◉ 4 Cable Option

The 4 cable option provides dedicated ports for management (2 x 1/10 GbE) and storage (2 x 10/25 GbE).

10/25 GbE Storage Ports
1/10 GbE Management Ports

A B C D
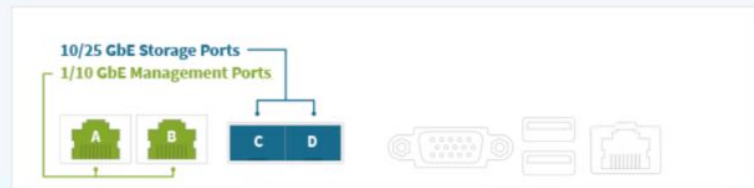
(H300S,H410S,H500S,H700S)

Back   Continue

13. The next page presented by NDE is the inventory of the environment as discovered by the APIPA addressed on the storage network. The storage node that is currently running NDE is already selected with a green check mark. Select the corresponding boxes to add additional nodes to the NetApp HCI environment. Click Continue.

Inventory

Verify the available nodes and select **at least 2 compute nodes and 4 storage nodes** to include in your installation.

Refresh Inventory

Compute Nodes

Filter ⌄

	Serial Number ⇕	Chassis Serial Number / Slot ⇕	Node Type ⇕	Software Version ⇕	Physical CPU Cores ⇕	Memory ⇕	1 GbE Ports ⇕	10 GbE Ports ⇕
☑	HM17CS002729	002170990158 / B	H410C	1.6	8	384 GB	0 of 2 detected	2 of 4 detected
☑	HM181S002024	002170990158 / A	H410C	1.6	8	384 GB	0 of 2 detected	2 of 4 detected

1 - 2 of 2 results   ⏮ ◄ 1 ► ⏭   20 ▾

2 compute nodes selected

Storage Nodes

Filter ⌄

	Serial Number ⇕	Chassis Serial Number / Slot ⇕	Node Type ⇕	Raw Capacity ⇕	Element Version ⇕	Drive Count ⇕	1 GbE Ports ⇕	10 GbE Ports ⇕
☑	221814003506	221814003436 / C	H500S	5.76 TB	11.3.1.5	6 of 6 detected	2 of 2 detected	2 of 2 detected
☑	221818004613	221814003436 / D	H500S	5.76 TB	11.3.1.5	6 of 6 detected	2 of 2 detected	2 of 2 detected
✔ ❓	221826005865	002170990158 / C	H500S	5.76 TB	11.3.1.5	6 of 6 detected	2 of 2 detected	2 of 2 detected
☑	221826005866	002170990158 / D	H500S	5.76 TB	11.3.1.5	6 of 6 detected	2 of 2 detected	2 of 2 detected

1 - 4 of 4 results   ⏮ ◄ 1 ► ⏭   20 ▾

4 storage nodes selected

Back   Continue

> ℹ️ If there are any nodes missing from the inventory screen, wait a few minutes and click Refresh Inventory. If the node still fails to appear, additional investigation of environment networking might be required.

14. You must next configure the permanent network settings for the NetApp HCI deployment. The first page configures infrastructure services (DNS and NTP), vCenter networking, and Mnode networking.

Network Settings

Provide the network settings that will be used for your installation.

Live network validation is: **On**

Infrastructure Services

DNS Server IP Address 1		DNS Server IP Address 2 (Optional)	
10.61.184.251	✓	10.61.184.252	✓

NTP Server Address 1		NTP Server Address 2 (Optional)	
10.61.184.251	✓	10.61.184.252	✓

To save time, launch the easy form to enter fewer network settings. >

vCenter Networking

VLAN ID	Subnet	Default Gateway	FQDN	IP Address
3480 ✓	172.21.224.0/24 ✓	172.21.224.1 ✓	anthos-vc.cie.netapp.com	172.21.224.10 ✓

Management Node Networking

	Management Network	iSCSI Network
VLAN ID	3480 ✓	3481 ✓
Subnet	172.21.224.0/24 ✓	172.21.225.0/24 ✓
Default Gateway	172.21.224.1 ✓	

Hostname	Management IP Address	Storage (iSCSI) IP Address
anthos-mnode ✓	172.21.224.50 ✓	172.21.225.50 ✓

15. The next page allows you to configure each node in the environment. For the compute nodes, it allows you to configure the host name, management network, vMotion network, and storage network. For the storage nodes, name the storage cluster and configure the management and storage networks being used for each node. Click Continue.

Compute Node Networking

	Management Network	vMotion Network	iSCSI A Network	iSCSI B Network
VLAN ID	3480 ✓	3482 ✓	3481 ✓	3481 ✓
Subtnet ❓	172.21.224.0/24 ✓	172.21.226.0/24 ✓	172.21.225.0/24 ✓	172.21.225.0/24 ✓
Default Gateway	172.21.224.1 ✓	Default Gateway (Optional)	Default Gateway (Optional)	Default Gateway (Optional)

Serial Number	Hostname	Management IP Address	vMotion IP Address	iSCSI A - IP Address	iSCSI B - IP Address
HM17CS002729	Anthos-ESXi-01 ✓	172.21.224.11 ✓	172.21.226.11 ✓	172.21.225.11 ✓	172.21.225.111 ✓
HM181S002024	Anthos-ESXi-02 ✓	172.21.224.12 ✓	172.21.226.12 ✓	172.21.225.12 ✓	172.21.225.112 ✓

Storage Node Networking

Storage Cluster Name

Anthos-Store ✓

> **Note:** The storage cluster name cannot be changed after deployment.

	Management Network	iSCSI Network
VLAN ID	3480 ✓	3481 ✓
Subtnet ❓	172.21.224.0/24 ✓	172.21.225.0/24 ✓
Default Gateway	172.21.224.1 ✓	Default Gateway (Optional)
	Management Virtual IP (MVIP) ❓ 172.21.224.20 ✓	Storage Virtual IP (SVIP) ❓ 172.21.225.20 ✓

Serial Number	Hostname	Management IP Address	Storage (iSCSI) IP Address
221814003506	Anthos-Store-01 ✓	172.21.224.21 ✓	172.21.225.21 ✓
221818004613	Anthos-Store-02 ✓	172.21.224.22 ✓	172.21.225.22 ✓
221826005865	Anthos-Store-03 ✓	172.21.224.23 ✓	172.21.225.23 ✓
221826005866	Anthos-Store-04 ✓	172.21.224.24 ✓	172.21.225.24 ✓

[Back]   Live network validation is: [On] ❓   [Continue]

16. On the next page, review all the settings that have been defined for the environment by expanding each section, and, if necessary, click Edit to make corrections. There is also a check box on this page that enables or disables the Mnode from sending real-time health and diagnostics information to NetApp Active IQ. If all the information is correct, click Start Deployment.

> ℹ️ If you want to enable Active IQ, verify that your management network can reach the internet. If NDE is unable to reach Active IQ, the deployment can fail.

17. A summary page appears along with a progress bar for each component of the NetApp HCI solution, as well as the overall solution. When complete, you are presented with an option to launch the vSphere client and begin working with your environment.

Your setup is complete.

Launch vSphere Client

Configure Network	Complete	✓
Set up NetApp Cluster	Complete	✓
Set up ESXi	Complete	✓
Set up vCenter	Complete	✓
Configure Management Node	Complete	✓
Finalize Configuration	Complete	✓

Overall Progress

100%

⬇ Export all setup information to CSV file