



# **Migrate from a Cisco switch to a Cisco Nexus 9336C-FX2 cluster switch**

## **ONTAP Systems Switches**

NetApp  
June 02, 2022

# Table of Contents

- Migrate from a Cisco switch to a Cisco Nexus 9336C-FX2 cluster switch . . . . . 1
  - Migrate from a Cisco switch to a Cisco Nexus 9336C-FX2 cluster switch. . . . . 1
  - How to migrate from a Cisco switch to a Cisco Nexus 9336C-FX2 cluster switch . . . . . 1

# Migrate from a Cisco switch to a Cisco Nexus 9336C-FX2 cluster switch

## Migrate from a Cisco switch to a Cisco Nexus 9336C-FX2 cluster switch

You must be aware of certain configuration information, port connections and cabling requirements when you are replacing some older Cisco Nexus cluster switches with Cisco Nexus 9336C-FX2 cluster switches.

- The following cluster switches are supported:
  - Nexus 9336C-FX2
  - Nexus 92300YC
  - Nexus 5596UP
  - Nexus 3232C
  - Nexus 3132Q-V
- See the [Hardware Universe](#) for full details of supported ports and their configurations.
- You have configured some of the ports on Nexus 9336C-FX2 switches to run at 10 GbE or 40 GbE.
- You have planned, migrated, and documented 10 GbE and 40 GbE connectivity from nodes to Nexus 9336C-FX2 cluster switches.
- The ONTAP and NX-OS versions supported in this procedure are on the [Cisco Ethernet Switches](#) page.

## How to migrate from a Cisco switch to a Cisco Nexus 9336C-FX2 cluster switch

You can migrate nondisruptively older Cisco cluster switches for an ONTAP cluster to Cisco Nexus 9336C-FX2 cluster network switches.

- The existing cluster must be properly set up and functioning.
- All cluster ports must be in the up state to ensure nondisruptive operations.
- The Nexus 9336C-FX2 cluster switches must be configured and operating under the proper version of NX-OS installed and reference configuration file (RCF) applied.
- The existing cluster network configuration must have the following:
  - A redundant and fully functional NetApp cluster using both older Cisco switches.
  - Management connectivity and console access to both the older Cisco switches and the new switches.
  - All cluster LIFs in the up state with the cluster LIFs are on their home ports.
  - ISL ports enabled and cabled between the older Cisco switches and between the new switches.

The examples in this procedure use the following switch and node nomenclature:

- The existing Cisco Nexus 5596UP cluster switches are c1 and c2.

- The new Nexus 9336C-FX2 cluster switches are cs1 and cs2.
- The nodes are node1 and node2.
- The cluster LIFs are node1\_clus1 and node1\_clus2 on node 1, and node2\_clus1 and node2\_clus2 on node 2 respectively.
- Switch c2 is replaced by switch cs2 first and then switch c1 is replaced by switch cs1.
  - A temporary ISL is built on cs2 connecting c2 to cs2.
  - Cabling between the nodes and c2 are then disconnected from c2 and reconnected to cs2.
  - Cabling between the nodes and c1 are then disconnected from c1 and reconnected to cs1.
  - The temporary ISL between c2 and cs2 is then removed.

## Steps

1. If AutoSupport is enabled on this cluster, suppress automatic case creation by invoking an AutoSupport message: `system node autosupport invoke -node * -type all -message MAINT=xh`

where x is the duration of the maintenance window in hours.



The AutoSupport message notifies technical support of this maintenance task so that automatic case creation is suppressed during the maintenance window.

2. Change the privilege level to advanced, entering **y** when prompted to continue: `set -privilege advanced`

The advanced prompt (**\*>**) appears.

3. Verify that auto-revert is enabled on all cluster LIFs: `network interface show -vserver Cluster -fields auto-revert`

```
cluster1::*> network interface show -vserver Cluster -fields auto-revert
```

Vserver	Logical Interface	Auto-revert
Cluster	node1_clus1	true
	node1_clus2	true
	node2_clus1	true
	node2_clus2	true

4 entries were displayed.

4. Determine the administrative or operational status for each cluster interface:

Each port should display up for Link and healthy for Health Status.

- a. Display the network port attributes: `network port show -ipspace Cluster`

```
cluster1::*> network port show -ipspace Cluster
```

```
Node: node1
```

```
Ignore
```

						Speed(Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	-----	----	----	-----	
-----	-----						
e0a	Cluster	Cluster		up	9000	auto/10000	healthy
false							
e0b	Cluster	Cluster		up	9000	auto/10000	healthy
false							

```
Node: node2
```

```
Ignore
```

						Speed(Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	-----	----	----	-----	
-----	-----						
e0a	Cluster	Cluster		up	9000	auto/10000	healthy
false							
e0b	Cluster	Cluster		up	9000	auto/10000	healthy
false							

```
4 entries were displayed.
```

- b. Display information about the logical interfaces and their designated home nodes: `network interface show -vserver Cluster`

Each LIF should display up/up for Status Admin/Oper and true for Is Home.

```
cluster1::*> network interface show -vserver Cluster
```

Current Is	Logical	Status	Network	Current
Vserver	Interface	Admin/Oper	Address/Mask	Node
Port	Home			
Cluster				
e0a	node1_clus1	up/up	169.254.209.69/16	node1
e0b	node1_clus2	up/up	169.254.49.125/16	node1
e0a	node2_clus1	up/up	169.254.47.194/16	node2
e0b	node2_clus2	up/up	169.254.19.183/16	node2

4 entries were displayed.

5. The cluster ports on each node are connected to existing cluster switches in the following way (from the nodes' perspective) using the command: `network device-discovery show -protocol cdp`

```
cluster1::*> network device-discovery show -protocol cdp
```

Node/	Local	Discovered		
Protocol	Port	Device (LLDP: ChassisID)	Interface	Platform
node1	/cdp			
	e0a	c1	0/1	N5K-
C5596UP				
	e0b	c2	0/1	N5K-
C5596UP				
node2	/cdp			
	e0a	c1	0/2	N5K-
C5596UP				
	e0b	c2	0/2	N5K-
C5596UP				

6. The cluster ports and switches are connected in the following way (from the switches' perspective) using the command: `show cdp neighbors`

```
c1# show cdp neighbors
```

Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge  
 S - Switch, H - Host, I - IGMP, r - Repeater,  
 V - VoIP-Phone, D - Remotely-Managed-Device,  
 s - Supports-STP-Dispute

Device-ID Port ID	Local Intrfce	Hldtme	Capability	Platform
node1 e0a	Eth1/1	124	H	FAS2750
node2 e0a	Eth1/2	124	H	FAS2750
c2 Eth1/41	Eth1/41	179	S I s	N5K-C5596UP
c2 Eth1/42	Eth1/42	175	S I s	N5K-C5596UP
c2 Eth1/43	Eth1/43	179	S I s	N5K-C5596UP
c2 Eth1/44	Eth1/44	175	S I s	N5K-C5596UP
c2 Eth1/45	Eth1/45	179	S I s	N5K-C5596UP
c2 Eth1/46	Eth1/46	179	S I s	N5K-C5596UP
c2 Eth1/47	Eth1/47	175	S I s	N5K-C5596UP
c2 Eth1/48	Eth1/48	179	S I s	N5K-C5596UP

Total entries displayed: 10

c2# **show cdp neighbors**

Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge  
 S - Switch, H - Host, I - IGMP, r - Repeater,  
 V - VoIP-Phone, D - Remotely-Managed-Device,  
 s - Supports-STP-Dispute

Device-ID Port ID	Local Intrfce	Hldtme	Capability	Platform
node1 e0b	Eth1/1	124	H	FAS2750
node2 e0b	Eth1/2	124	H	FAS2750
c1 Eth1/41	Eth1/41	175	S I s	N5K-C5596UP

c1	Eth1/42	175	S I s	N5K-C5596UP
Eth1/42				
c1	Eth1/43	175	S I s	N5K-C5596UP
Eth1/43				
c1	Eth1/44	175	S I s	N5K-C5596UP
Eth1/44				
c1	Eth1/45	175	S I s	N5K-C5596UP
Eth1/45				
c1	Eth1/46	175	S I s	N5K-C5596UP
Eth1/46				
c1	Eth1/47	176	S I s	N5K-C5596UP
Eth1/47				
c1	Eth1/48	176	S I s	N5K-C5596UP
Eth1/48				

7. Ensure that the cluster network has full connectivity using the command: `cluster ping-cluster -node node-name`

```
cluster1::*> cluster ping-cluster -node node2

Host is node2
Getting addresses from network interface table...
Cluster node1_clus1 169.254.209.69 node1 e0a
Cluster node1_clus2 169.254.49.125 node1 e0b
Cluster node2_clus1 169.254.47.194 node2 e0a
Cluster node2_clus2 169.254.19.183 node2 e0b
Local = 169.254.47.194 169.254.19.183
Remote = 169.254.209.69 169.254.49.125
Cluster Vserver Id = 4294967293
Ping status:
....
Basic connectivity succeeds on 4 path(s)
Basic connectivity fails on 0 path(s)
.....
Detected 9000 byte MTU on 4 path(s):
    Local 169.254.19.183 to Remote 169.254.209.69
    Local 169.254.19.183 to Remote 169.254.49.125
    Local 169.254.47.194 to Remote 169.254.209.69
    Local 169.254.47.194 to Remote 169.254.49.125
Larger than PMTU communication succeeds on 4 path(s)
RPC status:
2 paths up, 0 paths down (tcp check)
2 paths up, 0 paths down (udp check)
```

8. Configure a temporary ISL on cs1 on ports e1/33-34, between c1 and cs1.



The following example shows how the new ISL is configured on c1 and cs1:

```
cs2# configure
Enter configuration commands, one per line. End with CNTL/Z.
cs2(config)# interface e1/33-34
cs2(config-if-range)# description temporary ISL between Nexus 5596UP and
Nexus 9336C
cs2(config-if-range)# no lldp transmit
cs2(config-if-range)# no lldp receive
cs2(config-if-range)# switchport mode trunk
cs2(config-if-range)# no spanning-tree bpduguard enable
cs2(config-if-range)# channel-group 101 mode active
cs2(config-if-range)# exit
cs2(config)# interface port-channel 101
cs2(config-if)# switchport mode trunk
cs2(config-if)# spanning-tree port type network
cs2(config-if)# exit
cs2(config)# exit
```

9. Remove ISL cables from ports e1/33-34 from c2 and connect the cables to ports e1/33-34 on cs2.
10. Verify that the ISL ports and port-channel are operational connecting c2 and cs2: `show port-channel summary`

The following example shows the Cisco `show port-channel summary` command being used to verify the ISL ports are operational on c2 and cs2:

```
c2# show port-channel summary
```

```
Flags:  D - Down          P - Up in port-channel (members)
        I - Individual    H - Hot-standby (LACP only)
        s - Suspended     r - Module-removed
        b - BFD Session Wait
        S - Switched      R - Routed
        U - Up (port-channel)
        p - Up in delay-lACP mode (member)
        M - Not in use. Min-links not met
```

```
-----
-----
Group Port-      Type      Protocol  Member Ports
Channel
```

```
-----
1      Po1(SU)    Eth       LACP      Eth1/41(P)  Eth1/42(P)
Eth1/43(P)
                        Eth1/44(P)  Eth1/45(P)
Eth1/46(P)
                        Eth1/47(P)  Eth1/48(P)
```

```
cs2# show port-channel summary
```

```
Flags:  D - Down          P - Up in port-channel (members)
        I - Individual    H - Hot-standby (LACP only)
        s - Suspended     r - Module-removed
        b - BFD Session Wait
        S - Switched      R - Routed
        U - Up (port-channel)
        p - Up in delay-lACP mode (member)
        M - Not in use. Min-links not met
```

```
-----
-----
Group Port-      Type      Protocol  Member Ports
Channel
```

```
-----
1      Po1(SU)    Eth       LACP      Eth1/35(P)  Eth1/36(P)
101    Po101(SU)  Eth       LACP      Eth1/41(P)  Eth1/42(P)
Eth1/43(P)
                        Eth1/44(P)  Eth1/45(P)
Eth1/46(P)
                        Eth1/47(P)  Eth1/48(P)
```

11. For node1, disconnect the cable from e1/1 on c2, and then connect the cable to e1/1 on cs2, using

appropriate cabling supported by Nexus 9336C-FX2.

12. For node2, disconnect the cable from e1/2 on c2, and then connect the cable to e1/2 on cs2, using appropriate cabling supported by Nexus 9336C-FX2.
13. The cluster ports on each node are now connected to cluster switches in the following way, from the nodes' perspective: `network device-discovery show -protocol cdp`

```
cluster1::*> network device-discovery show -protocol cdp
```

Node/ Protocol	Local Port	Discovered Device (LLDP: ChassisID)	Interface	Platform
-----				
node1	/cdp			
	e0a	c1	0/1	N5K-
C5596UP				
	e0b	cs2	0/1	N9K-
C9336C				
node2	/cdp			
	e0a	c1	0/2	N5K-
C5596UP				
	e0b	cs2	0/2	N9K-
C9336C				

14. For node1, disconnect the cable from e1/1 on c1, and then connect the cable to e1/1 on cs1, using appropriate cabling supported by Nexus 9336C-FX2.
15. For node2, disconnect the cable from e1/2 on c1, and then connect the cable to e1/2 on cs1, using appropriate cabling supported by Nexus 9336C-FX2.
16. The cluster ports on each node are now connected to cluster switches in the following way, from the nodes' perspective: `network device-discovery show -protocol cdp`

```
cluster1::*> network device-discovery show -protocol cdp
```

Node/ Protocol	Local Port	Discovered Device (LLDP: ChassisID)	Interface	Platform
node1	/cdp			
	e0a	cs1	0/1	N9K-
C9336C				
	e0b	cs2	0/1	N9K-
C9336C				
node2	/cdp			
	e0a	cs1	0/2	N9K-
C9336C				
	e0b	cs2	0/2	N9K-
C9336C				

17. Delete the temporary ISL between cs1 and c1.

```
cs1(config)# no interface port-channel 101
cs1(config)# interface e1/33-34
cs1(config-if-range)# lldp transmit
cs1(config-if-range)# lldp receive
cs1(config-if-range)# no switchport mode trunk
cs1(config-if-range)# no channel-group
cs1(config-if-range)# description 10GbE Node Port
cs1(config-if-range)# spanning-tree bpduguard enable
cs1(config-if-range)# exit
cs1(config)# exit
```

18. Verify the final configuration of the cluster: network port show -ipSPACE Cluster

Each port should display up for Link and healthy for Health Status.

```
cluster1::*> network port show -ipSPACE Cluster
```

Node: node1					Ignore		Speed(Mbps)		Health	
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status			
Status										

```

-----
e0a      Cluster      Cluster      up    9000  auto/10000 healthy
false
e0b      Cluster      Cluster      up    9000  auto/10000 healthy
false

```

Node: node2

Ignore

						Speed(Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	-----	-----	-----	-----	-----

```

-----
e0a      Cluster      Cluster      up    9000  auto/10000 healthy
false
e0b      Cluster      Cluster      up    9000  auto/10000 healthy
false

```

4 entries were displayed.

cluster1::\*> **network interface show -vserver Cluster**

	Logical	Status	Network	Current	
Current Is					
Vserver	Interface	Admin/Oper	Address/Mask	Node	Port
Home					
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----
Cluster					
	node1_clus1	up/up	169.254.209.69/16	node1	e0a
true					
	node1_clus2	up/up	169.254.49.125/16	node1	e0b
true					
	node2_clus1	up/up	169.254.47.194/16	node2	e0a
true					
	node2_clus2	up/up	169.254.19.183/16	node2	e0b
true					

4 entries were displayed.

cluster1::\*> **network device-discovery show -protocol cdp**

Node/ Protocol	Local Port	Discovered Device (LLDP: ChassisID)	Interface	Platform
node2	/cdp			
	e0a	cs1	0/2	N9K-
C9336C				
	e0b	cs2	0/2	N9K-
C9336C				
node1	/cdp			
	e0a	cs1	0/1	N9K-
C9336C				
	e0b	cs2	0/1	N9K-
C9336C				

4 entries were displayed.

19. Verify that both nodes each have one connection to each switch: `show cdp neighbors`

The following example shows the appropriate results for both switches:

```
cs1# show cdp neighbors
```

```
Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge  
S - Switch, H - Host, I - IGMP, r - Repeater,  
V - VoIP-Phone, D - Remotely-Managed-Device,  
s - Supports-STP-Dispute
```

Device-ID ID	Local Intrfce	Hldtme	Capability	Platform	Port
node1	Eth1/1	124	H	FAS2750	e0a
node2	Eth1/2	124	H	FAS2750	e0a
cs2	Eth1/35	179	R S I s	N9K-C9336C	
Eth1/35					
cs2	Eth1/36	179	R S I s	N9K-C9336C	
Eth1/36					

```
cs2# show cdp neighbors
```

```
Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge  
S - Switch, H - Host, I - IGMP, r - Repeater,  
V - VoIP-Phone, D - Remotely-Managed-Device,  
s - Supports-STP-Dispute
```

Device-ID ID	Local Intrfce	Hldtme	Capability	Platform	Port
node1	Eth1/1	124	H	FAS2750	e0b
node2	Eth1/2	124	H	FAS2750	e0b
cs1	Eth1/35	179	R S I s	N9K-C9336C	
Eth1/35					
cs1	Eth1/36	179	R S I s	N9K-C9336C	
Eth1/36					

```
Total entries displayed: 4
```

20. Ensure that the cluster network has full connectivity: `cluster ping-cluster -node node-name`

```
cluster1::*> set -priv advanced
```

Warning: These advanced commands are potentially dangerous; use them only when

directed to do so by NetApp personnel.

Do you want to continue? {y|n}: **y**

```
cluster1::*> cluster ping-cluster -node node2
```

Host is node2

Getting addresses from network interface table...

Cluster node1\_clus1 169.254.209.69 node1 e0a

Cluster node1\_clus2 169.254.49.125 node1 e0b

Cluster node2\_clus1 169.254.47.194 node2 e0a

Cluster node2\_clus2 169.254.19.183 node2 e0b

Local = 169.254.47.194 169.254.19.183

Remote = 169.254.209.69 169.254.49.125

Cluster Vserver Id = 4294967293

Ping status:

....

Basic connectivity succeeds on 4 path(s)

Basic connectivity fails on 0 path(s)

.....

Detected 9000 byte MTU on 4 path(s):

Local 169.254.19.183 to Remote 169.254.209.69

Local 169.254.19.183 to Remote 169.254.49.125

Local 169.254.47.194 to Remote 169.254.209.69

Local 169.254.47.194 to Remote 169.254.49.125

Larger than PMTU communication succeeds on 4 path(s)

RPC status:

2 paths up, 0 paths down (tcp check)

2 paths up, 0 paths down (udp check)

```
cluster1::*> set -privilege admin
```

```
cluster1::*>
```

21. For ONTAP 9.8 and later, enable the Ethernet switch health monitor log collection feature for collecting switch-related log files, using the following two commands: `system switch ethernet log setup-password` and `system switch ethernet log enable-collection`

Enter: `system switch ethernet log setup-password`



```
cluster1::*> system switch ethernet log setup-password
```

```
Enter the switch name: <return>
```

```
The switch name entered is not recognized.
```

```
Choose from the following list:
```

```
cs1
```

```
cs2
```

```
cluster1::*> system switch ethernet log setup-password
```

```
Enter the switch name: cs1
```

```
RSA key fingerprint is e5:8b:c6:dc:e2:18:18:09:36:63:d9:63:dd:03:d9:cc
```

```
Do you want to continue? {y|n}::[n] y
```

```
Enter the password: <enter switch password>
```

```
Enter the password again: <enter switch password>
```

```
cluster1::*> system switch ethernet log setup-password
```

```
Enter the switch name: cs2
```

```
RSA key fingerprint is 57:49:86:a1:b9:80:6a:61:9a:86:8e:3c:e3:b7:1f:b1
```

```
Do you want to continue? {y|n}:: [n] y
```

```
Enter the password: <enter switch password>
```

```
Enter the password again: <enter switch password>
```

Followed by: `system switch ethernet log enable-collection`

```
cluster1::*> system switch ethernet log enable-collection
```

```
Do you want to enable cluster log collection for all nodes in the  
cluster?
```

```
{y|n}: [n] y
```

```
Enabling cluster switch log collection.
```

```
cluster1::*>
```



If any of these commands return an error, contact NetApp support.

22. For ONTAP releases 9.5P16, 9.6P12, and 9.7P10 and later patch releases, enable the Ethernet switch health monitor log collection feature for collecting switch-related log files, using the commands: `system cluster-switch log setup-password` and `system cluster-switch log enable-collection`

Enter: `system cluster-switch log setup-password`

```

cluster1::*> system cluster-switch log setup-password
Enter the switch name: <return>
The switch name entered is not recognized.
Choose from the following list:
cs1
cs2

cluster1::*> system cluster-switch log setup-password

Enter the switch name: cs1
RSA key fingerprint is e5:8b:c6:dc:e2:18:18:09:36:63:d9:63:dd:03:d9:cc
Do you want to continue? {y|n}::[n] y

Enter the password: <enter switch password>
Enter the password again: <enter switch password>

cluster1::*> system cluster-switch log setup-password

Enter the switch name: cs2
RSA key fingerprint is 57:49:86:a1:b9:80:6a:61:9a:86:8e:3c:e3:b7:1f:b1
Do you want to continue? {y|n}:: [n] y

Enter the password: <enter switch password>
Enter the password again: <enter switch password>

```

Followed by: `system cluster-switch log enable-collection`

```

cluster1::*> system cluster-switch log enable-collection

Do you want to enable cluster log collection for all nodes in the
cluster?
{y|n}: [n] y

Enabling cluster switch log collection.

cluster1::*>

```



If any of these commands return an error, contact NetApp support.

23. If you suppressed automatic case creation, reenable it by invoking an AutoSupport message: `system node autosupport invoke -node * -type all -message MAINT=END`

## Copyright Information

Copyright © 2022 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.