Lab 2-0: Creating and Managing VDCs

Task 0: Lab Preparation

In this task, you will perform the steps necessary to get ready for performing the Tasks in this lab.

Activity Procedure

Complete these steps:

Step 1 Before you can perform this lab you will need a Student Server and a Pod Number assigned to you. Your instructor should provide to you the following information:

- Student Server Name or IP Address
- Student Server Username
- Student Server Password
- Pod Number
- Peer Pod Number

Step 2 From your personal/work computer use the Remote Desktop Connection (RDC) application to log in to your assigned Student Server. Refer to *Accessing the NterOne Lab Equipment* for detailed instructions regarding how to use RDC to connect to your Student Server.

Step 3 From your Student Server desktop use the PuTTY application to open SSH sessions to each of the devices in the following table.

Device Name	Device Description	IP Address	Username	Password
N7K	Nexus 7004 Default VDC	10.0.0.80	admin	Nterone179

Activity Verification

You have completed this activity when you have achieved these goals:

- You have made a successful connection to your Student Server.
- You have successfully used PuTTY to connect to the devices in the table above.

Task 1: Create a VDC

In this task, you will use a terminal utility to establish a connection to the admin VDC of the Cisco Nexus 7000 Series Switch and create a new VDC.

Activity Procedure

Complete these steps:

Step 4 Using your PuTTY session to N7K look at the current state of the VDCs on the switch by entering the command **show vdc**. You should see that the only VDC currently on the switch is the Admin VDC.

```
N7K# show vdc

vdc_id  vdc_name         state        mac                type        lc
------  --------         -----        ----------         ---------   ------
1       N7K              active       84:78:ac:57:96:41  Admin       None
```

Step 5 Identify the modules that are present within the switch by entering the **show module** command. You should see that there is a single Supervisor 2E, a 48-port M1 I/O module, and a 48-port F2 I/O module.

```
N7K# show module
Mod  Ports  Module-Type                         Model              Status
```

```
---  -----  ---------------------------------- ------------------ ----------
1    0      Supervisor module-2                N7K-SUP2E          active *
3    48     10/100/1000 Mbps Ethernet XL Module N7K-M148GT-11L     ok
4    48     1/10 Gbps Ethernet Module          N7K-F248XP-25E     ok

Mod  Sw              Hw
---  --------------  ------
1    6.1(2)          1.0
3    6.1(2)          1.2
4    6.1(2)          1.0


Mod  MAC-Address(es)                         Serial-Num
---  --------------------------------------  ----------
1    84-78-ac-58-09-d4 to 84-78-ac-58-09-e6  JAF1652ANGS
3    00-06-f6-1b-86-14 to 00-06-f6-1b-86-47  JAF1651AGHR
4    84-78-ac-0f-66-50 to 84-78-ac-0f-66-83  JAF1707AGGQ

Mod  Online Diag Status
---  ------------------
1    Pass
3    Pass
4    Pass
```

Step 6 Identify the physical interfaces available for data VDCs to use by entering the **show vdc membership** command. At this point all interfaces should be located in VDC ID 0 (unallocated), however if other students have created their VDCs already some of the interfaces may be allocated to their VDCs.

```
N7K# show vdc membership

vdc_id: 0 vdc_name: Unallocated interfaces:
        Ethernet3/1           Ethernet3/2           Ethernet3/3
        Ethernet3/4           Ethernet3/5           Ethernet3/6
        Ethernet3/7           Ethernet3/8           Ethernet3/9
        Ethernet3/10          Ethernet3/11          Ethernet3/12
        Ethernet3/13          Ethernet3/14          Ethernet3/15
        Ethernet3/16          Ethernet3/17          Ethernet3/18
        Ethernet3/19          Ethernet3/20          Ethernet3/21
        Ethernet3/22          Ethernet3/23          Ethernet3/24
        Ethernet3/25          Ethernet3/26          Ethernet3/27
        Ethernet3/28          Ethernet3/29          Ethernet3/30
        Ethernet3/31          Ethernet3/32          Ethernet3/33
        Ethernet3/34          Ethernet3/35          Ethernet3/36
        Ethernet3/37          Ethernet3/38          Ethernet3/39
        Ethernet3/40          Ethernet3/41          Ethernet3/42
        Ethernet3/43          Ethernet3/44          Ethernet3/45
        Ethernet3/46          Ethernet3/47          Ethernet3/48

        Ethernet4/1           Ethernet4/2           Ethernet4/3
        Ethernet4/4           Ethernet4/5           Ethernet4/6
        Ethernet4/7           Ethernet4/8           Ethernet4/9
        Ethernet4/10          Ethernet4/11          Ethernet4/12
        Ethernet4/13          Ethernet4/14          Ethernet4/15
        Ethernet4/16          Ethernet4/17          Ethernet4/18
        Ethernet4/19          Ethernet4/20          Ethernet4/21
        Ethernet4/22          Ethernet4/23          Ethernet4/24
        Ethernet4/25          Ethernet4/26          Ethernet4/27
        Ethernet4/28          Ethernet4/29          Ethernet4/30
        Ethernet4/31          Ethernet4/32          Ethernet4/33
        Ethernet4/34          Ethernet4/35          Ethernet4/36
        Ethernet4/37          Ethernet4/38          Ethernet4/39
        Ethernet4/40          Ethernet4/41          Ethernet4/42
        Ethernet4/43          Ethernet4/44          Ethernet4/45
        Ethernet4/46          Ethernet4/47          Ethernet4/48

vdc_id: 1 vdc_name: N7K interfaces:
```

Step 7 Enter configuration mode and create your VDC by entering the **vdc vdcP** command (where "P" is your Pod Number).

```
N7K# configure
Enter configuration commands, one per line.  End with CNTL/Z.
N7K(config)# vdc vdcP
Note:  Creating VDC, one moment please ...
```

Step 8 Enter the **show vdc** command again to see the current state of your VDC.

```
vdc_id  vdc_name    state     mac                type        lc
------  --------    -----     ----------         ---------   ------
1       N7K         active    84:78:ac:57:96:41  Admin       None
2       vdcP        active    84:78:ac:57:96:42  Ethernet    m1 f1 m1xl m2xl
```

Step 9 Your new VDC does not have any interfaces allocated to it. Use the following table to allocate interfaces to your VDC using the **allocate interface** command.

VDC	Ethernet Interface 4/A-D
vdc1	Ethernet 4/1-4
vdc2	Ethernet 4/5-8
vdc3	Ethernet 4/9-12
vdc4	Ethernet 4/13-16
vdc5	Ethernet 4/17-20
vdc6	Ethernet 4/21-24
vdc7	Ethernet 4/25-28
vdc8	Ethernet 4/29-32

```
N7K(config-vdc)# allocate interface ethernet 4/A-D
Moving ports will cause all config associated to them in source vdc to be
removed. Are you sure you want to move the ports (y/n)?  [yes] yes
ERROR: 1 or more interfaces are from a module of type not supported by this vdc
```

Note	It is expected that you receive this error message. In this version of NX-OS and with the modules that are installed, a VDC must be configured to support interfaces that belong to the F2 line card. By default F2 line card interfaces are not supported.

Step 10 Use the **limit resource module-type** command to permit the use of F2 interfaces within your VDC.

```
N7K(config-vdc)# limit-resource module-type f2
This will cause all ports of unallowed types to be removed from this vdc.
Continue (y/n)? [yes] yes
```

Step 11 Enter the **show vdc** command again to verify that your VDC will now use F2 module interfaces.

```
vdc_id  vdc_name    state     mac                type        lc
------  --------    -----     ----------         ---------   ------
1       N7K         active    84:78:ac:57:96:41  Admin       None
2       vdcP        active    84:78:ac:57:96:42  Ethernet    f2
```

Step 12 Repeat the command that you used in a previous step to allocate the correct interfacs to your VDC. This is an example of a good time to use the up and down arrows to find the command so that you do not have to type it again.

```
N7K(config-vdc)# allocate interface ethernet 4/A-D
Moving ports will cause all config associated to them in source vdc to be
removed. Are you sure you want to move the ports (y/n)?  [yes] yes
```

Step 13 Confirm that the interfaces have been allocated to your VDC by entering the **show vdc membership module 4** command. The output will vary depending on how far along the other students are.

```
N7K(config-vdc)# show vdc membership module 4

vdc_id: 0 vdc_name: Unallocated interfaces:
        Ethernet4/5           Ethernet4/6           Ethernet4/7
        Ethernet4/8           Ethernet4/9           Ethernet4/10
        Ethernet4/11          Ethernet4/12          Ethernet4/13
        Ethernet4/14          Ethernet4/15          Ethernet4/16
        Ethernet4/17          Ethernet4/18          Ethernet4/19
        Ethernet4/20          Ethernet4/21          Ethernet4/22
        Ethernet4/23          Ethernet4/24          Ethernet4/25
        Ethernet4/26          Ethernet4/27          Ethernet4/28
        Ethernet4/29          Ethernet4/30          Ethernet4/31
        Ethernet4/32          Ethernet4/33          Ethernet4/34
        Ethernet4/35          Ethernet4/36          Ethernet4/37
        Ethernet4/38          Ethernet4/39          Ethernet4/40
        Ethernet4/41          Ethernet4/42          Ethernet4/43
        Ethernet4/44          Ethernet4/45          Ethernet4/46
        Ethernet4/47          Ethernet4/48

vdc_id: P vdc_name: vdcP interfaces:
        Ethernet4/A           Ethernet4/B           Ethernet4/C
        Ethernet4/D
```

Step 14 Exit configuration mode by entering the **end** command.

```
N7K(config-vdc)# end
N7K#
```

Step 15 Copy the running configuration to the startup configuration by entering the **copy running-config startup-config** command. This is necessary step in order for you to be able to save the running configuration of your VDC.

```
N7K# copy running-config startup-config
[########################################] 100%
Copy complete.
```

Activity Verification

You have completed this task when you attain these results:

- You have created a new VDC and allocated interfaces to the VDC.

Task 2: Configuring the VDC

In this task you will perform the steps necessary to get your new VDC to a usable state.

Activity Procedure

Complete these steps:

Step 16 Move from the admin VDC to the VDC you just created by entering the **switchto vdc vdcP** command (where "P" is your Pod Number). The first thing that you see will be the System Admin Account Setup script. Answer the questions as they appear using the following example.

```
N7K# switchto vdc vdcP


         ---- System Admin Account Setup ----


Do you want to enforce secure password standard (yes/no) [y]: y
  Enter the password for "admin": Nterone179
  Confirm the password for "admin": Nterone179

         ---- Basic System Configuration Dialog VDC: x ----

This setup utility will guide you through the basic configuration of
the system. Setup configures only enough connectivity for management
of the system.

Please register Cisco Nexus7000 Family devices promptly with your
supplier. Failure to register may affect response times for initial
service calls. Nexus7000 devices must be registered to receive
entitled support services.

Press Enter at anytime to skip a dialog. Use ctrl-c at anytime
to skip the remaining dialogs.

Would you like to enter the basic configuration dialog (yes/no): yes

  Create another login account (yes/no) [n]: n

  Configure read-only SNMP community string (yes/no) [n]: n

  Configure read-write SNMP community string (yes/no) [n]: n

  Enter the switch name : vdcP (NOTE: replace "P" with your Pod Number)

  Continue with Out-of-band (mgmt0) management configuration? (yes/no) [y]: y

    Mgmt0 IPv4 address : 10.0.0.8P (NOTE: replace "P" with your Pod Number)

    Mgmt0 IPv4 netmask : 255.255.255.0

  Configure the default gateway? (yes/no) [y]: y

    IPv4 address of the default gateway : 10.0.0.1

  Configure advanced IP options? (yes/no) [n]: n

  Enable the telnet service? (yes/no) [n]: n

  Enable the ssh service? (yes/no) [y]: y

    Type of ssh key you would like to generate (dsa/rsa) [rsa]: rsa

    Number of rsa key bits <1024-2048> [1024]: 1024

  Configure default interface layer (L3/L2) [L3]: L3

  Configure default switchport interface state (shut/noshut) [shut]: shut

The following configuration will be applied:
  password strength-check
  switchname vdcP
vrf context management
ip route 0.0.0.0/0 10.0.0.1
exit
  no feature telnet
  ssh key rsa 1024 force
  feature ssh
  no system default switchport
```

```
  system default switchport shutdown
interface mgmt0
ip address 10.0.0.8P 255.255.255.0
no shutdown

Would you like to edit the configuration? (yes/no) [n]: n

Use this configuration and save it? (yes/no) [y]: y

[########################################] 100%
Copy complete.

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vdcP#
```

Step 17 Confirm the status of your interfaces.

```
vdcP# show interface brief

--------------------------------------------------------------------------------
Port   VRF          Status IP Address                              Speed    MTU
--------------------------------------------------------------------------------
mgmt0  --           up     10.0.0.8P                               1000   1500

--------------------------------------------------------------------------------
Ethernet      VLAN    Type Mode   Status  Reason                   Speed   Port
Interface                                                                 Ch #
--------------------------------------------------------------------------------
Eth4/A        --      eth  routed down    Administratively down    auto(D) --
Eth4/B        --      eth  routed down    Administratively down    auto(D) --
Eth4/C        --      eth  routed down    Administratively down    auto(D) --
Eth4/D        --      eth  routed down    Administratively down    auto(D) --
```

Step 18 Enter configuration mode and administratively enable all of your interfaces.

```
vdcP# config
vdcP(config)# interface ethernet 4/A-D
vdcP(config-int)# no shutdown
vdcP(config-int)# show interface brief

--------------------------------------------------------------------------------
Port   VRF          Status IP Address                              Speed    MTU
--------------------------------------------------------------------------------
mgmt0  --           up     10.0.0.8P                               1000    1500

--------------------------------------------------------------------------------
Ethernet      VLAN    Type Mode   Status  Reason                   Speed   Port
Interface                                                                 Ch #
--------------------------------------------------------------------------------
Eth4/A        --      eth  routed down    Link not connected       auto(D) --
Eth4/B        --      eth  routed down    Link not connected       auto(D) --
Eth4/C        --      eth  routed up      none                     1000(D) --
Eth4/D        --      eth  routed up      none                     1000(D) --
```

Step 19 View the current configuration of your VDC by entering the **show running-configuration** command.

```
vdcP# show running-config

!Command: show running-config
!Time: Sun Jul 28 21:48:23 2013

version 6.1(2)
switchname vdcP

username admin password 5 $1$wsOHmzAs$Fo/uxlhluOe.kRkkAw53i0  role vdc-admin
ip domain-lookup
snmp-server user admin vdc-admin auth md5 0x1cc9674d5a14d6d8611639c1b2d61106 pri
v 0x1cc9674d5a14d6d8611639c1b2d61106 localizedkey
rmon event 1 log trap public description FATAL(1) owner PMON@FATAL
rmon event 2 log trap public description CRITICAL(2) owner PMON@CRITICAL
rmon event 3 log trap public description ERROR(3) owner PMON@ERROR
rmon event 4 log trap public description WARNING(4) owner PMON@WARNING
rmon event 5 log trap public description INFORMATION(5) owner PMON@INFO

vrf context management
  ip route 0.0.0.0/0 10.0.0.1
vlan 1


interface Ethernet4/A
  no shutdown

interface Ethernet4/B
  no shutdown

interface Ethernet4/C
  no shutdown

interface Ethernet4/D
  no shutdown

interface mgmt0
  ip address 10.0.0.8P/24
line vty
```

Step 20 Copy the running configuration to the startup configuration by entering the **copy running-config startup-config** command.

```
vdcP# copy running-config startup-config
[########################################] 100%
Copy complete.
```

Step 21 Create a checkpoint named “baseline” by entering the checkpoint baseline command. This checkpoint will be used in upcoming labs to return the state of the VDC to a clean state.

```
vdcP# checkpoint baseline
Done
```

Activity Verification

You have completed this task when you attain these results:

- You have configured management information in your VDC.
- You have ensured that all your interfaces are operational.