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# **Cisco DNA Center Appliance 인스톨 가이드**

**Cisco Korea EN**

# DNA Center Application Type

- 44-core appliance: Cisco part number DN2-HW-APL
- 44-core promotional appliance: Cisco part number DN2-HW-APL-U
- 56-core appliance: Cisco part number DN2-HW-APL-L
- 56-core promotional appliance: Cisco part number DN2-HW-APL-L-U
- 112-core appliance: Cisco part number DN2-HW-APL-XL
- 112-core promotional appliance: Cisco part number DN2-HW-APL-XL-U

Figure 3. 44 and 56-Core Appliance Rear Panel

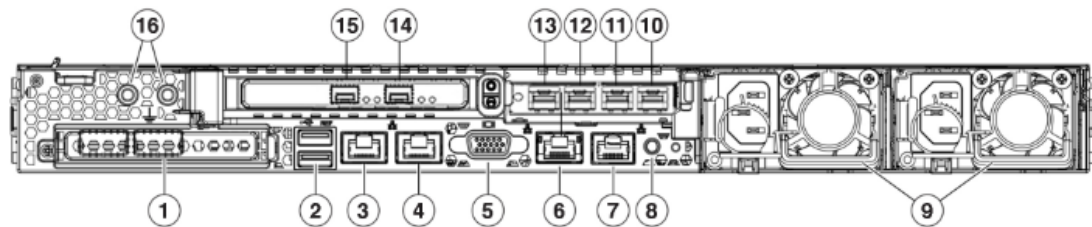
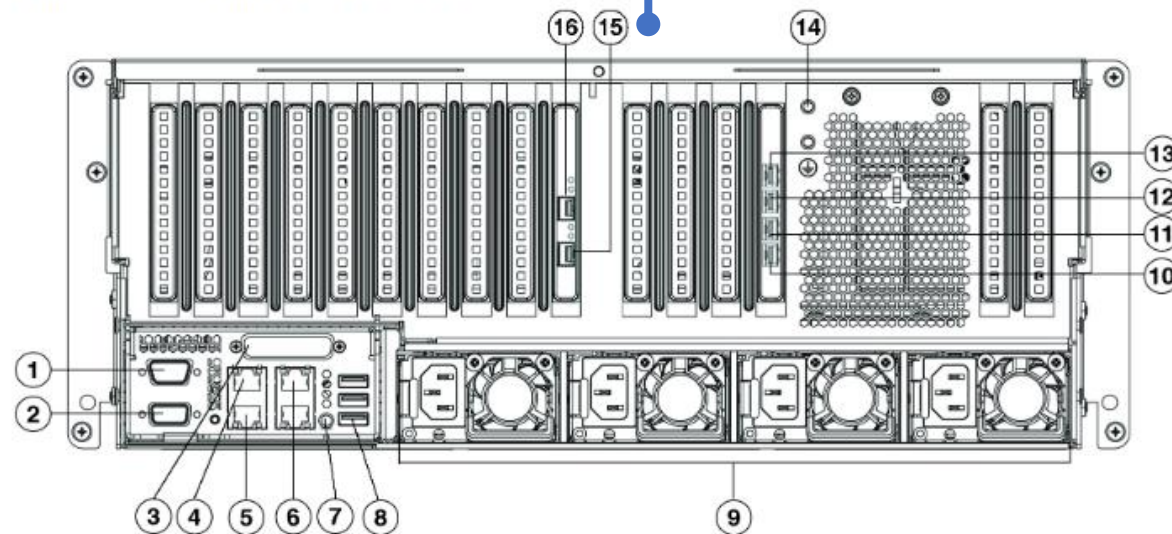
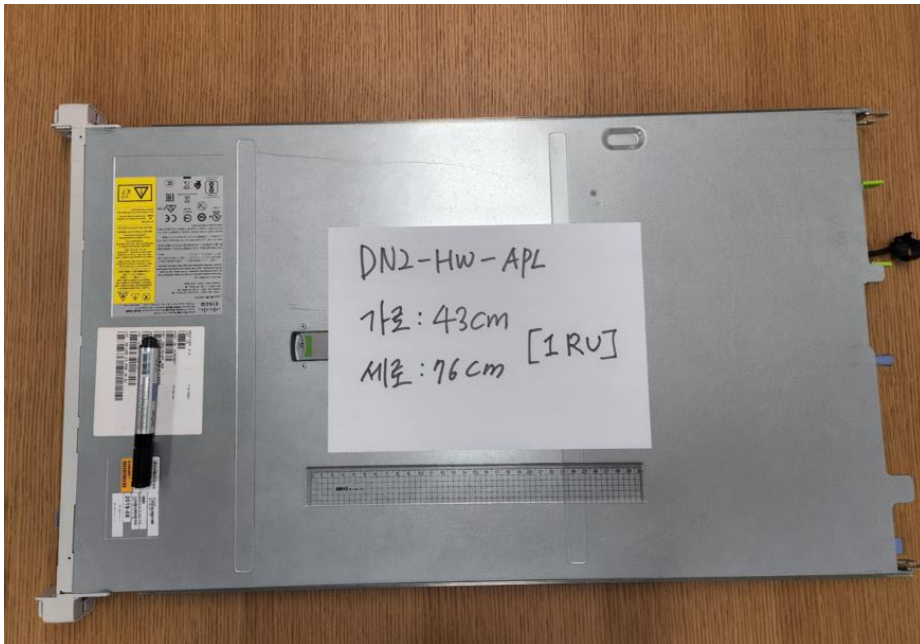


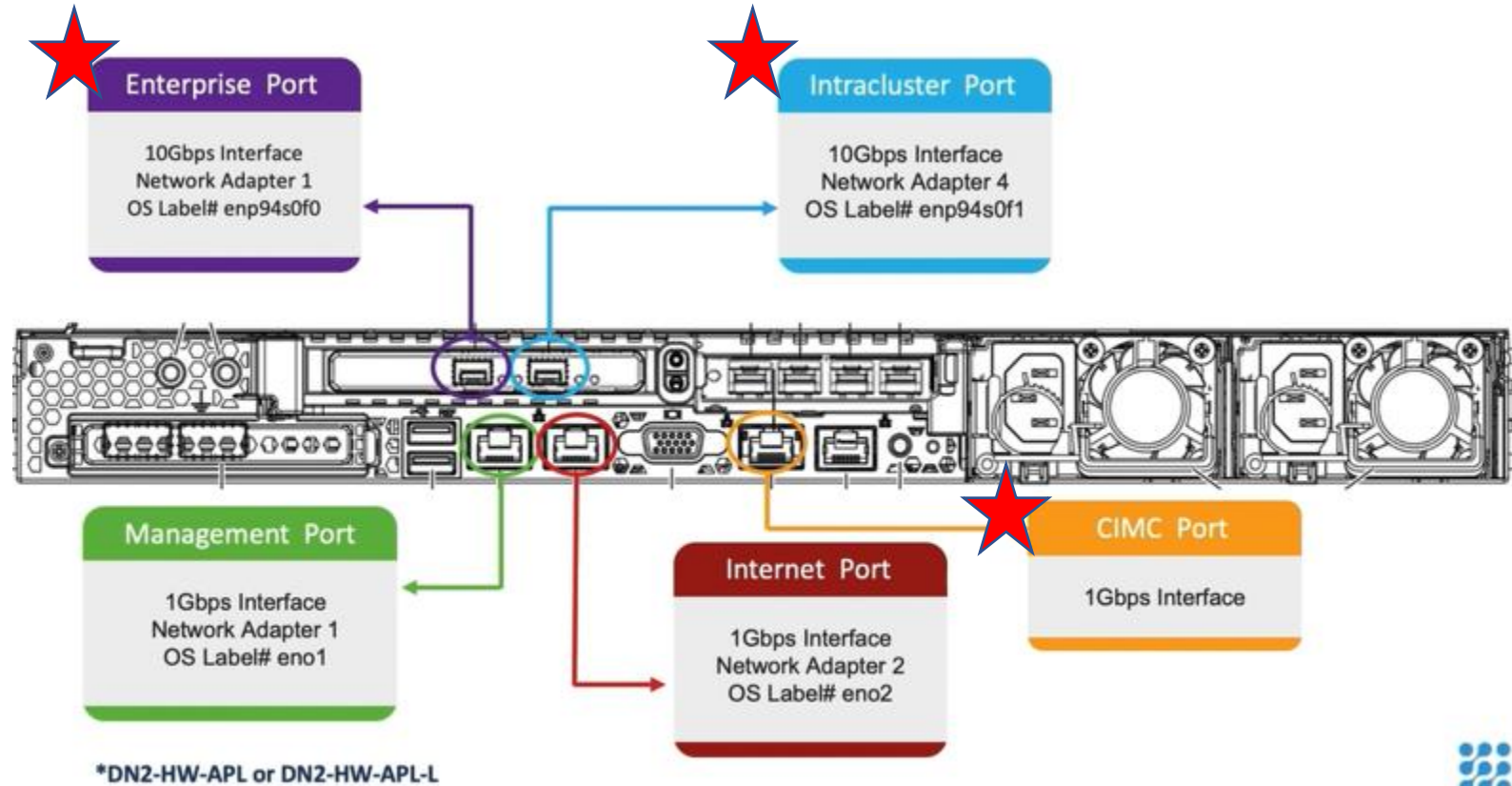
Figure 4. 112-Core Appliance Rear Panel



# DNA Center 외관 및 후면 인터페이스



외관

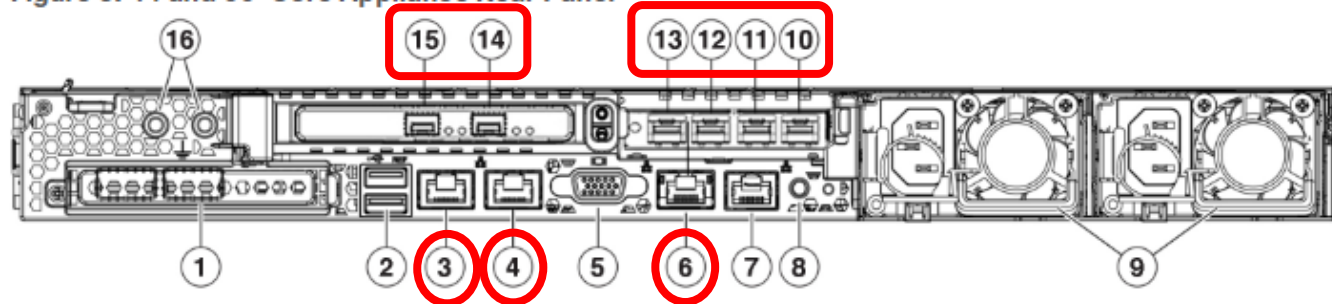


Enterprise Port(SFP+) , Intracuster Port(SFP+), CIMC (UTP)

위 필수 인터페이스 3개에 대하여 설정을 배워봅니다.

# DNA Center Interface Type

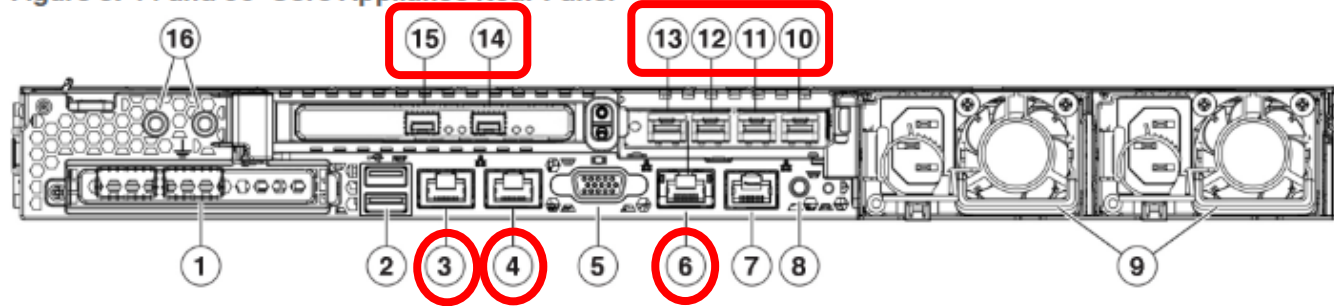
Figure 3. 44 and 56-Core Appliance Rear Panel



|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3, 10  | 1-Gbps/10-Gbps Management Port (Network Adapter 3): This Ethernet port can support 1 Gbps and 10 Gbps, depending on the link partner capability. It is identified as Network Adapter 3 in the Maglev Configuration wizard. Connect this port to a switch that provides access to your enterprise management network.                                                                                                                                                                                                                                                                                                                                                                                       |
| 4, 11  | 1-Gbps/10-Gbps Internet Port (Network Adapter 4): This Ethernet port can support 1 Gbps and 10 Gbps, depending on the link partner capability. It is identified as Network Adapter 4 in the Maglev Configuration wizard. This port is optional and is used for connecting to the Internet when it is not possible to do so via the 10-Gbps Enterprise port. Connect to the Internet or a proxy server that has connections to the Internet. <ul style="list-style-type: none"> <li>• The primary instance (callout 4) is labeled <b>2</b> on the rear panel.</li> <li>• The secondary instance (callout 11) is the third port on the Intel X710-DA4 NIC in the appliance's PCIe riser 2/slot 2.</li> </ul> |
| 6      | 1-Gbps Cisco IMC Port: This is the embedded port to the right of the VGA video port and to the left of the RJ45 serial port. It is assigned an IP address when you enable browser access to the appliance's Cisco IMC GUI (see <a href="#">Enable Browser Access to Cisco Integrated Management Controller</a> ). This port is reserved for out-of-band management of the appliance chassis and software. Connect this port to a switch that provides access to your enterprise management network.                                                                                                                                                                                                        |
| 12, 15 | 10-Gbps Enterprise Port (Network Adapter 1): This port is identified as Network Adapter 1 in the Maglev Configuration wizard. Connect it to a switch with connections to the Enterprise network. <ul style="list-style-type: none"> <li>• The primary instance (callout 15) is the left-hand port on the Intel X710-DA2 NIC in the appliance's PCIe riser 1/slot 1.</li> <li>• The secondary instance (callout 12) is the second port on the Intel X710-DA4 NIC in the appliance's PCIe riser 2/slot 2.</li> </ul>                                                                                                                                                                                         |
| 13, 14 | 10-Gbps Intracluster Port (Network Adapter 2): This port is identified as Network Adapter 2 in the Maglev Configuration wizard. Connect this port to a switch with connections to the other nodes in the cluster. <ul style="list-style-type: none"> <li>• The primary instance (callout 14) is the right-hand port on the Intel X710-DA2 NIC in the appliance PCIe riser 1/slot 1.</li> <li>• The secondary instance (callout 13) is first port on the Intel X710-DA4 NIC in the appliance's PCIe riser 2/slot 2.</li> </ul>                                                                                                                                                                              |

# DNA Center Interface Type

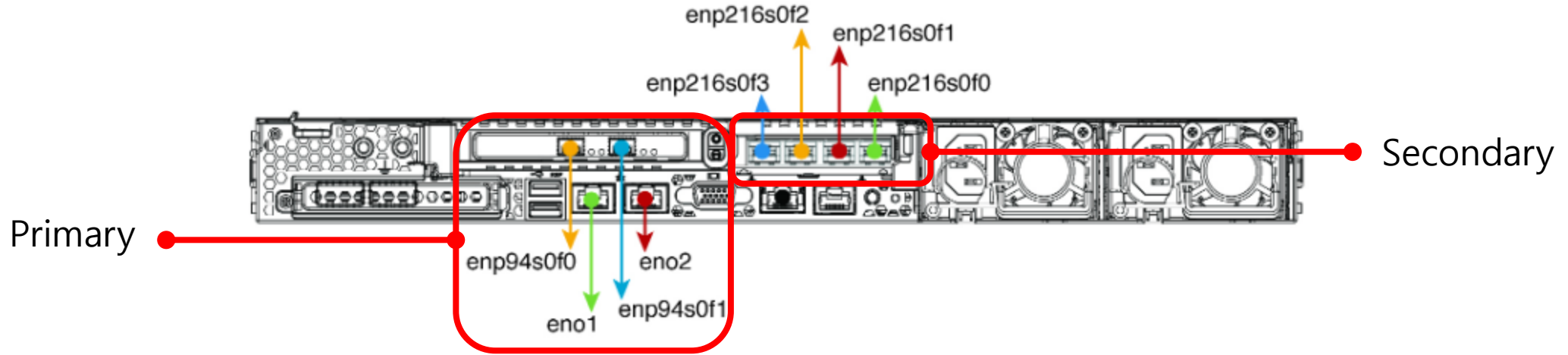
Figure 3. 44 and 56-Core Appliance Rear Panel



| Interface 번호 | Interface 이름 | 용도                                            |
|--------------|--------------|-----------------------------------------------|
| 3, 10        | Management   | 별도 관리 인터페이스 필요시 사용 (10 백업)                    |
| 4, 11        | Internet     | 별도 인터넷 연결 인터페이스 필요시 사용 (11 백업)                |
| 6            | Cisco IMC    | DNA Center appliance 관리를 위한 인터페이스             |
| 12, 15       | Enterprise   | <b>DNA Center가 네트워크 관리를 위해 사용. (12 백업)</b>    |
| 13, 14       | Intracuster  | <b>DNA Center간 Cluster 구성을 위해 사용. (13 백업)</b> |

# DNA Center Interface Type

Figure 1. Recommended Cabling for 44 and 56-Core Appliance



## Legend

- 10-Gbps Enterprise Port (Network Adapter 1)
- 10-Gbps Intracluster Port (Network Adapter 2)
- 1-Gbps/10-Gbps Management Port (Network Adapter 3)
- 1-Gbps/10-Gbps Internet Port (Network Adapter 4)
- 1-Gbps Cisco IMC Port



# DNA Center 설정 주의 사항

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## Note

During appliance configuration, the Maglev Configuration wizard does not let you proceed until you assign the **Cluster Link** option to an interface. For both single-node and three-node deployments in a production environment, assign the Intracluster port as the Cluster Link.

Be aware that the interface marked as the Cluster Link cannot be changed after configuration completes. Later, if you must change the interface marked as the Cluster Link, you are required to reimage the appliance. (For a description of the tasks you need to complete in order to reimage your Cisco DNA Center appliance, see [Reimage the Appliance](#).) With this in mind, we recommend that you set up the Cluster Port with an IP address, so as to allow for expansion to a three-node cluster in the future. Also, make sure that the cluster link interface is connected to a switch port and is in the UP state.

- 반드시 하나의 인터페이스는 Cluster Link를 지정 되어야 하고, switch와 연결되어 **UP** 상태여야 함. (Intracluster interface를 사용하는 것을 권장)
- Cluster link로 지정 된 인터페이스는 추후 설정 변경이 불가능 (필요할 경우 재설치)

# DNA Center IP Address

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- **Enterprise Port Address (Required):** One IP address with a subnet mask.
- **Cluster Port Address (Required):** One IP address with a subnet mask.
- **Management Port Address (Optional):** One IP address with a subnet mask.
- **Internet Port Address (Optional):** One IP address with a subnet mask. This is an optional port, used only when you cannot connect to the cloud using the Enterprise port. You do not need an IP address for the Internet port unless you must use it for this purpose.
- **CIMC Port Address (Optional, but strongly recommended):** One IP address with a subnet mask.



**Note**

All of the IP addresses called for in these requirements must be valid IPv4 addresses with valid IPv4 netmasks. Ensure that the addresses and their corresponding subnets do not overlap. Service communication issues can result if they do.

- 사용 되는 모든 인터페이스는 중복 되지 않는 IP Address를 할당 해야 합니다.



# DNA Center IP Address

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- **Cluster Virtual IP Addresses:** One virtual IP (VIP) address per configured network interface per cluster. This requirement applies to three-node clusters and single-node clusters that are likely to be converted into a three-node cluster in the future. You must supply a VIP for each network interface you configure. Each VIP should be from the same subnet as the IP address of the corresponding configured interface. There are four interfaces on each appliance: Enterprise, Cluster, Management, and Internet. At a minimum, you must configure the Enterprise and Cluster port interfaces, as they are required for Cisco DNA Center functionality. An interface is considered configured if you supply an IP address for that interface, along with a subnet mask and one or more associated gateways or static routes. If you skip an interface entirely during configuration, that interface is considered as not configured.

Note the following:

- If you have a single-node setup and do not plan to convert it into a three-node cluster in the future, you are not required to specify a VIP address. However, if you decide to do so, you must specify a VIP address for every configured network interface (just as you would for a three-node cluster).
- If the intracluster link for a single-node cluster goes down, the VIP addresses associated with the Management and Enterprise interfaces also go down. When this happens, Cisco DNA Center is unusable until the intracluster link is restored (because the Software Image Management [SWIM] and Cisco Identity Services Engine [ISE] integration is not operational and Cisco DNA Assurance data is not displayed because information cannot be gathered from Network Data Platform [NDP] collectors).
- You cannot use a link-local IP address for a host interface.

- Cluster 구성 시 사용 될 가상 IP address, 앞서 설정 된 인터페이스와 동일 대역의 IP Address로 설정
- 향후 Cluster 실제 구성 유무와 관계 없이 설정 하는 것을 권장.
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# DNA Center IP Address

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- **Default Gateway IP Address:** The IP address for your network's preferred default gateway. If no other routes match the traffic, traffic will be routed through this IP address. Typically, you should assign the default gateway to the interface in your network configuration that accesses the internet. For information on security considerations to keep in mind when deploying Cisco DNA Center, see the [Cisco Digital Network Architecture Center Security Best Practices Guide](#).
- **DNS Server IP Addresses:** The IP address for one or more of your network's preferred Domain Name System (DNS) servers. During configuration, you can specify multiple DNS server IP addresses by entering them as a space-separated list.

- 외부 연결 Gateway와 연결 된 인터페이스에 Default Gateway IP Address 설정
- DNS Lookup을 위한 DNS server 설정
- Default Gateway와 DNS는 설치 과정에서 연결이 가능 해야함. DNS는 IP 연결성 확인이 아닌 실제 DNS 서비스가 구동 중인지 확인

- **NTP Server IP Addresses:** The DNS-resolvable hostname or IP address for at least one Network Time Protocol (NTP) server.

During configuration, you can specify multiple NTP server IP addresses/masks or hostnames by entering them as a space-separated list. For a production deployment, we recommend that you configure a minimum of three NTP servers.

Specify these NTP servers during preflight hardware synchronization, and again during the configuration of the software on each appliance in the cluster. Time synchronization is critical to the accuracy of data and the coordination of processing across a multihost cluster. Before deploying the appliance in a production environment, make sure that the time on the appliance system clock is current and that the NTP servers you specified are keeping accurate time. If you are planning to integrate the appliance with ISE, you should also ensure that ISE is synchronizing with the same NTP servers as the appliance.

- NTP 설정은 필수는 아니지만, DNA Center 동작 시 정보 확인을 위해 설정 하는 것을 권장

# DNA Center IP Address

• **Container Subnet:** Identifies one dedicated IP subnet for the appliance to use in managing and getting IP addresses for communications among its internal application services, such as Assurance, inventory collection, and so on. By default, Cisco DNA Center configures a link-local subnet (**169.254.32.0/20**) for this parameter, and we recommend that you use this subnet. If you choose to enter another subnet, ensure that it does not conflict with or overlap any other subnet used by Cisco DNA Center's internal network or any external network. Also ensure that the minimum size of the subnet is 21 bits. The subnet you specify must conform with the IETF RFC 1918 and RFC 6598 specifications for private networks, which support the following address ranges:

- 10.0.0.0/8
- 172.16.0.0/12
- 192.168.0.0/16
- 100.64.0.0/10

For details, see RFC 1918, [Address Allocation for Private Internets](#), and RFC 6598, [IANA-Reserved IPv4 Prefix for Shared Address Space](#).



#### Important

- Ensure that you specify a valid CIDR subnet. Otherwise, incorrect bits will be present in the 172.17.1.0/20 and 172.17.61.0/20 subnets.
- After configuration of your Cisco DNA Center appliance is completed, you *cannot* assign a different subnet without first reimaging the appliance (see [Reimage the Appliance](#) for more information).

• **Cluster Subnet:** Identifies one dedicated IP subnet for the appliance to use in managing and getting IPs for communications among its infrastructure services, such as database access, the message bus, and so on. By default, Cisco DNA Center configures a link-local subnet (**169.254.48.0/20**) for this parameter, and we recommend that you use this subnet. If you choose to enter another subnet, ensure that it does not conflict with or overlap any other subnet used by Cisco DNA Center's internal network or any external network. Also ensure that the minimum size of the subnet is 21 bits. The subnet you specify must conform with the IETF RFC 1918 and RFC 6598 specifications for private networks, which support the following address ranges:

- 10.0.0.0/8
- 172.16.0.0/12
- 192.168.0.0/16
- 100.64.0.0/10

For details, see RFC 1918, [Address Allocation for Private Internets](#), and RFC 6598, [IANA-Reserved IPv4 Prefix for Shared Address Space](#).)

If you were to specify 10.10.10.0/21 as your Container subnet, you could also specify a Cluster subnet of 10.0.8.0/21 since these two subnets do not overlap. Also note that the configuration wizard detects overlaps (if any) between these subnets and prompts you to correct the overlap.



#### Important

- Ensure that you specify a valid CIDR subnet. Otherwise, incorrect bits will be present in the 172.17.1.0/20 and 172.17.61.0/20 subnets.
- After configuration of your Cisco DNA Center appliance is completed, you *cannot* assign a different subnet without first reimaging the appliance (see [Reimage the Appliance](#) for more information).

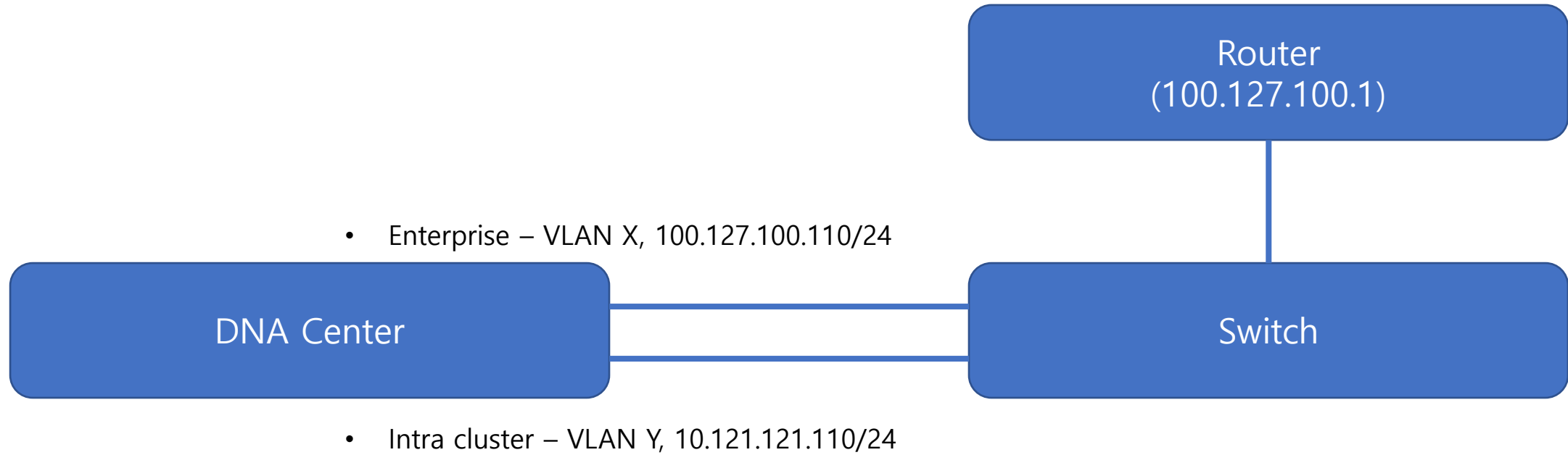


• DNA Center의 내부 동작을 위해 Container용 IP 서브넷이 필요, 기본 값 혹은 아래의 값을 사용 하는 것을 권장

• DNA Center의 내부 서비스간 통신을 위한 IP 서브넷이 필요, 기본 값 혹은 아래의 값을 사용 하는 것을 권장

# DNA Center 설치 구성도

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## 4 Steps to install a DNA Center

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0. DNA Center boot image 제작

1. CIMC 설정

2. DNA Center와 Switch 연결

3. Interface 설정

# 0. DNA Center boot image 제작 [준비물 : 64기가 이상의 USB 스틱]

최초 이미지가 장비에 인스톨된 상태로 배송이 되므로 이 과정은 **optional** 입니다.  
배송된 이미지 버전을 그대로 사용하실 분들은 1번 CIMC 설정부터 시작하시면 됩니다.  
**하지만 OS 재설치 or 업그레이드를 위하여 Boot Image 를 가지고 있는 것을 권장합니다.**

1. <https://software.cisco.com> 접속 → 2. 'Download and Upgrade' 선택 → DNA center 검색 후 클릭

## Download and manage

### Smart Software Manager

Track and manage your licenses. Convert traditional licenses to Smart Licenses.

[Manage licenses >](#)

### Download and Upgrade

Download new software or updates to your current software.

[Access downloads >](#)

### Traditional Licenses

Generate and manage PAK-based and other device licenses, including demo licenses.

[Access LRP >](#)

### Manage Smart Account

Update your profile information and manage users.

[Manage account >](#)

### EA Workspace

Generate and manage licenses purchased through a Cisco Enterprise Agreement.

[Access EA Workspace >](#)

### Manage Entitlements

eDelivery, version upgrade, and more management functionality is now available in our new portal.

[Access MCE >](#)

## Select a Product

Find Q

Search results for "**dna center**"

Cloud and Systems Management

[Cisco DNA Center](#)



# 0. DNA Center boot image 제작(계속)

## 4. ISO Image 다운로드 (파일크기 30GB)

### Software Download

[Downloads Home](#) / [Cloud and Systems Management](#) / [Network Automation and Management](#) / [Cisco DNA Center](#) / [DNA Center Software- 2.2.3.5](#)

[Expand All](#) [Collapse All](#)  
Suggested Release ▼  
**2.2.3.5**   
Latest Release ▼  
2.3.3.4  
1.3.3.9  
All Release ▼

## Cisco DNA Center

Release 2.2.3.5

[My Notifications](#)

[Related Links and Documentation](#)  
[Release Notes for 2.2.3.5](#)

| File Information                                                                | Release Date | Size        |                                     |
|---------------------------------------------------------------------------------|--------------|-------------|-------------------------------------|
| Cisco DNA Center SW 2.2.3.5 (Refer to Deployment Guide for verifying ISO image) | 04-Apr-2022  | 29190.13 MB | <a href="#">↓</a> <a href="#">🛒</a> |
| DNAC-SW-2.2.3.5.iso                                                             |              |             |                                     |
| <a href="#">Advisories</a>                                                      |              |             |                                     |

## 5. BalenaEtcher 프로그램 다운로드

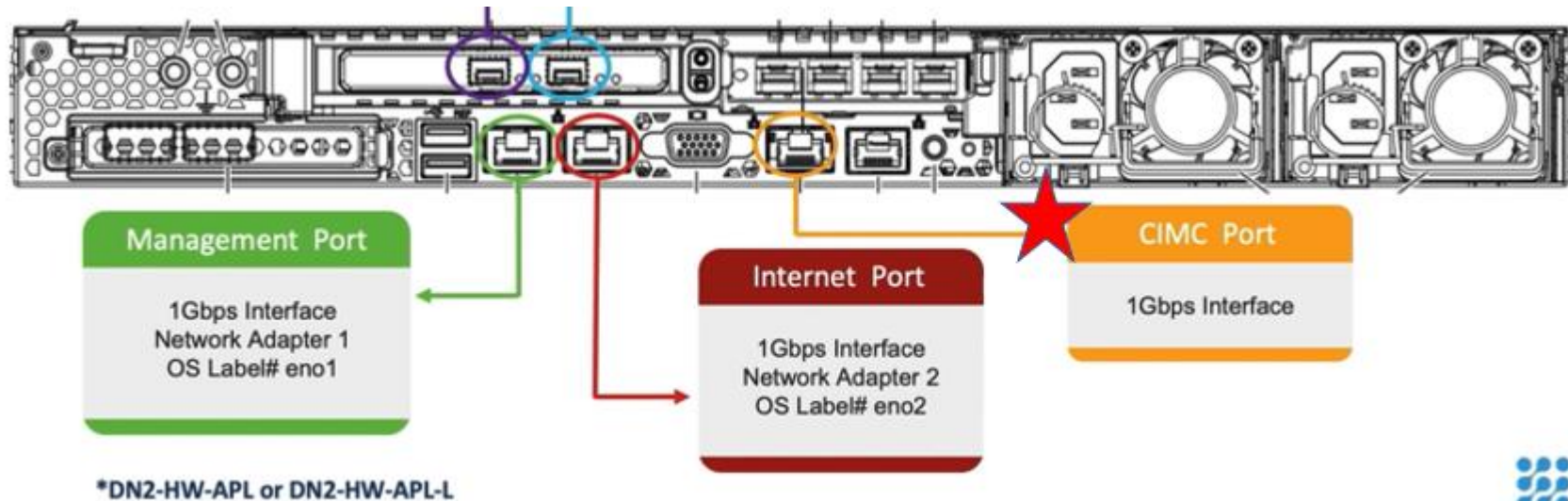
\* BalenaEtcher는 간단하게 SD 카드나 USB에 운영 체제 이미지를 구울 수 있는 무료 오픈소스 프로그램.

## 6. 다운받은 ISO Image를 준비한 USB Stick에 Bootable 형태로 변환작업 [끝]

# 1. CIMC(Cisco IMC) Port 설정 [준비물 : 모니터 with VGA(USB) 케이블, USB 키보드]

네트워크(IP주소)를 통한 원격에서의 콘솔(KVM) 접속을 위한 포트

- CIMC 접속을 통해 서버의 재시작, 하드웨어 정보 제공 및 상태 점검 가능하므로 필수 설정 권고




← CIMC 포트는 이렇게 생겼습니다.

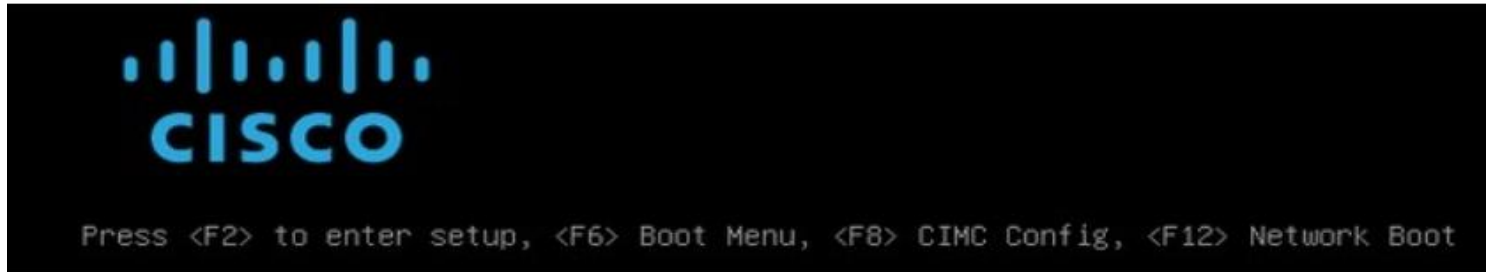
# 1. CIMC(Cisco IMC) Port 설정 (계속)

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1. DNA센터의 후면 인터페이스에 모니터와 USB 키보드를 연결합니다.

2.  CIMC 인터페이스에 UTP 케이블을 연결합니다.

3. 전원 ON , 부팅 과정에서 F8 버튼을 눌러 'CIMC Config' 로 진입합니다. (아래 화면 참고)



# 1. CIMC(Cisco IMC) Port 설정 (계속)

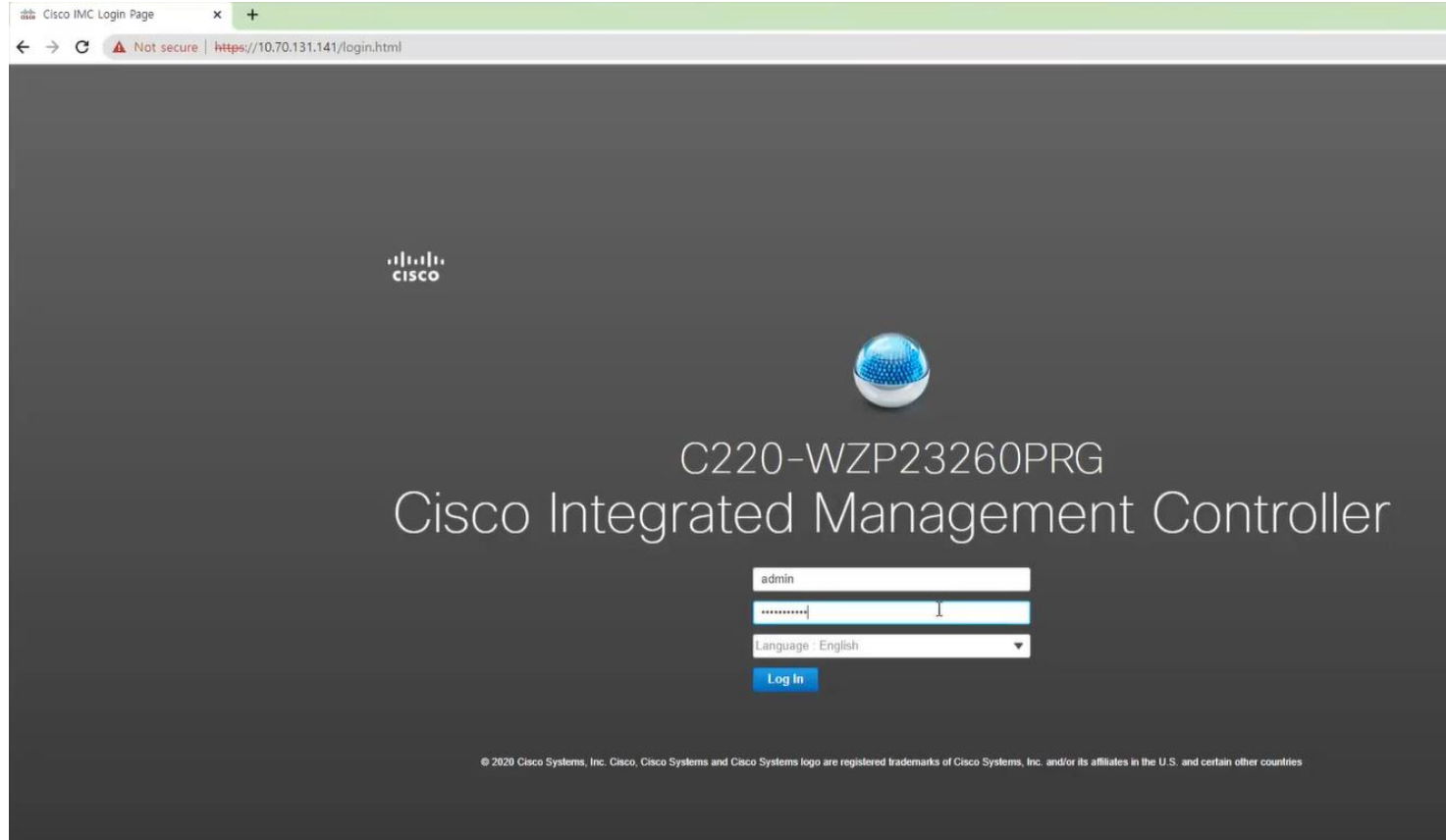
4. 아래 설정화면이 올라오면, 인터페이스 설정을 진행합니다.  
- NIC 모드 설정 및 IP 와 서브넷 그리고 게이트 웨이 설정

```
Cisco IMC Configuration Utility Version 2.0 Cisco Systems, Inc.
*****
NIC Properties
NIC mode                               NIC redundancy
Dedicated:                             [X]          None:                             [X]
Shared LOM:                             [ ]          Active-standby:                   [ ]
Cisco Card:                             Active-active:                       [ ]
  Riser1:                               [ ]          VLAN (Advanced)
  Riser2:                               [ ]          VLAN enabled:                     [ ]
  MLom:                                  [ ]          VLAN ID:                           1
Shared LOM Ext:                         [ ]          Priority:                           0
IP (Basic)
IPv4:                                   [X]          IPv6:                               [ ]  IPv4 and IPv6:                   [ ]
DHCP enabled:                           [ ]
CIMC IP:                                 10.70.131.141
Prefix/Subnet:                           255.255.255.192
Gateway:                                  10.70.131.129_
Net DNS Server: 0.0.0.0
Smart Access USB
Enabled                                   [ ]
*****
<Up/Down>Selection  <F10>Save  <Space>Enable/Disable  <F5>Refresh  <ESC>Exit
<F1>Additional settings
```

5. F10 눌러서 Save 하고 ESC 눌러서 CIMC 설정 종료

# 1. CIMC(Cisco IMC) Port 설정 (끝)

6. 접속 확인 <https://CIMC> IP // 기본 패스워드 = admin / password



7. 준비한 USB Stick 을 장비 후면에 삽입 후 KVM 을 통해 장비 Reboot

## 2. DNA Center와 Switch 연결

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동영상 참고

[https://www.cisco.com/c/ko\\_kr/partners/partner-webinar.html](https://www.cisco.com/c/ko_kr/partners/partner-webinar.html)



### 3. 인터페이스 설정

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동영상 참고

[https://www.cisco.com/c/ko\\_kr/partners/partner-webinar.html](https://www.cisco.com/c/ko_kr/partners/partner-webinar.html)