

Lab 03 : IPv6 Address

Bài tập 1: Loại bỏ những số 0 không cần thiết trong các địa chỉ IPv6 sau

1. 0000:0000:0000:0000:0000:0000:0000:0000

0::0

2. 0000:0000:0000:0000:0000:0000:0000:0001

0::1

3. 2000:0000:0000:0000:0000:ABCD:0000:0025

2000::ABCD:0:25

4. 3F00:0090:0000:0000:0000:0098:0000:0001

3F00:90::98:0:1

5. 2001:3756:0005:0000:ACAD:0000:0000:0025

2001:3756:5:0:ACAD::25

6. 3FFF:FF00:0000:0000:ACAD:0000:0000:0127

3FFF:FF00::ACAD:0:0:127

7. 2001:0000:0000:ABCD:FFFF:0000:0000:0001

2001:0:0:ABCD:FFFF::1

8. 3ABC:0001:ACAD:0000:0000:1234:0000:0005

3ABC:1:ACAD::1234:0:5

9. FC00:0000:0000:0000:3E00:1275:0000:0034

FC00::3E00:1275:0:34

10. FE95:FC6C:C540:0000:0000:0000:0000:9800

FE95:FC6C:C540::9800

11. FF00:ACAD:0000:0000:1234:0000:0000:0001

FF00:ACAD:0:0:1234::1

Bài tập 2: Định dạng các địa chỉ IPv6 sau thành dạng rút gọn (không loại bỏ số 0)

1. 0000:0000:0000:0000:0000:0000:0000:0000

2. 0000:0000:0000:0000:0000:0000:0000:0001

3. 2000:0000:0000:0000:0000:ABCD:0000:0025

4. 3F00:0090:0000:0000:0000:0098:0000:0001

5. 2001:3756:0005:0000:ACAD:0000:0000:0025

6. 3FFF:FF00:0000:0000:ACAD:0025:0000:0127

7. 2001:ACAD:0000:ABCD:FFFF:0000:0000:0001

8. 3ABC:0001:ACAD:0000:0000:1234:0000:0005

9. FC00:0000:0000:0000:3E00:1275:0000:0034

10. FE95:FC6C:C540:0000:0000:0000:0000:9800

11. FF00:ACAD:0000:0000:1234:0000:0000:0001

Bài tập 3: Loại bỏ số 0 trong IPv6 và rút gọn định dạng.

1. 0000:0000:0000:0000:0000:0000:0000:0000

2. 0000:0000:0000:0000:0000:0000:0000:0001

3. 2000:0000:0000:0000:0000:ABCD:0000:0025

4. 3F00:0090:0000:0000:0000:0098:0000:0001

5. 2001:3756:0005:0000:ACAD:0000:0000:0025

6. 3FFF:FF00:0000:0000:ACAD:0025:0000:0127

7. 2001:ACAD:0000:ABCD:FFFF:0000:0000:0001

8. 3ABC:0001:ACAD:0000:0000:1234:0000:0005

9. FC00:0000:0000:0000:3E00:1275:0000:0034

10. FE95:FC6C:C540:0000:0000:0000:9800

11. FF00:ACAD:0000:0000:1234:0000:0000:0001

Bài tập 4: Chuyển đổi các địa chỉ IPv6 sau thành dạng ban đầu

1. 2000::1

2. ::1

3. 2001:0:0:0:0:ABCD:0:127

4. 3E80:0070::0098:0000:0001

5. 2FFF:38:5:0:ACAD::5

6. 3FFF::ACAD:25:0:100

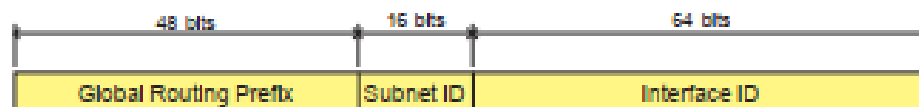
7. 2002:ACAD:0:1BCD:FFFF::4

8. 3FAA:0025:ACAD::ABCD:0000:0005

9. FFFF::4E00:1235:0:34

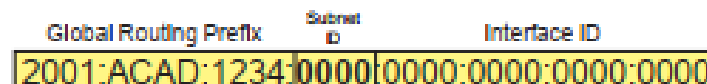
10. 3E01:6C:40::9800

Subnetting IPv6



Unlike IPv4 which requires you to borrow bits from the host portion, IPv6 has 16 bits or four hexadecimal numbers built into the address specifically allocated for creating subnets. A /48 address will allow you to have a single subnet or up to 65,536 subnets.

Lets say that your ISP has assigned you the 2001:ACAD:1234::/48 IPv6 address.



Basic subnetting in IPv6 was designed to make subnetting a very simple process. Start at the /64 bit and start counting up until you've used all the available bits in the subnet ID. It really is that simple!

2001:ACAD:1234:0000:0000:0000:0000:0000/64	1st subnet
2001:ACAD:1234:0001:0000:0000:0000:0000/64	2nd subnet
2001:ACAD:1234:0002:0000:0000:0000:0000/64	3rd subnet
2001:ACAD:1234:0003:0000:0000:0000:0000/64	4th subnet
2001:ACAD:1234:0004:0000:0000:0000:0000/64	5th subnet
2001:ACAD:1234:0005:0000:0000:0000:0000/64	6th subnet
2001:ACAD:1234:0006:0000:0000:0000:0000/64	7th subnet
2001:ACAD:1234:0007:0000:0000:0000:0000/64	8th subnet
2001:ACAD:1234:0008:0000:0000:0000:0000/64	9th subnet
2001:ACAD:1234:0009:0000:0000:0000:0000/64	10th subnet
2001:ACAD:1234:000A:0000:0000:0000:0000/64	11th subnet
2001:ACAD:1234:000B:0000:0000:0000:0000/64	12th subnet
2001:ACAD:1234:000C:0000:0000:0000:0000/64	13th subnet
2001:ACAD:1234:000D:0000:0000:0000:0000/64	14th subnet
2001:ACAD:1234:000E:0000:0000:0000:0000/64	15th subnet
2001:ACAD:1234:000F:0000:0000:0000:0000/64	16th subnet
2001:ACAD:1234:0010:0000:0000:0000:0000/64	17th subnet
2001:ACAD:1234:0011:0000:0000:0000:0000/64	18th subnet
2001:ACAD:1234:0012:0000:0000:0000:0000/64	19th subnet
2001:ACAD:1234:0013:0000:0000:0000:0000/64	20th subnet

Each subnet contains over 18 quintillion addresses.

(Lots of subnets omitted for space.)

2001:ACAD:1234:FFFC:0000:0000:0000:0000/64	65,533rd subnet
2001:ACAD:1234:FFFD:0000:0000:0000:0000/64	65,534th subnet
2001:ACAD:1234:FFFE:0000:0000:0000:0000/64	65,535th subnet
2001:ACAD:1234:FFFF:0000:0000:0000:0000/64	65,536th subnet

Bài tập 1: ISP của bạn đã cấp cho bạn địa chỉ IPv6 2000:ACAD:1234:6600::/56

Có bao nhiêu / 64 mạng con có sẵn với địa chỉ này?

Bốn mạng con /64 đầu tiên là gì?

Hai mạng con /64 cuối cùng trong phạm vi này là gì?

Bài tập 2: ISP của bạn đã cấp cho bạn địa chỉ IPv6 3FFF:5801:DEAF::/48

Có bao nhiêu / 64 mạng con có sẵn với địa chỉ này?

Bốn mạng con /64 đầu tiên là gì?

Hai mạng con /64 cuối cùng trong phạm vi này là gì?

Bài tập 3: ISP của bạn đã cấp cho bạn địa chỉ IPv6 2001:ACAD:5678:1840::/60

Có bao nhiêu / 64 mạng con có sẵn với địa chỉ này?

Hoàn tất vùng địa chỉ IPv6 sau:

2001:ACAD:5678:

2001:ACAD:5678:

2001:ACAD:5678:

2001:ACAD:5678:

2001:ACAD:5678:

2001:ACAD:5678:

2001:ACAD:5678:

2001:ACAD:5678:

2001:ACAD:5678:

2001:ACAD:5678:

2001:ACAD:5678:

2001:ACAD:5678:

2001:ACAD:5678:

2001:ACAD:5678:

2001:ACAD:5678:

2001:ACAD:5678:

Bài tập 4: ISP của bạn đã cấp cho bạn địa chỉ IPv6 3100:6523:AD14:8000::/52

Có bao nhiêu / 64 mạng con có sẵn với địa chỉ này?

Bốn mạng con /64 đầu tiên là gì?

Hai mạng con /64 cuối cùng trong phạm vi này là gì?

Bài tập 5: : ISP của bạn đã cấp cho bạn địa chỉ IPv6 2100:89:4500::/48.

Có bao nhiêu / 64 mạng con có sẵn với địa chỉ này?

Bốn mạng con /64 đầu tiên là gì?

Hai mạng con /64 cuối cùng trong phạm vi này là gì?

Phần 2: Chia Mạng IPv6

Bài tập mẫu:

Cho địa chỉ 2001:5378:8801::/48 hãy chia mạng cho các site và subsite, mỗi lần mượn 4 bit tương đương 1 số hex.

▣ Infrastructure Site ID: 2001:5378:8801::/52

▣ First Floor Site ID: 2001:5378:8801:1000::/52

▣ Infrastructure Sub-Site ID: 2001:5378:8801:1000::/56

▣ Patient Check-in Sub-Site ID: 2001:5378:8801:1100::/56

▣ Administrators Sub-Site ID: 2001:5378:8801:1100::/60

▣ Staff Sub-Site ID: 2001:5378:8801:1110::/60

▣ Guest Sub-Site ID: 2001:5378:8801:1120::/60

▣ Emergency Room Sub-Site ID: 2001:5378:8801:1200::/56

▣ Administrators Sub-Site ID: 2001:5378:8801:1200::/60

▣ Staff Sub-Site ID: 2001:5378:8801:1210::/60

▣ Guest Sub-Site ID: 2001:5378:8801:1220::/60

▣ Second Floor Site ID: 2001:5378:8801:2000::/52

▣ Infrastructure Sub-Site ID: 2001:5378:8801:2000::/56

▣ Nurses Station Sub-Site ID: 2001:5378:8801:2100::/56

▣ Staff Sub-Site ID: 2001:5378:8801:2100::/60

▣ Guest Sub-Site ID: 2001:5378:8801:2110::/60

▣ Ward A Sub-Site ID: 2001:5378:8801:2200::/56

▣ Staff Sub-Site ID: 2001:5378:8801:2200::/60

▣ Guest Sub-Site ID: 2001:5378:8801:2210::/60

Bài tập 1:

ISP Address: 2001:EE00:2575::/48

Infrastructure Site ID:

Administration Site ID:

- Infrastructure Sub-Site ID:
- Sales Sub-Site ID:
- Accounting Sub-Site ID:
- Distribution Sub-Site ID:

Production Site ID:

- Infrastructure Sub-Site ID:

Casting Sub-Site ID:

Editing Sub-Site ID:

Bài tập 2: ISP Address: 3F00:3589:0:5000:/52

<input type="checkbox"/>	Infrastructure Site ID:	<u>3F00:3589:0:</u>
<input type="checkbox"/>	Management Site ID:	<u>3F00:3589:0:</u>
<input type="checkbox"/>	HR Site ID:	<u>3F00:3589:0:</u>
<input type="checkbox"/>	Infrastructure Sub-Site ID:	<u>3F00:3589:0:</u>
<input type="checkbox"/>	Record Keeping Sub-Site ID:	<u>3F00:3589:0:</u>
<input type="checkbox"/>	Insurance Site ID:	<u>3F00:3589:0:</u>
<input type="checkbox"/>	Finance Site ID:	<u>3F00:3589:0:</u>
<input type="checkbox"/>	Infrastructure Sub-Site ID:	<u>3F00:3589:0:</u>
<input type="checkbox"/>	Sales Sub-Site ID:	<u>3F00:3589:0:</u>
<input type="checkbox"/>	Purchasing Sub-Site ID:	<u>3F00:3589:0:</u>
<input type="checkbox"/>	Inventory Sub-Site ID:	<u>3F00:3589:0:</u>
<input type="checkbox"/>	Distribution Sub-Site ID:	<u>3F00:3589:0:</u>