

IFT 266 Introduction to Network Information Communication Technology (ICT)

Lab 19

IPv6 Address Abbreviation & Expansion

Rule 1: Omission of the Leading 0s Problems

Using Rule 1 **ONLY** reduce the IPv6 addresses to their shortened form.

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

0:0:0:0:0:0:0:0

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

0:0:0:0:0:0:0:1

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

2000:0:0:0:0:ABCD:25

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

3F00:90:0:0:0:98:0:1

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

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

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

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

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

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

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

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

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

FC00:0:0:0:3E00:1275:0:34

Rule 2: Omission of the All-0 Hextets

Using Rule 2 **ONLY** reduce the IPv6 addresses to their shortened form.

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

::

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

:::0001

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

2000::ABCD:0000:0025

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

3F00:0900::0098:0000:0001

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

2001:3756:0005:0000:ACAD::0025

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

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

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

2001:ACAD:0000:ABCD:FFFF::0001

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

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

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

FC00::3E00:1275:0000:0034

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

FE95:FC6C:C540::9800

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

FF00:ACAD::1234:0000:0000:0001

Combining Rule 1 and Rule 2 Problems

Using Rule 1 and Rule 2 reduce the IPv6 addresses to their shortest form.

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

::

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

:::1

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

2000::ABCD: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:0025:0000:0127

3FFF:FF00:ACAD:25:0:0:127

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

2001:ACAD: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::1234:0:0:1

Reverting Reduced Address Problems

The following addresses have been shorted using Rule 1 and/or Rule 2. Expand them back to their preferred format.

Sample: FF00:ACAD:ABCD:0:1234::1

FF00:ACAD:ABCD:0000:1234:0000:0000:0001

1. 2000::1

2000:0000:0000:0000:0000:0000:0000:0001

2. ::1

0000:0000:0000:0000:0000:0000:0000:0001

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

2001:0000:0000:0000:0000:ABCD:0000:0127

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

3E80:0070:0000:0000:0000:0098:0000:0001

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

2FFF:0038:0005:0000:ACAD:0000:0000:0005

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

3FFF:0000:0000:0000:ACAD:0025:0000:0100

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

2002:ACAD:0000:1BCD:FFFF:0000:0000:0004

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

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

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

FFFF:0000:0000:0000:4E00:1235:0000:0034

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

3E01:006C:0040:0000:0000:0000:0000:9800