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CprE 431

Module 6 Lab

This lab focused on firewall iptables, exploring the different ways to write iptable entries and what rules are necessary for what criteria.

Initial resource allocation and slice:

Total run time: 1 minute, 53 seconds  
Status: **Finished**

Started at: Fri, 23 Oct 2020 01:05:37 -0400  
Finished at: Fri, 23 Oct 2020 01:07:30 -0400

[Results](#) | [Detailed Progress](#) | [Request RSpec](#) | [Manifest RSpec](#) | [Send Problem Report](#) | [Advanced](#)

## Results

Resources requested from RSpec:

Note that the results are current as of the finish time. Your resource allocation may have changed after this time if resources expired or were deleted. Check the [slice page](#) for the most up-to-date results about your slice's current allocated resources.

Node #1 (at Case Western InstaGENI):

Status	Client ID	Component ID	Expiration	Type	Hostname
Unknown	webserver1	pc2		default-vm	webserver1.SGordon4-lab6.ch-geni-net.geni.case.edu
Login	ssh.omabbas@oc2.geni.case.edu -p 26810				
	ssh.priester@oc2.geni.case.edu -p 26810				
	ssh.mvoussef@oc2.geni.case.edu -p 26810				
	ssh.sgordon@oc2.geni.case.edu -p 26810				
Interfaces		MAC	Layer 3		
interface-2	pc2:eth1	023460cd601d	ipv4: 10.10.1.3		

Node #2 (at Case Western InstaGENI):

Status	Client ID	Component ID	Expiration	Type	Hostname
Unknown	webserver2	pc3		default-vm	webserver2.SGordon4-lab6.ch-geni-net.geni.case.edu
Login	ssh.omabbas@oc3.geni.case.edu -p 26812				
	ssh.priester@oc3.geni.case.edu -p 26812				
	ssh.mvoussef@oc3.geni.case.edu -p 26812				
	ssh.sgordon@oc3.geni.case.edu -p 26812				
Interfaces		MAC	Layer 3		
interface-0	pc3:eth2	02d8aa320297	ipv4: 10.10.1.1		

Node #3 (at Case Western InstaGENI):

Status	Client ID	Component ID	Expiration	Type	Hostname
Unknown	Router	pc1		default-vm	Router.SGordon4-lab6.ch-geni-net.geni.case.edu
Login	ssh.omabbas@oc1.geni.case.edu -p 26810				
	ssh.priester@oc1.geni.case.edu -p 26810				
	ssh.mvoussef@oc1.geni.case.edu -p 26810				
	ssh.sgordon@oc1.geni.case.edu -p 26810				
Interfaces		MAC	Layer 3		
interface-1	pc1:eth1	02388fd17468	ipv4: 10.10.1.2		
interface-3	pc1:eth1	026074b7bf9c	ipv6: 10.10.1.1		

Node #4 (at Case Western InstaGENI):

Status	Client ID	Component ID	Expiration	Type	Hostname
Unknown	client1	pc3		default-vm	client1.SGordon4-lab6.ch-geni-net.geni.case.edu
Login	ssh.omabbas@oc3.geni.case.edu -p 26810				
	ssh.priester@oc3.geni.case.edu -p 26810				
	ssh.mvoussef@oc3.geni.case.edu -p 26810				
	ssh.sgordon@oc3.geni.case.edu -p 26810				
Interfaces		MAC	Layer 3		
interface-4	pc3:eth2	025ebf87e5dc	ipv4: 10.10.2.2		

Node #5 (at Case Western InstaGENI):

Status	Client ID	Component ID	Expiration	Type	Hostname
Unknown	client2	pc3		default-vm	client2.SGordon4-lab6.ch-geni-net.geni.case.edu
Login	ssh.omabbas@oc3.geni.case.edu -p 26811				
	ssh.priester@oc3.geni.case.edu -p 26811				
	ssh.mvoussef@oc3.geni.case.edu -p 26811				
	ssh.sgordon@oc3.geni.case.edu -p 26811				
Interfaces		MAC	Layer 3		
interface-5	pc3:eth2	0291fc664df7	ipv4: 10.10.2.3		

Link #1:

Client ID	Endpoint #0	Endpoint #1	Endpoint #2
link-0	interface-0	interface-1	interface-2

Link #2:

Client ID	Endpoint #0	Endpoint #1	Endpoint #2
link-1	interface-3	interface-4	interface-5

## Task 1, part 1

The screenshot displays a network simulation environment with three terminal windows and a packet capture analysis window.

- Terminal 1 (Left):** Shows a ping command from 10.10.1.3 to 10.10.1.3, resulting in 64 bytes of data. It then shows a ping command from 10.10.2.1 to 10.10.2.1, resulting in 64 bytes of data. Finally, it shows a ping command from 10.10.2.3 to 10.10.2.3, resulting in 64 bytes of data.
- Terminal 2 (Middle):** Shows a ping command from 10.10.2.3 to 10.10.2.3, resulting in 64 bytes of data. It then shows a ping command from 10.10.2.1 to 10.10.2.1, resulting in 64 bytes of data. Finally, it shows a ping command from 10.10.2.3 to 10.10.2.3, resulting in 64 bytes of data.
- Terminal 3 (Right):** Shows a ping command from 10.10.1.3 to 10.10.1.3, resulting in 64 bytes of data. It then shows a ping command from 10.10.2.1 to 10.10.2.1, resulting in 64 bytes of data. Finally, it shows a ping command from 10.10.2.3 to 10.10.2.3, resulting in 64 bytes of data.
- Packet Capture Analysis Window (Bottom Right):** Shows a list of captured packets. The first packet is from 10.10.1.3 to 10.10.1.3, and the second packet is from 10.10.2.1 to 10.10.2.1. The window also displays a list of rules and their status.

## Task 1, part 2

The screenshot displays a network simulation environment with three terminal windows and a packet capture analysis window.

- Terminal 1 (Left):** Shows a ping command from 10.10.1.3 to 10.10.1.3, resulting in 64 bytes of data. It then shows a ping command from 10.10.2.1 to 10.10.2.1, resulting in 64 bytes of data. Finally, it shows a ping command from 10.10.2.3 to 10.10.2.3, resulting in 64 bytes of data.
- Terminal 2 (Middle):** Shows a ping command from 10.10.2.3 to 10.10.2.3, resulting in 64 bytes of data. It then shows a ping command from 10.10.2.1 to 10.10.2.1, resulting in 64 bytes of data. Finally, it shows a ping command from 10.10.2.3 to 10.10.2.3, resulting in 64 bytes of data.
- Terminal 3 (Right):** Shows a ping command from 10.10.1.3 to 10.10.1.3, resulting in 64 bytes of data. It then shows a ping command from 10.10.2.1 to 10.10.2.1, resulting in 64 bytes of data. Finally, it shows a ping command from 10.10.2.3 to 10.10.2.3, resulting in 64 bytes of data.
- Packet Capture Analysis Window (Bottom Right):** Shows a list of captured packets. The first packet is from 10.10.1.3 to 10.10.1.3, and the second packet is from 10.10.2.1 to 10.10.2.1. The window also displays a list of rules and their status.

## Task 1, part 3

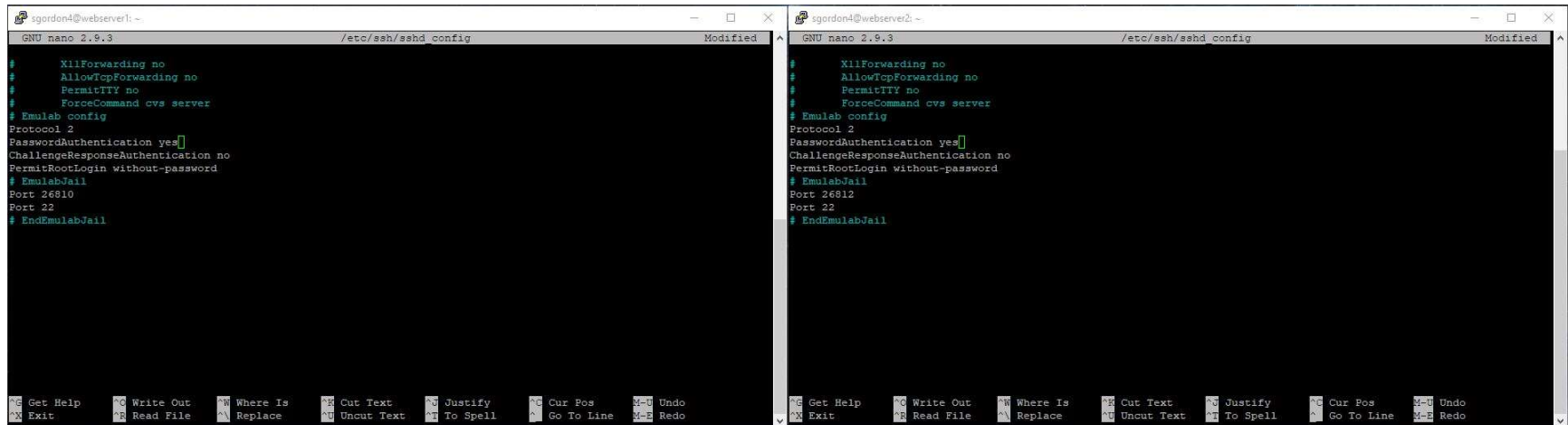
```
sgdnet@client0:~$ ping 10.10.1.3
PING 10.10.1.3 (10.10.1.3) 56(84) bytes of data.
64 bytes from 10.10.1.3: icmp_seq=1 ttl=63 time=2.10 ms
64 bytes from 10.10.1.3: icmp_seq=2 ttl=63 time=1.97 ms
64 bytes from 10.10.1.3: icmp_seq=3 ttl=63 time=1.75 ms
64 bytes from 10.10.1.3: icmp_seq=4 ttl=63 time=1.56 ms
^C
--- 10.10.1.3 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3004ms
rtt min/avg/max/mdev = 1.756/1.900/2.100/0.145 ms
sgdnet@client0:~$ ping 10.10.2.1
PING 10.10.2.1 (10.10.2.1) 56(84) bytes of data.
^C
--- 10.10.2.1 ping statistics ---
4 packets transmitted, 0 received, 100% packet loss, time 3110ms
sgdnet@client1:~$ ping 10.10.2.3
PING 10.10.2.3 (10.10.2.3) 56(84) bytes of data.
64 bytes from 10.10.2.3: icmp_seq=1 ttl=64 time=0.641 ms
64 bytes from 10.10.2.3: icmp_seq=2 ttl=64 time=0.684 ms
64 bytes from 10.10.2.3: icmp_seq=3 ttl=64 time=0.678 ms
64 bytes from 10.10.2.3: icmp_seq=4 ttl=64 time=0.742 ms
^C
--- 10.10.2.3 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3004ms
rtt min/avg/max/mdev = 0.641/0.685/0.742/0.090 ms
sgdnet@client1:~$

sgdnet@server0:~$ ping 10.10.2.3
PING 10.10.2.3 (10.10.2.3) 56(84) bytes of data.
64 bytes from 10.10.2.3: icmp_seq=1 ttl=63 time=2.02 ms
64 bytes from 10.10.2.3: icmp_seq=2 ttl=63 time=2.09 ms
64 bytes from 10.10.2.3: icmp_seq=3 ttl=63 time=1.65 ms
64 bytes from 10.10.2.3: icmp_seq=4 ttl=63 time=1.67 ms
^C
--- 10.10.2.3 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3004ms
rtt min/avg/max/mdev = 1.639/1.960/2.094/0.201 ms
sgdnet@server0:~$

sgdnet@router:~$ sudo iptables -A OUTPUT -p icmp -j DROP
sgdnet@router:~$ ping 10.10.1.3
PING 10.10.1.3 (10.10.1.3) 56(84) bytes of data.
ping: sendmsg: Operation not permitted
ping: sendmsg: Operation not permitted
ping: sendmsg: Operation not permitted
^C
--- 10.10.1.3 ping statistics ---
4 packets transmitted, 0 received, 100% packet loss, time 3073ms
sgdnet@router:~$

C:\Users\Open\Documents - School -> No_Sensor\Gpt_4\1st Module\Lab\Steering_Lab4\Lab4a - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
1000-7-10-2024-1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000-1001-1002-1003-1004-1005-1006-1007-1008-1009-1010-1011-1012-1013-1014-1015-1016-1017-1018-1019-1020-1021-1022-1023-1024-1025-1026-1027-1028-1029-1030-1031-1032-1033-1034-1035-1036-1037-1038-1039-1040-1041-1042-1043-1044-1045-1046-1047-1048-1049-1050-1051-1052-1053-1054-1055-1056-1057-1058-1059-1060-1061-1062-1063-1064-1065-1066-1067-1068-1069-1070-1071-1072-1073-1074-1075-1076-1077-1078-1079-1080-1081-1082-1083-1084-1085-1086-1087-1088-1089-1090-1091-1092-1093-1094-1095-1096-1097-1098-1099-1100-1101-1102-1103-1104-1105-1106-1107-1108-1109-1110-1111-1112-1113-1114-1115-1116-1117-1118-1119-1120-1121-1122-1123-1124-1125-1126-1127-1128-1129-1130-1131-1132-1133-1134-1135-1136-1137-1138-1139-1140-1141-1142-1143-1144-1145-1146-1147-1148-1149-1150-1151-1152-1153-1154-1155-1156-1157-1158-1159-1160-1161-1162-1163-1164-1165-1166-1167-1168-1169-1170-1171-1172-1173-1174-1175-1176-1177-1178-1179-1180-1181-1182-1183-1184-1185-1186-1187-1188-1189-1190-1191-1192-1193-1194-1195-1196-1197-1198-1199-1200-1201-1202-1203-1204-1205-1206-1207-1208-1209-1210-1211-1212-1213-1214-1215-1216-1217-1218-1219-1220-1221-1222-1223-1224-1225-1226-1227-1228-1229-1230-1231-1232-1233-1234-1235-1236-1237-1238-1239-1240-1241-1242-1243-1244-1245-1246-1247-1248-1249-1250-1251-1252-1253-1254-1255-1256-1257-1258-1259-1260-1261-1262-1263-1264-1265-1266-1267-1268-1269-1270-1271-1272-1273-1274-1275-1276-1277-1278-1279-1280-1281-1282-1283-1284-1285-1286-1287-1288-1289-1290-1291-1292-1293-1294-1295-1296-1297-1298-1299-1300-1301-1302-1303-1304-1305-1306-1307-1308-1309-1310-1311-1312-1313-1314-1315-1316-1317-1318-1319-1320-1321-1322-1323-1324-1325-1326-1327-1328-1329-1330-1331-1332-1333-1334-1335-1336-1337-1338-1339-1340-1341-1342-1343-1344-1345-1346-1347-1348-1349-1350-1351-1352-1353-1354-1355-1356-1357-1358-1359-1360-1361-1362-1363-1364-1365-1366-1367-1368-1369-1370-1371-1372-1373-1374-1375-1376-1377-1378-1379-1380-1381-1382-1383-1384-1385-1386-1387-1388-1389-1390-1391-1392-1393-1394-1395-1396-1397-1398-1399-1400-1401-1402-1403-1404-1405-1406-1407-1408-1409-1410-1411-1412-1413-1414-1415-1416-1417-1418-1419-1420-1421-1422-1423-1424-1425-1426-1427-1428-1429-1430-1431-1432-1433-1434-1435-1436-1437-1438-1439-1440-1441-1442-1443-1444-1445-1446-1447-1448-1449-1450-1451-1452-1453-1454-1455-1456-1457-1458-1459-1460-1461-1462-1463-1464-1465-1466-1467-1468-1469-1470-1471-1472-1473-1474-1475-1476-1477-1478-1479-1480-1481-1482-1483-1484-1485-1486-1487-1488-1489-1490-1491-1492-1493-1494-1495-1496-1497-1498-1499-1500-1501-1502-1503-1504-1505-1506-1507-1508-1509-1510-1511-1512-1513-1514-1515-1516-1517-1518-1519-1520-1521-1522-1523-1524-1525-1526-1527-1528-1529-1530-1531-1532-1533-1534-1535-1536-1537-1538-1539-1540-1541-1542-1543-1544-1545-1546-1547-1548-1549-1550-1551-1552-1553-1554-1555-1556-1557-1558-1559-1560-1561-1562-1563-1564-1565-1566-1567-1568-1569-1570-1571-1572-1573-1574-1575-1576-1577-1578-1579-1580-1581-1582-1583-1584-1585-1586-1587-1588-1589-1590-1591-1592-1593-1594-1595-1596-1597-1598-1599-1600-1601-1602-1603-1604-1605-1606-1607-1608-1609-1610-1611-1612-1613-1614-1615-1616-1617-1618-1619-1620-1621-1622-1623-1624-1625-1626-1627-1628-1629-1630-1631-1632-1633-1634-1635-1636-1637-1638-1639-1640-1641-1642-1643-1644-1645-1646-1647-1648-1649-1650-1651-1652-1653-1654-1655-1656-1657-1658-1659-1660-1661-1662-1663-1664-1665-1666-1667-1668-1669-1670-1671-1672-1673-1674-1675-1676-1677-1678-1679-1680-1681-1682-1683-1684-1685-1686-1687-1688-1689-1690-1691-1692-1693-1694-1695-1696-1697-1698-1699-1700-1701-1702-1703-1704-1705-1706-1707-1708-1709-1710-1711-1712-1713-1714-1715-1716-1717-1718-1719-1720-1721-1722-1723-1724-1725-1726-1727-1728-1729-1730-1731-1732-1733-1734-1735-1736-1737-1738-1739-1740-1741-1742-1743-1744-1745-1746-1747-1748-1749-1750-1751-1752-1753-1754-1755-1756-1757-1758-1759-1760-1761-1762-1763-1764-1765-1766-1767-1768-1769-1770-1771-1772-1773-1774-1775-1776-1777-1778-1779-1780-1781-1782-1783-1784-1785-1786-1787-1788-1789-1790-1791-1792-1793-1794-1795-1796-1797-1798-1799-1800-1801-1802-1803-1804-1805-1806-1807-1808-1809-1810-1811-1812-1813-1814-1815-1816-1817-1818-1819-1820-1821-1822-1823-1824-1825-1826-1827-1828-1829-1830-1831-1832-1833-1834-1835-1836-1837-1838-1839-1840-1841-1842-1843-1844-1845-1846-1847-1848-1849-1850-1851-1852-1853-1854-1855-1856-1857-1858-1859-1860-1861-1862-1863-1864-1865-1866-1867-1868-1869-1870-1871-1872-1873-1874-1875-1876-1877-1878-1879-1880-1881-1882-1883-1884-1885-1886-1887-1888-1889-1890-1891-1892-1893-1894-1895-1896-1897-1898-1899-1900-1901-1902-1903-1904-1905-1906-1907-1908-1909-1910-1911-1912-1913-1914-1915-1916-1917-1918-1919-1920-1921-1922-1923-1924-1925-1926-1927-1928-1929-1930-1931-1932-1933-1934-1935-1936-1937-1938-1939-1940-1941-1942-1943-1944-1945-1946-1947-1948-1949-1950-1951-1952-1953-1954-1955-1956-1957-1958-1959-1960-1961-1962-1963-1964-1965-1966-1967-1968-1969-1970-1971-1972-1973-1974-1975-1976-1977-1978-1979-1980-1981-1982-1983-1984-1985-1986-1987-1988-1989-1990-1991-1992-1993-1994-1995-1996-1997-1998-1999-2000-2001-2002-2003-2004-2005-2006-2007-2008-2009-2010-2011-2012-2013-2014-2015-2016-2017-2018-2019-2020-2021-2022-2023-2024-2025-2026-2027-2028-2029-2030-2031-2032-2033-2034-2035-2036-2037-2038-2039-2040-2041-2042-2043-2044-2045-2046-2047-2048-2049-2050-2051-2052-2053-2054-2055-2056-2057-2058-2059-2060-2061-2062-2063-2064-2065-2066-2067-2068-2069-2070-2071-2072-2073-2074-2075-2076-2077-2078-2079-2080-2081-2082-2083-2084-2085-2086-2087-2088-2089-2090-2091-2092-2093-2094-2095-2096-2097-2098-2099-2100-2101-2102-2103-2104-2105-2106-2107-2108-2109-2110-2111-2112-2113-2114-2115-2116-2117-2118-2119-2120-2121-2122-2123-2124-2125-2126-2127-2128-2129-2130-2131-2132-2133-2134-2135-2136-2137-2138-2139-2140-2141-2142-2143-2144-2145-2146-2147-2148-2149-2150-2151-2152-2153-2154-2155-2156-2157-2158-2159-2160-2161-2162-2163-2164-2165-2166-2167-2168-2169-2170-2171-2172-2173-2174-2175-2176-2177-2178-2179-2180-2181-2182-2183-2184-2185-2186-2187-2188-2189-2190-2191-2192-2193-2194-2195-2196-2197-2198-2199-2200-2201-2202-2203-2204-2205-2206-2207-2208-2209-2210-2211-2212-2213-2214-2215-2216-2217-2218-2219-2220-2221-2222-2223-2224-2225-2226-2227-2228-2229-2230-2231-2232-2233-2234-2235-2236-2237-2238-2239-2240-2241-2242-2243-2244-2245-2246-2247-2248-2249-2250-2251-2252-2253-2254-2255-2256-2257-2258-2259-2260-2261-2262-2263-2264-2265-2266-2267-2268-2269-2270-2271-2272-2273-2274-2275-2276-2277-2278-2279-2280-2281-2282-2283-2284-2285-2286-2287-2288-2289-2290-2291-2292-2293-2294-2295-2296-2297-2298-2299-2300-2301-2302-2303-2304-2305-2306-2307-2308-2309-2310-2311-2312-2313-2314-2315-2316-2317-2318-2319-2320-2321-2322-2323-2324-2325-2326-2327-2328-2329-2330-2331-2332-2333-2334-2335-2336-2337-2338-2339-2340-2341-2342-2343-2344-2345-2346-2347-2348-2349-2350-2351-2352-2353-2354-2355-2356-2357-2358-2359-2360-2361-2362-2363-2364-2365-2366-2367-2368-2369-2370-2371-2372-2373-2374-2375-2376-2377-2378-2379-2380-2381-2382-2383-2384-2385-2386-2387-2388-2389-2390-2391-2392-2393-2394-2395-2396-2397-2398-2399-2400-2401-2402-2403-2404-2405-2406-2407-2408-2409-2410-2411-2412-2413-2414-2415-2416-2417-2418-2419-2420-2421-2422-2423-2424-2425-2426-2427-2428-2429-2430-2431-2432-2433-2434-2435-2436-2437-2438-2439-2440-2441-2442-2443-2444-2445-2446-2447-2448-2449-2450-2451-2452-2453-2454-2455-2456-2457-2458-2459-2460-2461-2462-2
```

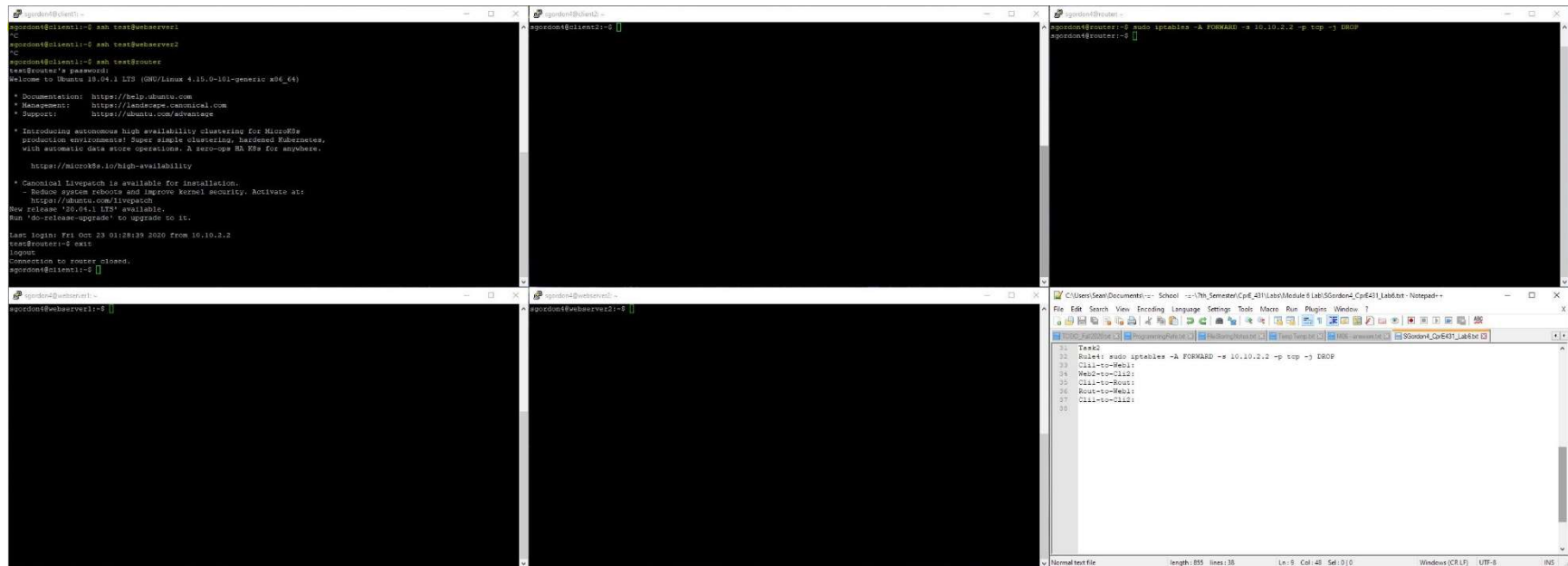
## Editing the config files for task 2



```
GNU nano 2.9.3 /etc/ssh/sshd_config Modified
#
# X11Forwarding no
#
# AllowTcpForwarding no
#
# PermitTTY no
#
# ForceCommand cvs server
#
# Emulab config
Protocol 2
PasswordAuthentication yes
ChallengeResponseAuthentication no
PermitRootLogin without-password
#
# EmulabJail
Port 26810
Port 22
#
# EndEmulabJail
Get Help Write Out Where Is Cut Text Justify Cur Pos Undo
Exit Read File Replace Uncut Text To Spell Go To Line Redo
```

```
GNU nano 2.9.3 /etc/ssh/sshd_config Modified
#
# X11Forwarding no
#
# AllowTcpForwarding no
#
# PermitTTY no
#
# ForceCommand cvs server
#
# Emulab config
Protocol 2
PasswordAuthentication yes
ChallengeResponseAuthentication no
PermitRootLogin without-password
#
# EmulabJail
Port 26812
Port 22
#
# EndEmulabJail
Get Help Write Out Where Is Cut Text Justify Cur Pos Undo
Exit Read File Replace Uncut Text To Spell Go To Line Redo
```

## Task 2



```
agordon@client1:~$ ssh test@webserver1
agordon@client1:~$ ssh test@webserver2
agordon@client1:~$ ssh test@router
test@router's password:
Welcome to Ubuntu 18.04.1 LTS (GNU/Linux 4.15.0-101-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

 * Introducing autonomous high availability clustering for MicroTik
  production environments! Super simple clustering, hardened subroutines,
  with automatic data store operations. A zero-ops SD-WAN for anywhere.
  https://microtike.io/high-availability

 * Canonical Livepatch is available for installation.
  - Reduce system reboots and improve kernel security. Activate at:
    https://ubuntu.com/livepatch
New release '20.04.1 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

last login: Fri Oct 23 01:28:19 2020 from 10.10.2.2
test@router:~$ exit
logout
Connection to router closed.
agordon@client1:~$
```

```
agordon@router:~$ sudo iptables -A FORWARD -s 10.10.2.2 -p tcp --dport 22
agordon@router:~$
```

```
Task2
10 Rule: sudo iptables -A FORWARD -s 10.10.2.2 -p tcp --dport 22
11 Call-to-Web1
12 Web2-to-Web1
13 Call-to-Web2
14 Web1-to-Web2
15 Call-to-Web1
16 Web1-to-Web2
17 Call-to-Web2
18
```

## Task 3 pre-rule5

## Task 3 post-rule5

[illegible]

## Task 4

The screenshot displays three terminal windows and a network diagram. The top-left terminal shows ping statistics for 10.10.1.3 to 10.10.2.1, indicating 100% packet loss. The top-right terminal shows ping statistics for 10.10.1.3 to 10.10.2.3, also indicating 100% packet loss. The bottom-left terminal shows ping statistics for 10.10.1.3 to 10.10.2.3, showing successful connectivity. The bottom-right terminal shows a network diagram with nodes 10.10.1.3, 10.10.2.1, 10.10.2.3, and 10.10.2.4, with connections between them.

```

aptonet@ubuntu:~$ ping 10.10.1.3
PING 10.10.1.3 (10.10.1.3) 56(84) bytes of data.
^C
--- 10.10.1.3 ping statistics ---
4 packets transmitted, 0 received, 100% packet loss, time 0.11ms

aptonet@ubuntu:~$ ping 10.10.2.1
PING 10.10.2.1 (10.10.2.1) 56(84) bytes of data.
^C
--- 10.10.2.1 ping statistics ---
4 packets transmitted, 0 received, 100% packet loss, time 0.11ms

aptonet@ubuntu:~$ ping 10.10.2.3
PING 10.10.2.3 (10.10.2.3) 56(84) bytes of data.
64 bytes from 10.10.2.3: icmp_seq=1 ttl=64 time=0.461 ms
64 bytes from 10.10.2.3: icmp_seq=2 ttl=64 time=0.461 ms
64 bytes from 10.10.2.3: icmp_seq=3 ttl=64 time=0.461 ms
64 bytes from 10.10.2.3: icmp_seq=4 ttl=64 time=0.457 ms
^C
--- 10.10.2.3 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 300ms
rtt min/avg/max/mdev = 0.427/0.541/0.463/0.040 ms
aptonet@ubuntu:~$

aptonet@ubuntu:~$ ping 10.10.2.1
PING 10.10.2.1 (10.10.2.1) 56(84) bytes of data.
^C
--- 10.10.2.1 ping statistics ---
4 packets transmitted, 0 received, 100% packet loss, time 0.11ms

aptonet@ubuntu:~$ ping 10.10.2.3
PING 10.10.2.3 (10.10.2.3) 56(84) bytes of data.
64 bytes from 10.10.2.3: icmp_seq=1 ttl=64 time=0.461 ms
64 bytes from 10.10.2.3: icmp_seq=2 ttl=64 time=0.461 ms
64 bytes from 10.10.2.3: icmp_seq=3 ttl=64 time=0.461 ms
64 bytes from 10.10.2.3: icmp_seq=4 ttl=64 time=0.457 ms
^C
--- 10.10.2.3 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 300ms
rtt min/avg/max/mdev = 0.427/0.541/0.463/0.040 ms
aptonet@ubuntu:~$

aptonet@ubuntu:~$ ping 10.10.1.3
PING 10.10.1.3 (10.10.1.3) 56(84) bytes of data.
64 bytes from 10.10.1.3: icmp_seq=1 ttl=64 time=0.461 ms
64 bytes from 10.10.1.3: icmp_seq=2 ttl=64 time=0.461 ms
64 bytes from 10.10.1.3: icmp_seq=3 ttl=64 time=0.461 ms
64 bytes from 10.10.1.3: icmp_seq=4 ttl=64 time=0.457 ms
^C
--- 10.10.1.3 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 300ms
rtt min/avg/max/mdev = 0.427/0.541/0.463/0.040 ms
aptonet@ubuntu:~$
  
```

## Task 5

The screenshot displays three terminal windows and a network diagram. The top-left terminal shows ping statistics for 10.10.1.3 to 10.10.2.1, indicating 100% packet loss. The top-right terminal shows ping statistics for 10.10.1.3 to 10.10.2.3, indicating 100% packet loss. The bottom-left terminal shows ping statistics for 10.10.1.3 to 10.10.2.3, showing successful connectivity. The bottom-right terminal shows a network diagram with nodes 10.10.1.3, 10.10.2.1, 10.10.2.3, and 10.10.2.4, with connections between them.

```

aptonet@ubuntu:~$ ping 10.10.1.3
PING 10.10.1.3 (10.10.1.3) 56(84) bytes of data.
^C
--- 10.10.1.3 ping statistics ---
4 packets transmitted, 0 received, 100% packet loss, time 0.11ms

aptonet@ubuntu:~$ ping 10.10.2.1
PING 10.10.2.1 (10.10.2.1) 56(84) bytes of data.
^C
--- 10.10.2.1 ping statistics ---
4 packets transmitted, 0 received, 100% packet loss, time 0.11ms

aptonet@ubuntu:~$ ping 10.10.2.3
PING 10.10.2.3 (10.10.2.3) 56(84) bytes of data.
64 bytes from 10.10.2.3: icmp_seq=1 ttl=64 time=0.461 ms
64 bytes from 10.10.2.3: icmp_seq=2 ttl=64 time=0.461 ms
64 bytes from 10.10.2.3: icmp_seq=3 ttl=64 time=0.461 ms
64 bytes from 10.10.2.3: icmp_seq=4 ttl=64 time=0.457 ms
^C
--- 10.10.2.3 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 300ms
rtt min/avg/max/mdev = 0.427/0.541/0.463/0.040 ms
aptonet@ubuntu:~$

aptonet@ubuntu:~$ ping 10.10.2.1
PING 10.10.2.1 (10.10.2.1) 56(84) bytes of data.
^C
--- 10.10.2.1 ping statistics ---
4 packets transmitted, 0 received, 100% packet loss, time 0.11ms

aptonet@ubuntu:~$ ping 10.10.2.3
PING 10.10.2.3 (10.10.2.3) 56(84) bytes of data.
64 bytes from 10.10.2.3: icmp_seq=1 ttl=64 time=0.461 ms
64 bytes from 10.10.2.3: icmp_seq=2 ttl=64 time=0.461 ms
64 bytes from 10.10.2.3: icmp_seq=3 ttl=64 time=0.461 ms
64 bytes from 10.10.2.3: icmp_seq=4 ttl=64 time=0.457 ms
^C
--- 10.10.2.3 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 300ms
rtt min/avg/max/mdev = 0.427/0.541/0.463/0.040 ms
aptonet@ubuntu:~$

aptonet@ubuntu:~$ ping 10.10.1.3
PING 10.10.1.3 (10.10.1.3) 56(84) bytes of data.
64 bytes from 10.10.1.3: icmp_seq=1 ttl=64 time=0.461 ms
64 bytes from 10.10.1.3: icmp_seq=2 ttl=64 time=0.461 ms
64 bytes from 10.10.1.3: icmp_seq=3 ttl=64 time=0.461 ms
64 bytes from 10.10.1.3: icmp_seq=4 ttl=64 time=0.457 ms
^C
--- 10.10.1.3 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 300ms
rtt min/avg/max/mdev = 0.427/0.541/0.463/0.040 ms
aptonet@ubuntu:~$
  
```

### Resulting Rules:

Node1 = Webserver1    eth1 @ 10.10.1.3  
Node2 = Webserver2    eth2 @ 10.10.1.1  
Node3 = Router        eth1 @ 10.10.1.2 and eth1 @ 10.10.2.1  
Node4 = Client1        eth2 @ 10.10.2.2  
Node5 = Client2        eth2 @ 10.10.2.3

### Task1

Rule1: sudo iptables -A FORWARD -p icmp -j DROP

Cli1-to-Web1: blocked

Web2-to-Cli2: blocked

Cli1-to-Rout: allowed

Rout-to-Web1: allowed

Cli1-to-Cli2: allowed

Rule2: sudo iptables -A INPUT -p icmp -j DROP

Cli1-to-Web1: allowed

Web2-to-Cli2: allowed

Cli1-to-Rout: blocked

Rout-to-Web1: blocked

Cli1-to-Cli2: allowed

Rule3: sudo iptables -A OUTPUT -p icmp -j DROP

Cli1-to-Web1: allowed

Web2-to-Cli2: allowed

Cli1-to-Rout: blocked

Rout-to-Web1: blocked

Cli1-to-Cli2: allowed

### Task2

Rule4: `sudo iptables -A FORWARD -s 10.10.2.2 -p tcp -j DROP`

Client was unable to ssh into webserver 1 and 2, but was able to ssh into the router

### Task3

Rule5: `sudo iptables -A FORWARD -p tcp --dport 80 -j DROP`

Cli1-to-Web1 ping: allowed

Cli1-to-Web1 lynx: blocked

Cli2-to-Web2 lynx: blocked

### Task4

RuleX: `sudo iptables -P FORWARD DROP`

Cli1-to-Web1: blocked

Web2-to-Cli2: blocked

Cli1-to-Rout: allowed

Rout-to-Web1: allowed

Cli1-to-Cli2: allowed

### Task5

Alongside: `sudo iptables -A FORWARD -m state --state ESTABLISHED,RELATED -j ACCEPT`

Rule6: `sudo iptables -A FORWARD -p tcp -i eth2 -o eth1 -j ACCEPT`

Rule7: `sudo iptables -A FORWARD -p tcp -i eth1 -o eth2 -d 10.10.2.2 -j ACCEPT`

Cli2-to-Web1 lynx: allowed

Web1-to-Cli1 ssh : allowed

Cli1-to-Web1 ping: blocked

Web2-to-Cli2 ssh : blocked

Cli1-to-Rout ping: allowed (incoming not dropped)