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Web Systems

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Homework #2

Objective: GRADE A

In this lab, we will be learning about some of the more basic first level troubleshooting tactics when a device ~~seem~~seems to not be able to connect to the World Wide Web. We will be testing such commands and recording the results we receive.

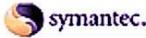
Equipment List:

For this lab we will only need a device capable of using the CMD (Command Line Interface) with Internet connection.

Procedure/Data:

Activity 1A

Network Analyzer Comparison Chart

| |  |  |  |  |
|-----------------------|---|---|--|---|
| Product Name | SAINT v4.1 Saint www.saintcorporation.com | NetRocn v3.5 Symantec www.symantec.com | Internet Scanner v6.21 Internet Security Systems www.iss.net | Nessus v1.2.6 and NessusWX v1.4.2 The Nessus Project www.nessus.org |
| Pricing | From \$845 (10 hosts) | From \$3,895 (254 hosts) | From \$1,198 (10 hosts) | Open-source freeware |
| Platform | Linux/x86/SPARC Solaris/HP-UX/ FreeBSD/OpenBSD | Windows | Windows | Nessus: Unix NessusWX: Windows |
| Network Mapping | C Name-to-address problems kept it from working well. | D Not useful as a mapping tool. | B Only a few false positives. | B+ Could be more accurate, but did detect nonstandard port usage. |
| Vulnerability Testing | C- Missed some critical problems. | C Average results. | B Good balance between errors/accuracy; excellent Windows coverage. | B Good balance; excellent Unix coverage. |
| Data Management | C+ Few tools to help the network admin, but good hyperlink displays. | B- Good tools, but slow performance. | B Good data manipulation, but nothing to help with repeated scans. | B- Nice data management, but difficult to sort through information. |
| Reporting | C- Weak reporting overall. | A Excellent reporting tools. | A Excellent reporting tools. | C Good selection of reports, but no ability to trim and filter. |
| Performance | B- Had to break up scans into pieces. Fast when it worked. | C Slow | B- Fast, but didn't always run to completion. | B Scanned in appropriate length of time. |
| Verdict | C Works, but has lots of room to grow. | C Overkill in some areas, underkill in others. | B Solid, balanced product, but can still learn from the competition. | B Solid and comprehensive. Excellent customization. Free. |

Recommendation: I would recommend the Nessus v1.2.6 and NessusWX v1.4.2. I would recommend those two because they are just as good as the Internet Scanner v6.21 that start at \$1,198 except the fact that it is free. In addition to being free it is also open source which means it can be freely customized if desired.

Good!

Activity 2A:

Netstat:

Active Connections

| Proto | Local Address | Foreign Address | State |
|-------|-------------------|----------------------------|-------------|
| TCP | 127.0.0.1:5354 | DESKTOP-I87133P:49669 | ESTABLISHED |
| TCP | 127.0.0.1:5354 | DESKTOP-I87133P:49670 | ESTABLISHED |
| TCP | 127.0.0.1:27015 | DESKTOP-I87133P:50658 | ESTABLISHED |
| TCP | 127.0.0.1:49669 | DESKTOP-I87133P:5354 | ESTABLISHED |
| TCP | 127.0.0.1:49670 | DESKTOP-I87133P:5354 | ESTABLISHED |
| TCP | 127.0.0.1:50658 | DESKTOP-I87133P:27015 | ESTABLISHED |
| TCP | 192.168.1.6:50619 | msnbot-65-52-108-222:https | ESTABLISHED |
| TCP | 192.168.1.6:51587 | jc-in-f188:5228 | ESTABLISHED |
| TCP | 192.168.1.6:51665 | ipfw:https | ESTABLISHED |
| TCP | 192.168.1.6:51709 | ord37s07-in-f5:https | ESTABLISHED |
| TCP | 192.168.1.6:51710 | ord38s08-in-f14:https | ESTABLISHED |
| TCP | 192.168.1.6:51711 | 13.107.3.128:https | ESTABLISHED |
| TCP | 192.168.1.6:51712 | 13.107.13.88:https | ESTABLISHED |
| TCP | 192.168.1.6:51713 | a23-215-105-33:http | ESTABLISHED |
| TCP | 192.168.1.6:51714 | a23-6-169-80:https | ESTABLISHED |
| TCP | 192.168.1.6:51715 | a-0001:https | ESTABLISHED |
| TCP | 192.168.1.6:51716 | a-0001:https | ESTABLISHED |
| TCP | 192.168.1.6:51717 | 72.21.91.70:https | ESTABLISHED |

Netstat -E:

| Interface Statistics | | |
|----------------------|-----------|----------|
| | Received | Sent |
| Bytes | 589209774 | 41064274 |
| Unicast packets | 471855 | 220587 |
| Non-unicast packets | 25644 | 5172 |
| Discards | 0 | 0 |
| Errors | 0 | 0 |
| Unknown protocols | 0 | |

Netstat ?:

Displays protocol statistics and current TCP/IP network connections.

NETSTAT [-a] [-b] [-e] [-f] [-n] [-o] [-p proto] [-r] [-s] [-x] [-t] [interval]

- a** Displays all connections and listening ports.
- b** Displays the executable involved in creating each connection or listening port. In some cases well-known executables host multiple independent components, and in these cases the sequence of components involved in creating the connection or listening port is displayed. In this case the executable name is in [] at the bottom, on top is the component it called, and so forth until TCP/IP was reached. Note that this option can be time-consuming and will fail unless you have sufficient permissions.
- e** Displays Ethernet statistics. This may be combined with the **-s** option.
- f** Displays Fully Qualified Domain Names (FQDN) for foreign addresses.
- n** Displays addresses and port numbers in numerical form.
- o** Displays the owning process ID associated with each connection.
- p proto** Shows connections for the protocol specified by proto; proto may be any of: TCP, UDP, TCPv6, or UDPv6. If used with the **-s** option to display per-protocol statistics, proto may be any of: IP, IPv6, ICMP, ICMPv6, TCP, TCPv6, UDP, or UDPv6.
- q** Displays all connections, listening ports, and bound nonlistening TCP ports. Bound nonlistening ports may or may not be associated with an active connection.
- r** Displays the routing table.
- s** Displays per-protocol statistics. By default, statistics are shown for IP, IPv6, ICMP, ICMPv6, TCP, TCPv6, UDP, and UDPv6; the **-p** option may be used to specify a subset of the default.

-t Displays the current connection offload state.

-x Displays NetworkDirect connections, listeners, and shared endpoints.

-y Displays the TCP connection template for all connections.
Cannot be combined with the other options.

interval Redisplays selected statistics, pausing interval seconds between each display. Press CTRL+C to stop redisplaying statistics. If omitted, netstat will print the current configuration information once.

Activity 2B:

Ipconfig ?:

Error: unrecognized or incomplete command line.

USAGE:

```
ipconfig [/allcompartments] [/? | /all |  
        /renew [adapter] | /release [adapter] |  
        /renew6 [adapter] | /release6 [adapter] |  
        /flushdns | /displaydns | /registerdns |  
        /showclassid adapter |  
        /setclassid adapter [classid] |  
        /showclassid6 adapter |  
        /setclassid6 adapter [classid] ]
```

where

adapter Connection name
(wildcard characters * and ? allowed, see examples)

Options:

/? Display this help message

/all Display full configuration information.

/release Release the IPv4 address for the specified adapter.

/release6 Release the IPv6 address for the specified adapter.

/renew Renew the IPv4 address for the specified adapter.

/renew6 Renew the IPv6 address for the specified adapter.

/flushdns Purges the DNS Resolver cache.
/registerdns Refreshes all DHCP leases and re-registers DNS names
/displaydns Display the contents of the DNS Resolver Cache.
/showclassid Displays all the dhcp class IDs allowed for adapter.
/setclassid Modifies the dhcp class id.
/showclassid6 Displays all the IPv6 DHCP class IDs allowed for adapter.
/setclassid6 Modifies the IPv6 DHCP class id.

The default is to display only the IP address, subnet mask and default gateway for each adapter bound to TCP/IP.

For Release and Renew, if no adapter name is specified, then the IP address leases for all adapters bound to TCP/IP will be released or renewed.

For Setclassid and Setclassid6, if no ClassId is specified, then the ClassId is removed.

Examples:

```
> ipconfig          ... Show information
> ipconfig /all     ... Show detailed information
> ipconfig /renew   ... renew all adapters
> ipconfig /renew EL* ... renew any connection that has its
                        name starting with EL
> ipconfig /release *Con* ... release all matching connections,
                        eg. "Wired Ethernet Connection 1" or
                        "Wired Ethernet Connection 2"
> ipconfig /allcompartments ... Show information about all
                        compartments
> ipconfig /allcompartments /all ... Show detailed information about all
                        Compartments
```

Ipconfig Test Results Summary:

Ipconfig is a powerful command for troubleshooting connection issues with a device. These commands can test a wide range of possible issues as a “first try” act at regaining connection to the world wide web. Good!

Activity 3B:

Ping www.mit.edu

```
C:\Users\ManMan>ping www.mit.edu
```

```
Pinging e9566.dscb.akamaiedge.net [23.72.62.127] with 32 bytes of data:
```

```
Reply from 23.72.62.127: bytes=32 time=7ms TTL=55
```

```
Reply from 23.72.62.127: bytes=32 time=7ms TTL=55
```

```
Reply from 23.72.62.127: bytes=32 time=8ms TTL=55
```

```
Reply from 23.72.62.127: bytes=32 time=7ms TTL=55
```

```
Ping statistics for 23.72.62.127:
```

```
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
```

```
Approximate round trip times in milli-seconds:
```

```
    Minimum = 7ms, Maximum = 8ms, Average = 7ms
```

Ping -n 10 www.mit.edu

```
Pinging e9566.dscb.akamaiedge.net [23.72.62.127] with 32 bytes of data:
```

```
Reply from 23.72.62.127: bytes=32 time=9ms TTL=55
```

```
Reply from 23.72.62.127: bytes=32 time=8ms TTL=55
```

```
Reply from 23.72.62.127: bytes=32 time=8ms TTL=55
```

```
Reply from 23.72.62.127: bytes=32 time=10ms TTL=55
```

```
Reply from 23.72.62.127: bytes=32 time=9ms TTL=55
```

```
Reply from 23.72.62.127: bytes=32 time=7ms TTL=55
```

```
Reply from 23.72.62.127: bytes=32 time=9ms TTL=55
```

```
Reply from 23.72.62.127: bytes=32 time=8ms TTL=55
```

```
Reply from 23.72.62.127: bytes=32 time=7ms TTL=55
```

```
Reply from 23.72.62.127: bytes=32 time=8ms TTL=55
```

```
Ping statistics for 23.72.62.127:
```

Packets: Sent = 10, Received = 10, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 7ms, Maximum = 10ms, Average = 8ms

Ping www.microsoft.com

Pinging e1863.dspb.akamaiedge.net [23.202.232.192] with 32 bytes of data:

Reply from 23.202.232.192: bytes=32 time=13ms TTL=58

Reply from 23.202.232.192: bytes=32 time=11ms TTL=58

Reply from 23.202.232.192: bytes=32 time=12ms TTL=58

Reply from 23.202.232.192: bytes=32 time=11ms TTL=58

Ping statistics for 23.202.232.192:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 11ms, Maximum = 13ms, Average = 11ms

Ping www.ucla.edu

Pinging gateway.lb.it.ucla.edu [164.67.228.152] with 32 bytes of data:

Reply from 164.67.228.152: bytes=32 time=102ms TTL=48

Reply from 164.67.228.152: bytes=32 time=102ms TTL=48

Reply from 164.67.228.152: bytes=32 time=107ms TTL=48

Reply from 164.67.228.152: bytes=32 time=102ms TTL=48

Ping statistics for 164.67.228.152:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 102ms, Maximum = 107ms, Average = 103ms

Ping www.purdue.edu

Pinging www.purdue.edu [128.210.7.200] with 32 bytes of data:

Reply from 128.210.7.200: bytes=32 time=22ms TTL=246

Reply from 128.210.7.200: bytes=32 time=32ms TTL=246

Reply from 128.210.7.200: bytes=32 time=23ms TTL=246

Reply from 128.210.7.200: bytes=32 time=23ms TTL=246

Ping statistics for 128.210.7.200:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 22ms, Maximum = 32ms, Average = 25ms

Ping-Test Summary:

The results that were obtained show that I have good network connectivity as well as the route to the various website servers are all up and functioning. The “-n 10” command basically tells Ping to test for a reply 10 times before ending, the “10” in “-n 10” can be replaced with however many times you want the connection to be tested. good

Activity 2D:

Arp -A:

Interface: 192.168.1.6 --- 0x11

| Internet Address | Physical Address | Type |
|------------------|-------------------|---------|
| 192.168.1.1 | 70-f1-96-6e-9d-00 | dynamic |
| 192.168.1.8 | 58-82-a8-4e-6a-ee | dynamic |
| 192.168.1.255 | ff-ff-ff-ff-ff-ff | static |
| 224.0.0.2 | 01-00-5e-00-00-02 | static |
| 224.0.0.22 | 01-00-5e-00-00-16 | static |
| 224.0.0.251 | 01-00-5e-00-00-fb | static |
| 224.0.0.252 | 01-00-5e-00-00-fc | static |
| 224.0.0.253 | 01-00-5e-00-00-fd | static |
| 239.255.255.250 | 01-00-5e-7f-ff-fa | static |
| 255.255.255.255 | ff-ff-ff-ff-ff-ff | static |

Arp Summary:

These commands are used for realizing what IP Addresses are associated with your local router. In the business place this is a powerful tool in determining which IP Addresses are not supposed to be connected to the network as well as if a device is not communicating with the network this tool can be used as a first test. Good

Activity 2E:

Route:

Manipulates network routing tables.

ROUTE [-f] [-p] [-4|-6] command [destination]

[MASK netmask] [gateway] [METRIC metric] [IF interface]

- f Clears the routing tables of all gateway entries. If this is used in conjunction with one of the commands, the tables are cleared prior to running the command.
- p When used with the ADD command, makes a route persistent across boots of the system. By default, routes are not preserved when the system is restarted. Ignored for all other commands, which always affect the appropriate persistent routes.
- 4 Force using IPv4.
- 6 Force using IPv6.

command One of these:

PRINT Prints a route

ADD Adds a route

DELETE Deletes a route

CHANGE Modifies an existing route

destination Specifies the host.

MASK Specifies that the next parameter is the 'netmask' value.

netmask Specifies a subnet mask value for this route entry.

If not specified, it defaults to 255.255.255.255.

gateway Specifies gateway.

interface the interface number for the specified route.

METRIC specifies the metric, ie. cost for the destination.

All symbolic names used for destination are looked up in the network database file NETWORKS. The symbolic names for gateway are looked up in the host name database file HOSTS.

If the command is PRINT or DELETE. Destination or gateway can be a wildcard, (wildcard is specified as a star '*'), or the gateway argument may be omitted.

If Dest contains a * or ?, it is treated as a shell pattern, and only matching destination routes are printed. The '*' matches any string, and '?' matches any one char. Examples: 157.*.1, 157.*, 127.*, *224*.

Pattern match is only allowed in PRINT command.

Diagnostic Notes:

Invalid MASK generates an error, that is when (DEST & MASK) != DEST.

Example> route ADD 157.0.0.0 MASK 155.0.0.0 157.55.80.1 IF 1

The route addition failed: The specified mask parameter is invalid. (Destination & Mask) != Destination.

Examples:

```
> route PRINT
```

```
> route PRINT -4
```

```
> route PRINT -6
```

```
> route PRINT 157*      .... Only prints those matching 157*
```

```
> route ADD 157.0.0.0 MASK 255.0.0.0 157.55.80.1 METRIC 3 IF 2
```

```
destination^ ^mask ^gateway metric^ ^  
Interface^
```

If IF is not given, it tries to find the best interface for a given gateway.

```
> route ADD 3ffe::/32 3ffe::1
```

```
> route CHANGE 157.0.0.0 MASK 255.0.0.0 157.55.80.5 METRIC 2 IF 2
```

CHANGE is used to modify gateway and/or metric only.

```
> route DELETE 157.0.0.0
```

```
> route DELETE 3ffe::/32
```

Route Print:

```
=====
Interface List
```

```
2...1c b7 2c 24 b1 dc .....Realtek PCIe GBE Family Controller
13...1e 85 de f1 e4 97 .....Microsoft Wi-Fi Direct Virtual Adapter
17...dc 85 de f1 e4 97 .....Qualcomm Atheros AR956x Wireless Network Adapter
9...dc 85 de f1 e4 96 .....Bluetooth Device (Personal Area Network)
1.....Software Loopback Interface 1
23...00 00 00 00 00 00 00 e0 Microsoft ISATAP Adapter
21...00 00 00 00 00 00 00 e0 Microsoft Teredo Tunneling Adapter
=====
```

```
IPv4 Route Table
=====
```

```
Active Routes:
```

| Network Destination | Netmask | Gateway | Interface | Metric |
|---------------------|-----------------|-------------|-------------|--------|
| 0.0.0.0 | 0.0.0.0 | 192.168.1.1 | 192.168.1.6 | 55 |
| 127.0.0.0 | 255.0.0.0 | On-link | 127.0.0.1 | 331 |
| 127.0.0.1 | 255.255.255.255 | On-link | 127.0.0.1 | 331 |
| 127.255.255.255 | 255.255.255.255 | On-link | 127.0.0.1 | 331 |
| 192.168.1.0 | 255.255.255.0 | On-link | 192.168.1.6 | 311 |
| 192.168.1.6 | 255.255.255.255 | On-link | 192.168.1.6 | 311 |
| 192.168.1.255 | 255.255.255.255 | On-link | 192.168.1.6 | 311 |

```
224.0.0.0 240.0.0.0 On-link 127.0.0.1 331
224.0.0.0 240.0.0.0 On-link 192.168.1.6 311
255.255.255.255 255.255.255.255 On-link 127.0.0.1 331
255.255.255.255 255.255.255.255 On-link 192.168.1.6 311
```

Persistent Routes:

None

IPv6 Route Table

Active Routes:

| If | Metric | Network | Destination | Gateway |
|----|--------|---|-------------|---------|
| 21 | 331 | ::/0 | | On-link |
| 1 | 331 | ::1/128 | | On-link |
| 21 | 331 | 2001::/32 | | On-link |
| 21 | 331 | 2001:0:9d38:6ab8:1012:d75:47ed:cd92/128 | | On-link |
| 17 | 311 | fe80::/64 | | On-link |
| 21 | 331 | fe80::/64 | | On-link |
| 21 | 331 | fe80::1012:d75:47ed:cd92/128 | | On-link |
| 17 | 311 | fe80::a5a9:e3e5:713c:a040/128 | | On-link |
| 1 | 331 | ff00::/8 | | On-link |
| 17 | 311 | ff00::/8 | | On-link |
| 21 | 331 | ff00::/8 | | On-link |

Persistent Routes:

None

Route Print -4:

```
=====  
Interface List
```

```
2...1c b7 2c 24 b1 dc .....Realtek PCIe GBE Family Controller  
13...1e 85 de f1 e4 97 .....Microsoft Wi-Fi Direct Virtual Adapter  
17...dc 85 de f1 e4 97 .....Qualcomm Atheros AR956x Wireless Network Adapter  
9...dc 85 de f1 e4 96 .....Bluetooth Device (Personal Area Network)  
1.....Software Loopback Interface 1  
23...00 00 00 00 00 00 00 e0 Microsoft ISATAP Adapter  
21...00 00 00 00 00 00 00 e0 Microsoft Teredo Tunneling Adapter  
=====
```

```
=====  
IPv4 Route Table
```

```
=====  
Active Routes:
```

| Network | Destination | Netmask | Gateway | Interface | Metric |
|---------|-----------------|-----------------|-------------|-------------|--------|
| | 0.0.0.0 | 0.0.0.0 | 192.168.1.1 | 192.168.1.6 | 55 |
| | 127.0.0.0 | 255.0.0.0 | On-link | 127.0.0.1 | 331 |
| | 127.0.0.1 | 255.255.255.255 | On-link | 127.0.0.1 | 331 |
| | 127.255.255.255 | 255.255.255.255 | On-link | 127.0.0.1 | 331 |
| | 192.168.1.0 | 255.255.255.0 | On-link | 192.168.1.6 | 311 |
| | 192.168.1.6 | 255.255.255.255 | On-link | 192.168.1.6 | 311 |
| | 192.168.1.255 | 255.255.255.255 | On-link | 192.168.1.6 | 311 |
| | 224.0.0.0 | 240.0.0.0 | On-link | 127.0.0.1 | 331 |
| | 224.0.0.0 | 240.0.0.0 | On-link | 192.168.1.6 | 311 |
| | 255.255.255.255 | 255.255.255.255 | On-link | 127.0.0.1 | 331 |
| | 255.255.255.255 | 255.255.255.255 | On-link | 192.168.1.6 | 311 |

```
=====
```

Persistent Routes:

None

Route Print -6:

=====
Interface List

2...1c b7 2c 24 b1 dcRealtek PCIe GBE Family Controller
13...1e 85 de f1 e4 97Microsoft Wi-Fi Direct Virtual Adapter
17...dc 85 de f1 e4 97Qualcomm Atheros AR956x Wireless Network Adapter
9...dc 85 de f1 e4 96Bluetooth Device (Personal Area Network)
1.....Software Loopback Interface 1
23...00 00 00 00 00 00 00 e0 Microsoft ISATAP Adapter
21...00 00 00 00 00 00 00 e0 Microsoft Teredo Tunneling Adapter

=====

IPv6 Route Table

=====

Active Routes:

| If | Metric | Network | Destination | Gateway |
|----|--------|---|-------------|---------|
| 21 | 331 | :::0 | | On-link |
| 1 | 331 | :::1/128 | | On-link |
| 21 | 331 | 2001::/32 | | On-link |
| 21 | 331 | 2001:0:9d38:6ab8:1012:d75:47ed:cd92/128 | | On-link |
| 17 | 311 | fe80::/64 | | On-link |
| 21 | 331 | fe80::/64 | | On-link |

21 331 fe80::1012:d75:47ed:cd92/128

On-link

17 311 fe80::a5a9:e3e5:713c:a040/128

On-link

1 331 ff00::/8 On-link

17 311 ff00::/8 On-link

21 331 ff00::/8 On-link

Persistent Routes:

None

Activity 2F:

Tracert www.mit.edu

Tracing route to e9566.dscb.akamaiedge.net [69.192.216.121]

over a maximum of 30 hops:

| | | | | |
|---|-------|-------|-------|--|
| 1 | 1 ms | 1 ms | <1 ms | Wireless_Broadband_Router.home [192.168.1.1] |
| 2 | 12 ms | 2 ms | 7 ms | pool-184-18-48-1.ftwy.in.frontiernet.net [184.18.48.1] |
| 3 | 3 ms | 2 ms | 5 ms | 172.76.21.113 |
| 4 | 7 ms | 6 ms | 8 ms | ae17---0.cor01.chcg.il.frontiernet.net [74.40.2.145] |
| 5 | 12 ms | 11 ms | 13 ms | ae0---0.cbr01.chcg.il.frontiernet.net [74.40.4.138] |
| 6 | 10 ms | 12 ms | 9 ms | 206.111.2.148.ptr.us.xo.net [206.111.2.148] |
| 7 | 23 ms | 14 ms | 32 ms | vb2001.rar3.chicago-il.us.xo.net [207.88.13.130] |
| 8 | 14 ms | 16 ms | 12 ms | 207.88.13.7.ptr.us.xo.net [207.88.13.7] |
| 9 | 8 ms | 7 ms | 7 ms | a69-192-216-121.deploy.akamaitechnologies.com [69.192.216.121] |

Trace complete.

Tracert www.microsoft.edu

Tracing route to www.microsoft.edu [198.105.244.114]

over a maximum of 30 hops:

| | | | | |
|----|-------|-------|-------|--|
| 1 | 1 ms | <1 ms | <1 ms | Wireless_Broadband_Router.home [192.168.1.1] |
| 2 | 4 ms | 3 ms | 3 ms | pool-184-18-48-1.ftwy.in.frontiernet.net [184.18.48.1] |
| 3 | 4 ms | 3 ms | 7 ms | 172.76.21.117 |
| 4 | 12 ms | 12 ms | 11 ms | 74.40.4.77 |
| 5 | 16 ms | 15 ms | 16 ms | ae1---0.cbr01.chcg.il.frontiernet.net [74.40.4.142] |
| 6 | 11 ms | 12 ms | 12 ms | 10gigabitethernet4-1.core1.chi1.he.NET [206.223.119.37] |
| 7 | 37 ms | 29 ms | 30 ms | 100ge16-1.core1.nyc4.he.net [184.105.223.162] |
| 8 | 38 ms | 30 ms | 30 ms | xerocole-inc.10gigabitethernet12-4.core1.nyc4.he.net [216.66.41.242] |
| 9 | * | * | * | Request timed out. |
| 10 | * | * | * | Request timed out. |
| 11 | * | * | * | Request timed out. |
| 12 | * | * | * | Request timed out. |
| 13 | * | * | * | Request timed out. |
| 14 | * | * | * | Request timed out. |
| 15 | * | * | * | Request timed out. |
| 16 | * | * | * | Request timed out. |
| 17 | * | * | * | Request timed out. |
| 18 | * | * | * | Request timed out. |
| 19 | * | * | * | Request timed out. |
| 20 | * | * | * | Request timed out. |
| 21 | * | * | * | Request timed out. |
| 22 | * | * | * | Request timed out. |
| 23 | * | * | * | Request timed out. |
| 24 | * | * | * | Request timed out. |
| 25 | * | * | * | Request timed out. |
| 26 | * | * | * | Request timed out. |
| 27 | * | * | * | Request timed out. |
| 28 | * | * | * | Request timed out. |
| 29 | * | * | * | Request timed out. |
| 30 | * | * | * | Request timed out. |

Trace complete.

Tracert www.purdue.edu

Tracing route to www.purdue.edu [128.210.7.200]

over a maximum of 30 hops:

```
 1  <1 ms   4 ms   <1 ms  Wireless_Broadband_Router.home [192.168.1.1]
 2   3 ms   3 ms   5 ms  pool-184-18-48-1.ftwy.in.frontiernet.net [184.18.48.1]
 3   3 ms   3 ms   3 ms  172.76.21.117
 4  12 ms  11 ms  12 ms  74.40.4.77
 5  16 ms  15 ms  16 ms  ae1---0.cbr01.chcg.il.frontiernet.net [74.40.4.142]
 6  12 ms  11 ms  14 ms  equinix-exchange.chi-2.wiscnet.NET [206.223.119.7]
 7  16 ms  18 ms  16 ms  ae-1.2247.rtr.ictc.indiana.gigapop.net [149.165.183.89]
 8  23 ms  24 ms  23 ms  tel-210-c9006-01-te0-0-0-151.tcom.purdue.edu [192.5.40.81]
 9  22 ms  22 ms  22 ms  itap-dc-core-vss-01-te2-3-1.tcom.purdue.edu [192.5.40.90]
10  22 ms  27 ms  22 ms  128.210.7.200
```

Trace complete.

Tracert www.iu.edu

Tracing route to www.iu.edu [129.79.78.189]

over a maximum of 30 hops:

```
 1  <1 ms  <1 ms  <1 ms  Wireless_Broadband_Router.home [192.168.1.1]
 2   3 ms  3 ms   3 ms  pool-184-18-48-1.ftwy.in.frontiernet.net [184.18.48.1]
 3   3 ms  3 ms   2 ms  172.76.21.113
 4   7 ms  7 ms   7 ms  ae17---0.cor01.chcg.il.frontiernet.net [74.40.2.145]
 5  11 ms  11 ms  11 ms  ae0---0.cbr01.chcg.il.frontiernet.net [74.40.4.138]
 6   7 ms  7 ms   7 ms  equinix-exchange.chi-2.wiscnet.NET [206.223.119.7]
 7  11 ms  11 ms  12 ms  ae-1.2247.rtr.ictc.indiana.gigapop.net [149.165.183.89]
 8  12 ms  11 ms  11 ms  ae-4.12.rtr.ll.indiana.gigapop.net [149.165.183.13]
 9  18 ms  18 ms  17 ms  tge-1-2.12.br.hper.net.uits.iu.edu [149.165.183.14]
10  18 ms  18 ms  18 ms  ae-33.932.dcr3.blcd.net.uits.iu.edu [134.68.3.129]
```

11 18 ms 17 ms 17 ms zeus1-iu.gateway.indiana.edu [129.79.78.189]

Trace complete.

Summary:

All of these were able to be traced except the "www.microsoft.edu" website because the link should have ended in ".com" rather than ".edu". This tool can be used to determine if a device is not connecting to a website due to network connectivity or because the actual connection to the website is faulty.

GRADE A