*** Northcutt, the lessons learned section was really nice to read, there is some solid work here, this was a bit hard to read due to no formatting and so there is a deduction there. 75 *

Joseph S. Dietz, Jr.

Here is the format for my practical detect analysis:

Detect #: Title
Detect Tool:
Detect Details:
Time:
Source IP Characteristics:
Source Port Characteristics:
Destination IP Characteristics:
Destination Port Characteristics:
Log excerpt:
Date Time Source IP Dest IP Sport

A little about the Detect Tool:

Firewall-1 logs with home grown perl scripts to summarize the daily detects. Logs are summarized every twenty-four hours.

Probes

of 25 hits or more are reported in the daily summary. The daily summaries are manually reviewed. Additional investigation and analysis is completed manually as necessary. Only dropped packets are logged. It is not guaranteed that every dropped packet will be logged.

Summary of Lessons Learned:

* Disabled IP redirected broadcasts on border router.
* Need to stay current with web sites listing known attacks.
* Need to deploy an ID tool that is able to pick up detects at a deeper level in the IP/TCP/UDP header.

I concede that my detects are limited to what can be assessed from our firewall logs. I am blind to attacks that use inappropriate TCP flag settings, inappropriate fragmentation...etc..

Thank you,

Joseph S. Dietz, Jr.
Lead Network Engineer
Detect 1: SMURF-like using limited broadcast. UDP instead of ICMP.

Detect Tool:
Firewall-1 logs with home grown perl scripts to summarize the daily detects. Logs are summarized every twenty-four hours.

Probes
of 25 hits or more are reported in the daily summary. The daily summaries are manually reviewed. Additional investigation and analysis is completed manually as necessary. Only dropped packets are logged. It is not guaranteed that every dropped packet will be logged.

Detect Details:
This probe was detected because of the destination address 255.255.255.255. How would we ever get this packet? I would offer that most likely our border router did an ip redirect-broadcast. The packet may have originated something like 1.2.0.255. This redirect-broadcast capability was immediately disabled using the "no ip redirect-broadcast" feature of the IOS on our border router.

Time:
The probe is over several days. This was not a continuous probe. The timestamps of the probe vary.

Source IP Characteristics:
Source changes.
IP www.arin.net whois

210.23.143.10 Asia-Pacific address space
198.142.1.242 AUSNet Services Inc.
129.130.76.13 Kansas State University
63.224.141.241 U S WEST Communications ISP
203.164.12.151 Asia-Pacific address space

There are no DNS reverse lookups for these address.

Source Port Characteristics:
Source port changes from somewhat random high ports > 1023, to upd-7 aka echo-udp

Destination IP Characteristics:
This is a probe against the broadcast address 255.255.255.255 This may have arrived as 1.2.0.255 and our router helped out by redirecting the broadcast :-(

Destination Port Characteristics:
In general ports are > 1023.
The destination port does dip below 1024
Log excerpt:

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Source IP</th>
<th>Dest IP</th>
<th>Sport</th>
</tr>
</thead>
<tbody>
<tr>
<td>25Mar2000; 0:38:13; inbound; udp; 210.23.143.10; 255.255.255.255; 30532; 47264;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25Mar2000; 0:38:34; inbound; udp; 210.23.143.10; 255.255.255.255; 42831; 31946;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25Mar2000; 0:38:54; inbound; udp; 210.23.143.10; 255.255.255.255; 48291; 10134;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25Mar2000; 0:39:15; inbound; udp; 210.23.143.10; 255.255.255.255; 43792; 41509;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25Mar2000; 0:39:35; inbound; udp; 210.23.143.10; 255.255.255.255; 16517; 20307;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25Mar2000; 0:39:56; inbound; udp; 210.23.143.10; 255.255.255.255; 27386; 1434;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25Mar2000; 0:53:44; inbound; udp; 210.23.143.10; 255.255.255.255; 39203; 36429;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25Mar2000; 0:54:27; inbound; udp; 210.23.143.10; 255.255.255.255; 25671; 15533;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25Mar2000; 0:54:48; inbound; udp; 210.23.143.10; 255.255.255.255; 33416; 54367;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Destination port does dip below 1024

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Source IP</th>
<th>Dest IP</th>
<th>Sport</th>
</tr>
</thead>
<tbody>
<tr>
<td>30Mar2000; 4:08:58; inbound; udp; 198.142.1.242; 255.255.255.255; echo-udp; 892;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source port changes to upd-7, echo-udp

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Source IP</th>
<th>Dest IP</th>
<th>Sport</th>
</tr>
</thead>
<tbody>
<tr>
<td>29Mar2000; 22:39:32; inbound; udp; 139.130.76.13; 255.255.255.255; echo-udp; 44515;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29Mar2000; 22:39:52; inbound; udp; 139.130.76.13; 255.255.255.255; echo-udp; 60477;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29Mar2000; 23:09:40; inbound; udp; 63.224.141.241; 255.255.255.255; echo-udp; 60651</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29Mar2000; 23:09:41; inbound; udp; 63.224.141.241; 255.255.255.255; echo-udp; 61230</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29Mar2000; 23:13:02; inbound; udp; 203.164.12.151; 255.255.255.255; echo-udp; 65164</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29Mar2000; 23:14:04; inbound; udp; 203.164.12.151; 255.255.255.255; echo-udp; 36888</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total of 1418 log entries.
Detect 2: UDP based network mapping. WinTel'ish in style.

Detect Tool:
Firewall-1 logs with home grown perl scripts to summarize the daily detects. Logs are summarized every twenty-four hours.

Probes
of 25 hits or more are reported in the daily summary. The daily summaries are manually reviewed. Additional investigation and analysis is completed manually as necessary. Only dropped packets are logged. It is not guaranteed that every dropped packet will be logged.

Detect Details:
This probe was detected because of the destination address 1.2.255.255
This might be categorized as a slow network mapping with a Windows 95/98/NT style. The nbdatagram 138 may be repeated to hide the port scan.

Time:
The probe is repeated over several days. This was not a continuous probe. The timestamps of the probe are grouped together but not consistent. Each probes last for about eight hours. The probe is slow and it uses destination broadcast address.

Source IP Characteristics:
The source of 216.133.8.10 is static. No reverse lookup via DNS available. Www.arin.net's whois returns "Epoch Internet" owns this address space.

Source Port Characteristics:
Static always udp port 138 = nbdatagram Win95/98/NT

Destination IP Characteristics:
This is a probe against the broadcast address of one of our class-B networks 1.2.0.0

Destination Port Characteristics:
Ports increment from 1-138
In addition there are anywhere from 1-5 hits to port 138 between the individual port increments. This could be an effort to try and hide the port scan.
Log excerpt:

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Source IP</th>
<th>Dest IP</th>
<th>Sport</th>
</tr>
</thead>
<tbody>
<tr>
<td>28Feb2000</td>
<td>15:57:32</td>
<td>inbound;udp:216.133.8.10;1.2.255.255;nbdatagram;nbdatagram</td>
<td>m;</td>
<td></td>
</tr>
<tr>
<td>28Feb2000</td>
<td>16:02:48</td>
<td>inbound;udp:216.133.8.10;1.2.255.255;nbdatagram;nbdatagram</td>
<td>m;</td>
<td></td>
</tr>
<tr>
<td>28Feb2000</td>
<td>16:07:58</td>
<td>inbound;udp:216.133.8.10;1.2.255.255;nbdatagram;nbdatagram</td>
<td>m;</td>
<td></td>
</tr>
<tr>
<td>28Feb2000</td>
<td>16:09:18</td>
<td>inbound;udp:216.133.8.10;1.2.255.255;nbdatagram;nbdatagram</td>
<td>m;</td>
<td></td>
</tr>
<tr>
<td>28Feb2000</td>
<td>16:11:42</td>
<td>inbound;udp:216.133.8.10;1.2.255.255;nbdatagram;nbdatagram</td>
<td>m;</td>
<td></td>
</tr>
<tr>
<td>28Feb2000</td>
<td>16:18:18</td>
<td>inbound;udp:216.133.8.10;1.2.255.255;nbdatagram;nbdatagram</td>
<td>m;</td>
<td></td>
</tr>
<tr>
<td>28Feb2000</td>
<td>16:21:16</td>
<td>inbound;udp:216.133.8.10;1.2.255.255;nbdatagram;nbdatagram</td>
<td>m;</td>
<td></td>
</tr>
<tr>
<td>28Feb2000</td>
<td>16:23:28</td>
<td>inbound;udp:216.133.8.10;1.2.255.255;nbdatagram;nbdatagram</td>
<td>m;</td>
<td></td>
</tr>
</tbody>
</table>

Total of 527 log entries

Joseph S. Dietz, Jr.

Detect 3: DNS Load Balancing "measurement" using UDP & TCP.

Detect Tool:
Firewall-1 logs with home grown perl scripts to summarize the daily detects. Logs are summarized every twenty-four hours.

Probes
of 25 hits or more are reported in the daily summary. The daily summaries are manually reviewed. Additional investigation and analysis is completed manually as necessary. Only dropped packets are logged. It is not guaranteed that every dropped packet will be logged.
Detect Details:
This probe was detected because of the high number of hits to a short list of destination ports. These hits were linked to 1.2.3.11 and 1.2.3.12 which are our DNS and MAIL forwarders. The BSDi Unix man pages mentions that traceroute runs using UDP with the default port being 33434. This may be a load balancer trying to do a measurement that looks like traceroute. The pattern looks similar to DNS load balancing for a web site.

Time:
The probes is repeated over several days. The probes are clustered together in groups of 2-5 hits.

Source IP Characteristics:
The source IP address as limited to:
209.67.123.169 www.rivalcom.net
38.185.173.6 psi.net
206.191.171.4 Rival Communications Network
206.191.171.11 no DNS reverse lookup
209.67.78.203 Exodus Communications Inc.
208.178.110.7 Global Crossing
This looks like co-location for perhaps "www.rivalcom.net"

Source Port Characteristics:
Fairly static at UDP-33434 and TCP-53

Destination IP Characteristics:
1.2.3.11 & 1.2.3.12 are our DNS forwarders for a split horizon DNS configuration. These addresses are specifically targeted.

Destination Port Characteristics:
The destination ports cycle. Some examples are:
2400,2401,2402 & 3311,3312,3313,3314,115
The protocol does switch from UDP to TCP on at least on occasion.

Log excerpt:

Date      Time                 Source IP     Dest IP Sport Dport
21Mar2000; 0:21:23;inbound;udp;209.67.123.169;1.2.3.12;33434;2400;
21Mar2000; 0:21:23;inbound;udp;209.67.123.169;1.2.3.12;33434;2401;
21Mar2000; 0:21:23;inbound;udp;209.67.123.169;1.2.3.12;33434;2402;
21Mar2000; 0:21:48;inbound;tcp;209.67.123.169;1.2.3.12;domain-tcp;2400;
21Mar2000; 0:21:48;inbound;tcp;209.67.123.169;1.2.3.12;domain-tcp;2401;
21Mar2000; 0:21:48;inbound;tcp;209.67.123.169;1.2.3.12;domain-tcp;2402;
21Mar2000; 1:26:40;inbound;tcp;38.185.173.6;1.2.3.12;domain-tcp;2301;
21Mar2000; 1:26:40;inbound;tcp;38.185.173.6;1.2.3.12;domain-tcp;2302;
21Mar2000; 2:12:36;inbound;tcp;38.185.173.6;1.2.3.12;domain-tcp;2400;
21Mar2000; 2:12:36;inbound;tcp;38.185.173.6;1.2.3.12;domain-tcp;2401;
21Mar2000; 2:12:36;inbound;tcp;38.185.173.6;1.2.3.12;domain-tcp;2402;
21Mar2000; 2:26:48;inbound;tcp;38.185.173.6;1.2.3.12;domain-tcp;2400;
21Mar2000; 3:39:36; inbound; udp; 206.191.171.4; 1.2.3.12; 33434; 2301; 21Mar2000; 3:39:36; inbound; udp; 206.191.171.4; 1.2.3.12; 33434; 2302; 21Mar2000; 3:40:11; inbound; tcp; 206.191.171.4; 1.2.3.12; domain-tcp; 2301; 21Mar2000; 3:40:11; inbound; tcp; 206.191.171.4; 1.2.3.12; domain-tcp; 2302; 21Mar2000; 3:45:17; inbound; tcp; 38.185.173.6; 1.2.3.12; domain-tcp; 2301; 21Mar2000; 3:45:17; inbound; tcp; 38.185.173.6; 1.2.3.12; domain-tcp; 2302; 21Mar2000; 4:14:37; inbound; tcp; 38.185.173.6; 1.2.3.12; domain-tcp; 2400; 21Mar2000; 4:14:37; inbound; tcp; 38.185.173.6; 1.2.3.12; domain-tcp; 2401; 21Mar2000; 4:14:37; inbound; tcp; 38.185.173.6; 1.2.3.12; domain-tcp; 2402; 21Mar2000; 4:14:37; inbound; tcp; 38.185.173.6; 1.2.3.12; domain-tcp; 2301; 21Mar2000; 4:24:45; inbound; udp; 206.191.171.11; 1.2.3.11; 33434; 2302; 21Mar2000; 4:24:45; inbound; udp; 206.191.171.11; 1.2.3.11; 33434; 2301; 21Mar2000; 4:25:35; inbound; tcp; 206.191.171.11; 1.2.3.11; domain-tcp; 2301; 21Mar2000; 4:25:35; inbound; tcp; 206.191.171.11; 1.2.3.11; domain-tcp; 2302; 21Mar2000; 4:58:54; inbound; tcp; 38.185.173.6; 1.2.3.12; domain-tcp; 2301; 21Mar2000; 4:58:54; inbound; tcp; 38.185.173.6; 1.2.3.12; domain-tcp; 2302; 21Mar2000; 4:58:54; inbound; tcp; 38.185.173.6; 1.2.3.12; domain-tcp; 2400; 21Mar2000; 4:58:54; inbound; tcp; 38.185.173.6; 1.2.3.12; domain-tcp; 2401; 21Mar2000; 4:58:54; inbound; tcp; 38.185.173.6; 1.2.3.12; domain-tcp; 2402; 21Mar2000; 4:58:54; inbound; tcp; 38.185.173.6; 1.2.3.12; domain-tcp; 2301; 30Mar2000; 21:16:01; inbound; udp; 208.178.110.7; 1.2.3.12; 33434; 2202; 30Mar2000; 21:16:01; inbound; udp; 208.178.110.7; 1.2.3.12; 33434; 2200; 30Mar2000; 21:16:01; inbound; udp; 208.178.110.7; 1.2.3.12; 33434; 2201; 30Mar2000; 22:23:05; inbound; udp; 209.67.111.70; 1.2.3.11; 33434; 2400; 30Mar2000; 22:23:05; inbound; udp; 209.67.111.70; 1.2.3.11; 33434; 2401; 30Mar2000; 22:23:05; inbound; udp; 209.67.111.70; 1.2.3.11; 33434; 2402; 30Mar2000; 22:41:31; inbound; udp; 208.184.3.84; 1.2.3.12; 33434; 2100; 30Mar2000; 22:41:31; inbound; udp; 208.184.3.84; 1.2.3.12; 33434; 2101; 30Mar2000; 22:41:31; inbound; udp; 208.184.3.84; 1.2.3.12; 33434; 2102; 30Mar2000; 22:41:31; inbound; udp; 208.184.3.84; 1.2.3.12; 33434; 2103; 30Mar2000; 22:41:31; inbound; udp; 208.184.3.84; 1.2.3.12; 33434; 2104; 30Mar2000; 22:41:31; inbound; udp; 208.184.3.84; 1.2.3.12; 33434; 2105; 30Mar2000; 22:41:31; inbound; udp; 208.184.3.84; 1.2.3.12; 33434; 2106; 30Mar2000; 22:41:31; inbound; udp; 208.184.3.84; 1.2.3.12; 33434; 2107; 31Jan2000; 7:42:54; inbound; udp; 209.67.78.203; 1.2.3.12; 33434; 3311; 31Jan2000; 7:42:55; inbound; udp; 209.67.78.203; 1.2.3.12; 33434; 3312; 31Jan2000; 7:42:56; inbound; udp; 209.67.78.203; 1.2.3.12; 33434; 3313; 31Jan2000; 7:42:57; inbound; udp; 209.67.78.203; 1.2.3.12; 33434; 3314; 31Jan2000; 7:42:58; inbound; udp; 209.67.78.203; 1.2.3.12; 33434; 3315; 31Jan2000; 8:07:38; inbound; udp; 209.67.78.203; 1.2.3.12; 33434; 3311; 31Jan2000; 8:07:39; inbound; udp; 209.67.78.203; 1.2.3.12; 33434; 3312; 31Jan2000; 8:07:40; inbound; udp; 209.67.78.203; 1.2.3.12; 33434; 3313; 31Jan2000; 8:07:41; inbound; udp; 209.67.78.203; 1.2.3.12; 33434; 3314; 31Jan2000; 8:07:43; inbound; udp; 209.67.78.203; 1.2.3.12; 33434; 3315; Total of 8108 log entries.

Joseph S. Dietz, Jr.
Detect 4: Proxy Server targeted detect.
Detect Tool:
Firewall-1 logs with home grown perl scripts to summarize the daily detects. Logs are summarized every twenty-four hours.

Probes

of 25 hits or more are reported in the daily summary. The daily summaries are manually reviewed. Additional investigation and analysis is completed manually as necessary. Only dropped packets are logged. It is not guaranteed that every dropped packet will be logged.

Detect Details:

This probe was detected because of the number of hits to port 8080. This probe was targeted at our proxy servers specifically. This was not a scan of our entire network for proxy servers. Our security policies do not allow "Internet" to initiate connections to our proxy servers. Our proxy servers actually run on port-80.

Time:

Total detect period was about 11 hours. Some hits were clustered together. These are normal working hours.

Source IP Characteristics:

Fairly static but the majority are from the excite.com address. 199.172.148.172 swirly-rwcmex.excite.com 208.184.172.168 h-208-184-172-168.aureate.com 205.139.29.131 psun45-25e.and.navisite.com

Source Port Characteristics:

Most hits came from port tcp-4101.

Destination IP Characteristics:

1.2.139.20, 1.2.254.27 are our proxy servers.

Destination Port Characteristics:

Static at HTTP proxy port 8080.

Log excerpt:

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Source IP</th>
<th>Dest IP</th>
<th>Sport</th>
<th>Dport</th>
</tr>
</thead>
<tbody>
<tr>
<td>27Mar2000;6:57:32;inbound</td>
<td>tcp</td>
<td>199.172.148.172;1.2.139.20;4101;8080;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27Mar2000;6:59:11;inbound</td>
<td>tcp</td>
<td>199.172.148.172;1.2.139.20;4101;8080;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27Mar2000;7:00:54;inbound</td>
<td>tcp</td>
<td>199.172.148.172;1.2.139.20;4101;8080;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27Mar2000;7:04:18;inbound</td>
<td>tcp</td>
<td>199.172.148.172;1.2.139.20;4101;8080;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27Mar2000;10:24:21;inbound</td>
<td>tcp</td>
<td>208.184.172.168;1.2.254.27;3129;8080;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27Mar2000;17:52:34;inbound</td>
<td>tcp</td>
<td>205.139.29.131;1.2.139.20;4908;8080;</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total of 40 log entries.
Detect 5: Network Mapping search for portmap

Detect Tool:
Firewall-1 logs with home grown perl scripts to summarize the daily detects. Logs are summarized every twenty-four hours.

Probes
of 25 hits or more are reported in the daily summary. The daily summaries are manually reviewed. Additional investigation and analysis is completed manually as necessary. Only dropped packets are logged. It is not guaranteed that every dropped packet will be logged.

Detect Details:
This probe was detected because of the high number of hits from the source address 210.200.75.51 and the high number of hits to the port tcp-111, portmapper aka rpcbind. The source and destination ports stay the same. This probe targeted our DMZ and screened networks.

Time:
This was a fast scan. It took place in one minute.

Source IP Characteristics:
Static 210.200.75.51
www.arin.net whois returns Asia Pacific Network

Source Port Characteristics:
Static tcp-111 rpcbind

Destination IP Characteristics:
These three networks are part of our firewall screened network and DMZ environments.
Increment from 1.2.3.1 - 1.2.3.255
Increment from 1.2.4.1 - 1.2.4.255
Increment from 1.2.5.x - 1.2.5.y (partial scan)

Destination Port Characteristics:
Static tcp-111 rpcbind

Log excerpt:

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Source IP</th>
<th>Dest IP</th>
<th>Sport</th>
<th>Dport</th>
</tr>
</thead>
<tbody>
<tr>
<td>19Mar2000; 9:54:16; inbound; tcp; 210.200.75.51; 1.2.3.1; 111; 111</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19Mar2000; 9:54:16; inbound; tcp; 210.200.75.51; 1.2.3.5; 111; 111</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19Mar2000; 9:54:16; inbound; tcp; 210.200.75.51; 1.2.3.6; 111; 111</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19Mar2000; 9:54:16; inbound; tcp; 210.200.75.51; 1.2.3.7; 111; 111</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19Mar2000; 9:54:31; inbound; tcp; 210.200.75.51; 1.2.3.251; 111; 111</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19Mar2000; 9:54:31; inbound; tcp; 210.200.75.51; 1.2.3.252; 111; 111</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19Mar2000; 9:54:31; inbound; tcp; 210.200.75.51; 1.2.3.253; 111; 111</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Detect 6: RTSP Detect

Detect Tool:
Firewall-1 logs with home grown perl scripts to summarize the daily detects. Logs are summarized every twenty-four hours.

Probes
of 25 hits or more are reported in the daily summary. The daily summaries are manually reviewed. Additional investigation and analysis is completed manually as necessary. Only dropped packets are logged. It is not guaranteed that every dropped packet will be logged.

Detect Details:
This probe was detected because of the high number of hits to our proxy server with the destination port tcp-554. Our security policies do not allow for real time streaming proxy,(RTSP) services.
It is possible that our own users are attempting to connect to a streaming server. The proxy would make the connection then the streaming server would try to connect to our server. I do not have the hard data to verify this theory.

Time:
The probe lasted about 30 minutes with a few hits per minute

Source IP Characteristics:
Static 209.247.74.23 Level 3 Communications CIDR

Source Port Characteristics:
Source ports repeat

Destination IP Characteristics:
Static 1.2.2.40
This is one of our proxy servers.

Destination Port Characteristics:
Static RTSP = tcp/udp 554

Log excerpt:
21Mar2000; 1:10:26; inbound; tcp; 209.247.74.23; 1.2.2.40; 2385; rtsp;
21Mar2000; 1:10:26; inbound; tcp; 209.247.74.23; 1.2.2.40; 2387; rtsp;
21Mar2000; 1:10:26; inbound; tcp; 209.247.74.23; 1.2.2.40; 2374; rtsp;
21Mar2000; 1:10:26; inbound; tcp; 209.247.74.23; 1.2.2.40; 2397; rtsp;
21Mar2000; 1:11:58; inbound; tcp; 209.247.74.23; 1.2.2.40; 2374; rtsp;
21Mar2000; 1:11:59; inbound; tcp; 209.247.74.23; 1.2.2.40; 2397; rtsp;
21Mar2000; 1:11:59; inbound; tcp; 209.247.74.23; 1.2.2.40; 2385; rtsp;
21Mar2000; 1:12:52; inbound; tcp; 209.247.74.23; 1.2.2.40; 2387; rtsp;
21Mar2000; 1:13:32; inbound; tcp; 209.247.74.23; 1.2.2.40; 2374; rtsp;
21Mar2000; 1:13:35; inbound; tcp; 209.247.74.23; 1.2.2.40; 2397; rtsp;

Total of 59 log entries.

Joseph S. Dietz, Jr.

Detect 7: Scan for "RC" trojan on port 65535.

Detect Tool:
Firewall-1 logs with home grown perl scripts to summarize the daily detects. Logs are summarized every twenty-four hours.

Probes
of 25 hits or more are reported in the daily summary. The daily summaries are manually reviewed. Additional investigation and analysis is completed manually as necessary. Only dropped packets are logged. It is not guaranteed that every dropped packet will be logged.

Detect Details:
This probe was detected because of the high number of hits from source port 109. In addition the Source address does not change. The destination port was very interesting after reviewing a list of known trojan programs. The trojan "RC" has been found on port 65535.

Time:
This was a very fast scan. It took place in one second. The timestamp may be a feature of our firewall log. We can safely say that this took place in the same minute.

Source IP Characteristics:
Static 199.4.121.210 www.arin.net whois reports that Best Internet Communications, Inc owns this address space.

Source Port Characteristics:
Static TCP port 109 aka pop-2

Destination IP Characteristics:
1.2.3.0 and 1.2.4.0 our CIDR addresses
Increments somewhat haphazardly threw this address space.

Destination Port Characteristics:
Static TCP port 65535. According to the list of trojans at
Von Braun's web site a trojan called "RC" is known to run on
65535.

Log excerpt:

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Source IP</th>
<th>Dest IP</th>
<th>Sport</th>
<th>Dport</th>
</tr>
</thead>
<tbody>
<tr>
<td>4Mar2000</td>
<td>13:07:26</td>
<td>inbound;tcp;199.4.121.210;1.2.3.1;pop-2;65535;</td>
<td>1.2.3.1</td>
<td>pop-2</td>
<td>65535</td>
</tr>
<tr>
<td>4Mar2000</td>
<td>13:07:26</td>
<td>inbound;tcp;199.4.121.210;1.2.3.8;pop-2;65535;</td>
<td>1.2.3.8</td>
<td>pop-2</td>
<td>65535</td>
</tr>
<tr>
<td>4Mar2000</td>
<td>13:07:26</td>
<td>inbound;tcp;199.4.121.210;1.2.3.14;pop-2;65535;</td>
<td>1.2.3.14</td>
<td>pop-2</td>
<td>65535</td>
</tr>
<tr>
<td>4Mar2000</td>
<td>13:07:26</td>
<td>inbound;tcp;199.4.121.210;1.2.3.21;pop-2;65535;</td>
<td>1.2.3.21</td>
<td>pop-2</td>
<td>65535</td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4Mar2000</td>
<td>13:07:26</td>
<td>inbound;tcp;199.4.121.210;1.2.4.234;pop-2;65535;</td>
<td>1.2.4.234</td>
<td>pop-2</td>
<td>65535</td>
</tr>
<tr>
<td>4Mar2000</td>
<td>13:07:26</td>
<td>inbound;tcp;199.4.121.210;1.2.4.241;pop-2;65535;</td>
<td>1.2.4.241</td>
<td>pop-2</td>
<td>65535</td>
</tr>
<tr>
<td>4Mar2000</td>
<td>13:07:26</td>
<td>inbound;tcp;199.4.121.210;1.2.4.242;pop-2;65535;</td>
<td>1.2.4.242</td>
<td>pop-2</td>
<td>65535</td>
</tr>
<tr>
<td>4Mar2000</td>
<td>13:07:26</td>
<td>inbound;tcp;199.4.121.210;1.2.4.249;pop-2;65535;</td>
<td>1.2.4.249</td>
<td>pop-2</td>
<td>65535</td>
</tr>
</tbody>
</table>

Total of 115 log entries.

Joseph S. Dietz, Jr.

Detect 8: Network mapping using tcp-discard

Detect Tool:
Firewall-1 logs with home grown perl scripts to summarize the
daily detects. Logs are summarized every twenty-four hours.

Probes
of 25 hits or more are reported in the daily summary. The
daily summaries are manually reviewed. Additional
investigation and
analysis is completed manually as necessary. Only dropped
packets
are logged. It is not guaranteed that every dropped packet
will be logged.

Detect Details:
This probe was detected because of the unusual amount of hits to
destination port tcp-9 and the source ip does not change.

Time:
This probe lasted for about 15 minutes. Several hits per minute.

Source IP Characteristics:
Static 129.16.13.132 DNS entry mcquack.ced.chalmers.se

Source Port Characteristics:
Appears to be somewhat random
Destination IP Characteristics:
1.2.0.0 & 3.4.0.0 is our class-B address space. Destination varied back and forth between our two class-B addresses.

Destination Port Characteristics:
Static TCP-9 discard

Log excerpt:

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Source IP</th>
<th>Dest IP</th>
<th>Sport</th>
<th>Dport</th>
</tr>
</thead>
<tbody>
<tr>
<td>1Apr2000;18:13:24;inbound;tcp;129.16.13.132;1.2.99.19;23655;discard-tcp;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1Apr2000;18:13:29;inbound;tcp;129.16.13.132;1.2.74.59;16238;discard-tcp;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1Apr2000;18:14:14;inbound;tcp;129.16.13.132;3.4.20.120;41141;discard-tcp;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1Apr2000;18:14:50;inbound;tcp;129.16.13.132;3.4.22.24;33588;discard-tcp;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1Apr2000;18:14:52;inbound;tcp;129.16.13.132;1.2.74.49;43908;discard-tcp;</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1Apr2000;18:15:26;inbound;tcp;129.16.13.132;1.2.4.21;20228;discard-tcp;</td>
<td></td>
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<tr>
<td>...</td>
<td></td>
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</tr>
<tr>
<td>1Apr2000;18:29:16;inbound;tcp;129.16.13.132;3.4.185.122;60257;discard-tcp;</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1Apr2000;18:29:37;inbound;tcp;129.16.13.132;3.4.94.27;14403;discard-tcp;</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1Apr2000;18:30:06;inbound;tcp;129.16.13.132;3.4.243.118;17831;discard-tcp;</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Total of 100 log entries.

Joseph S. Dietz, Jr.

Detect 9: Hellnine host mapping & scan for well known ports.

Detect Tool:
Firewall-1 logs with home grown perl scripts to summarize the daily detects. Logs are summarized every twenty-four hours.

Probes
of 25 hits or more are reported in the daily summary. The daily summaries are manually reviewed. Additional investigation and analysis is completed manually as necessary. Only dropped packets are logged. It is not guaranteed that every dropped packet will be logged.

Detect Details:
This probe was detected because of the number of hits from the source address. Attempts connection to well known ports under 1024.
Source port stays the same while it tries well known destination ports.

Time:
The probes separated over seven days.

Source IP Characteristics:
Static 161.58.239.94 dns returns hellnine2000.org

Source Port Characteristics:
Changes but limited to these tcp ports 1934,1055,1295,1440

Destination IP Characteristics:
Several different ip addresses in our class-B networks 1.2.0.0 & 3.4.0.0

Destination Port Characteristics:
Well known ports < 1024. Telnet, FTP, SSH, DNS tcp-53

Log excerpt:

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Source IP</th>
<th>Dest IP</th>
<th>Sport</th>
<th>Dport</th>
</tr>
</thead>
<tbody>
<tr>
<td>5Mar2000;</td>
<td>6:42:01;</td>
<td>tcp;161.58.239.94;1.2.222.50;1934;ftp;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5Mar2000;</td>
<td>6:42:07;</td>
<td>inbound;tcp;161.58.239.94;1.2.237.28;1055;ftp;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5Mar2000;</td>
<td>6:42:08;</td>
<td>inbound;tcp;161.58.239.94;3.4.8.105;1295;ftp;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5Mar2000;</td>
<td>6:42:12;</td>
<td>inbound;tcp;161.58.239.94;1.2.222.50;1934;telnet;</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>5Mar2000;</td>
<td>6:42:14;</td>
<td>inbound;tcp;161.58.239.94;1.2.237.28;1055;SSH-22;</td>
<td></td>
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</tr>
<tr>
<td>5Mar2000;</td>
<td>6:42:17;</td>
<td>inbound;tcp;161.58.239.94;3.4.23.83;1440;ftp;</td>
<td></td>
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<td></td>
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<tr>
<td>5Mar2000;</td>
<td>6:42:21;</td>
<td>inbound;tcp;161.58.239.94;1.2.237.28;1055;telnet;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5Mar2000;</td>
<td>6:42:29;</td>
<td>inbound;tcp;161.58.239.94;1.2.13.66;1934;ftp;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5Mar2000;</td>
<td>6:42:38;</td>
<td>inbound;tcp;161.58.239.94;1.2.20.44;1055;ftp;</td>
<td></td>
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<td>...</td>
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<td></td>
</tr>
<tr>
<td>19Mar2000;</td>
<td>11:31:50;</td>
<td>inbound;tcp;161.58.239.94;3.4.3.24;1295;ftp;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19Mar2000;</td>
<td>11:32:06;</td>
<td>inbound;tcp;161.58.239.94;3.4.18.2;1440;ftp;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19Mar2000;</td>
<td>11:32:25;</td>
<td>inbound;tcp;161.58.239.94;1.2.49.54;1055;domain-tcp;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19Mar2000;</td>
<td>11:32:25;</td>
<td>inbound;tcp;161.58.239.94;1.2.8.113;1934;ftp;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19Mar2000;</td>
<td>11:32:26;</td>
<td>inbound;tcp;161.58.239.94;3.4.76.2;1295;domain-tcp;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19Mar2000;</td>
<td>11:32:29;</td>
<td>inbound;tcp;161.58.239.94;1.2.2.39;1055;telnet;</td>
<td></td>
<td></td>
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<tr>
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</tr>
<tr>
<td>Total of 13950 log entries.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Joseph S. Dietz, Jr.

Detect 10: Network mapping Deep Throat-like ports using UDP.

Detect Tool:
Firewall-1 logs with home grown perl scripts to summarize the daily detects. Logs are summarized every twenty-four hours.

Probes
of 25 hits or more are reported in the daily summary. The daily summaries are manually reviewed. Additional investigation and analysis is completed manually as necessary. Only dropped packets are logged. It is not guaranteed that every dropped packet will be logged.

Detect Details:
This probe was detected because of the high number of hits from the source address. The source and destination port do not change.
Deep Throat has been found to run on TCP ports 2140 and 60000. It is interesting that this probe uses these same port numbers via UDP.

Time:
This was a fast scan. It took place in one minute.

Source IP Characteristics:
Static 213.46.18.151 DNS reverse lookup dl8151.dtk.chello.nl

Source Port Characteristics:
Static UDP 2140

Destination IP Characteristics:
1.2.0.0 is one of our class-B addresses
Increments through one segment 1.2.0.1 - 1.2.0.255

Destination Port Characteristics:
Static UDP 60000

Log excerpt:
Date    Time       Source IP          Dest IP  Sport  Dport
16Mar2000; 4:08:10;inbound;udp;213.46.18.151;1.2.0.1;2140;60000;
16Mar2000; 4:08:10;inbound;udp;213.46.18.151;1.2.0.2;2140;60000;
16Mar2000; 4:08:10;inbound;udp;213.46.18.151;1.2.0.3;2140;60000;
16Mar2000; 4:08:10;inbound;udp;213.46.18.151;1.2.0.4;2140;60000;
16Mar2000; 4:08:10;inbound;udp;213.46.18.151;1.2.0.5;2140;60000;
16Mar2000; 4:08:10;inbound;udp;213.46.18.151;1.2.0.6;2140;60000;
... 16Mar2000; 4:08:32;inbound;udp;213.46.18.151;1.2.0.250;2140;60000;
16Mar2000; 4:08:32;inbound;udp;213.46.18.151;1.2.0.251;2140;60000;
16Mar2000; 4:08:32;inbound;udp;213.46.18.151;1.2.0.252;2140;60000;
16Mar2000; 4:08:32;inbound;udp;213.46.18.151;1.2.0.253;2140;60000;
16Mar2000; 4:08:32;inbound;udp;213.46.18.151;1.2.0.254;2140;60000;
16Mar2000; 4:08:32;inbound;udp;213.46.18.151;1.2.0.255;2140;60000;

Total of 255 log entries.
# Upcoming Training

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Location</th>
<th>Dates</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mentor Session - SEC503</td>
<td>Houston, TX</td>
<td>Mar 21, 2020 - Apr 25, 2020</td>
<td>Mentor</td>
</tr>
<tr>
<td>SANS 2020</td>
<td>Orlando, FL</td>
<td>Apr 03, 2020 - Apr 10, 2020</td>
<td>CyberCon</td>
</tr>
<tr>
<td>SANS London April 2020</td>
<td>London, United Kingdom</td>
<td>Apr 20, 2020 - Apr 25, 2020</td>
<td>CyberCon</td>
</tr>
<tr>
<td>SANS Baltimore Spring 2020</td>
<td>Baltimore, MD</td>
<td>Apr 27, 2020 - May 02, 2020</td>
<td>CyberCon</td>
</tr>
<tr>
<td>SANS Security West 2020</td>
<td>San Diego, CA</td>
<td>May 06, 2020 - May 13, 2020</td>
<td>CyberCon</td>
</tr>
<tr>
<td>SANS Amsterdam May 2020</td>
<td>Amsterdam, Netherlands</td>
<td>May 11, 2020 - May 18, 2020</td>
<td>CyberCon</td>
</tr>
<tr>
<td>SANS San Antonio 2020</td>
<td>San Antonio, TX</td>
<td>May 17, 2020 - May 22, 2020</td>
<td>CyberCon</td>
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<tr>
<td>SANS Las Vegas Summer 2020</td>
<td>Las Vegas, NV</td>
<td>Jun 08, 2020 - Jun 13, 2020</td>
<td>Live Event</td>
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<tr>
<td>SANS Munich July 2020</td>
<td>Munich, Germany</td>
<td>Jul 06, 2020 - Jul 11, 2020</td>
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<tr>
<td>Rocky Mountain Summer 2020 - SEC503: Intrusion Detection In-Depth</td>
<td>Denver, CO</td>
<td>Jul 20, 2020 - Jul 25, 2020</td>
<td>vLive</td>
</tr>
<tr>
<td>SANS Columbia 2020</td>
<td>Columbia, MD</td>
<td>Jul 20, 2020 - Jul 25, 2020</td>
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<td>SANS Rocky Mountain Summer 2020</td>
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<td>Live Event</td>
</tr>
<tr>
<td>SANS vLive - SEC503: Intrusion Detection In-Depth</td>
<td>SEC503 - 202008,</td>
<td>Aug 10, 2020 - Sep 16, 2020</td>
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<td>SANS Amsterdam August 2020</td>
<td>Amsterdam, Netherlands</td>
<td>Aug 17, 2020 - Aug 22, 2020</td>
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<tr>
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<td>Aug 17, 2020 - Aug 22, 2020</td>
<td>Live Event</td>
</tr>
<tr>
<td>SANS Virginia Beach 2020</td>
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<td>Aug 24, 2020 - Sep 04, 2020</td>
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<tr>
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<td>Aug 30, 2020 - Sep 04, 2020</td>
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<td>Sep 07, 2020 - Sep 12, 2020</td>
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<td>Anytime</td>
<td>Self Paced</td>
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<tr>
<td>SANS SelfStudy</td>
<td>Books &amp; MP3s Only</td>
<td>Anytime</td>
<td>Self Paced</td>
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