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# Control Plane Protection CPPr

Posted by Collin Clark on Nov 8, 2013 12:24:54 PM

I was browsing through the security docs the other day and came across CPPr. For detailed info go here.

This is a feature for securing devices. I used to work for a company that adhered to DISA security standards. One of things that was a pain was restricting what interfaces could be used for management. We only wanted certain interfaces to allow management protocols. There were ways to get creative, but it's a lot easier now.

```

ROUTER#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ROUTER(config)#control-plane host
ROUTER(config-cp-host)#management-interface vlan13 allow ?
  beep      Beep Protocol
  ftp       File Transfer Protocol
  http      HTTP Protocol
  https     HTTPS Protocol
  snmp      Simple Network Management Protocol
  ssh       Secure Shell Protocol
  telnet    Telnet Protocol
  tftp      Trivial File Transfer Protocol
  tll       Transaction Language Session Protocol
  <cr>

```

We can now (easily) restrict which interfaces can use what management protocol! My only complaint is that we can't use this on loopbacks which is where most/all management protocols live.

The second part I found useful is the ability to drop packets BEFORE they hit the CPU. Nice!

First let's look to see what "daemons" are running on the router.

```

ROUTER#show control-plane host open-ports
Active internet connections (servers and established)
Prot          Local Address           Foreign Address         Service      State
tcp           *:22                    *:0                     SSH-Server  LISTEN
tcp           *:23                    *:0                     Telnet      LISTEN
udp           *:123                   *:0                     NTP         LISTEN

```

Telnet is there by default. SSH and NTP showed up once I configured them. We should disable telnet. There never really was a way to disable telnet, all we could do is not use it and configure SSH and permit it. Telnet was still running though. Even though we still can't disable telnet, this is the next best thing. First we create the class map. In this example we're dropping packets that are destined to the router for ports that are not open [match closed-ports]. That certainly makes sense. Let's also drop all telnet connects too [match port tcp 23]. Now this may be belt-and-suspenders when also configuring transport under the VTYs, but I like the idea of being able to "firewall" my control plane.

```

class-map type port-filter match-any CLOSED_PORTS
  match closed-ports
  match port tcp 23

```

Next we create the policy map. In the real world you probably don't want the log keyword, but it's helpful when learning stuff in the lab.

```

policy-map type port-filter FILTER_CLOSED_PORTS
class CLOSED_PORTS
  drop
  log

```

We apply it to the control plane and then test.

```

control-plane host
  service-policy type port-filter input FILTER_CLOSED_PORTS

```

I tried to telnet from a neighboring router and I was denied. On the host router I had the following in the buffer log.

```

*Nov  8 18:33:03.089: %CP-6-TCP: DROP TCP/UDP Portfilter 192.168.100.2(47624) -> 192.168.100.1(23)

```

Awesome. One thing to note is that you may want to completely configure your router before applying this. There may be things running you were not expecting. I didn't allow DHCP and that broke my home network since my router is running DHCP 😞

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