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RFC1918 Blues

Well, it's been quite a week or so for me. 7 days of travel, to Las Vegas for SANS and Stockholm for the penetration testing summit. Man, I'm tired! But I promised tons of people I'd actually write out what I was talking about during my speeches, since it's tough to cover everything in such a short presentation, with all the other things I was talking about, and now that I'm finally recovered from my jet lag, I had a chance to sit down and write it all out. For those of you who have no idea what I'm talking about, don't worry, you're not behind the times. You can read the whole RFC1918 issue here. I tried to make it into a blog post, but it kept getting longer and longer, so I just turned it into a whitepaper instead because it's easier.

Without re-explaining the paper, it turns out that in certain browser, and with certain VPN and the current architecture of most RFC1918 networks, there is a high tendency for bad things to inadvertently happen, like IP collisions. That's annoying in the networking world (and a well known problem) but it's dangerous in the security world (and far less understood). Anyway, I talked it over with HD Moore and Toby and some of the other guys at SANS and it turns out they had actually seen similar things happen in the past, so it's been validated in the wild (again, inadvertently though).

This entry was posted on Monday, June 8th, 2009 at 1:02 pm and is filed under Webappsec, Random Security. You can leave a response as well.

- arshan Says:

neat stuff. ip collisions are very annoying to the traveling consultant, but it's nice to see the security aspect so thoroughly investigated here. =) i have some observations, but it's 3am and i'm just reading this now, so forgive me if they're not bulletproof.

aren't these attacks slightly, well, redundant/overkill, since an evil admin could push evil routes that would filter all your traffic through their malicious and controlled IP space? there's no motivation to stop at the intranet space IMHO - i don't see how many realistic attackers would think paypal is less valuable than intranet apps.

although the evil admin could still steal internal info if he wanted: step #1: user connects to work VPN or LAN, which uses addresses in 192.168.1.* land. step #2: user connects to evil VPN, evil admin pushes down routes that tell user "route all your traffic to 192.168.1.* through 192.168.2.1″ (which is the evil router that, although it can't reach internal sites, it can be used to collect internal credentials of all kinds like is shown in #4, including cookies, FTP/DB credentials, etc.) internal sites wouldn't work, but who cares?

even if the victim's original LAN/VPN prevents exact "collisions" through some OS hook you could still bypass that by specifically putting out a separate route for each IP address so the "longest prefix" rule would match for your evil route for every IP - after all, you mentioned there's only a few thousand of them. if they check their routing tables it will be very obvious, but if they check their routing tables, then it may be over already.

also, has the feasibility of altering routes in the middle of a VPN session been tested? i assumed (maybe incorrectly) that when the VPN client authenticated, it got pushed down some routes and they persisted until the end of the session. the server could terminate the session prematurely, sure. that would jolt the user, which would not be that important, but would make getting timely information (like cookies/stolen data) back to the evil admin harder unless they re-establish in, well, a timely manner. but what can an attacker realistically do with those cookies anyway?

but anyway, how can the evil admin use those stolen credentials if they are firewalled out? forcing a collision in the other direction and having him act as your confused deputy?

it always seemed to me that accepting routes from someone indicates complete trust, and i think everything here validates that. i don't think you'd disagree - i'd stick with some browser exploit after some enticing the corporate employee with pictures of anna faris.
