The Internet goes up in flames: Could 512k be the new Y2K?

By Paul Cooper 13 August 2014

We've all heard that the lack of Internet Protocol version 4 (IPv4) could cause problems in the future, if businesses and users don't transition to the newer IPv6 – well, that future is now. Internet service providers in the UK like BT and Virgin went down, as did major network providers in the US including AT&T, Time Warner, and Verizon, in what looked to be one of the largest and most widespread outages in Internet history.

Many of the service providers, for instance BT in the UK, and LiquidWeb in Michigan, initially believed local flooding to be the cause of the outage, this turned out not to be the case. In fact, it appears that the outage was caused by a problem with older routers and their inability to deal with the ever increasing size of the Internet's routing table.

That's because today many Border Gateway Protocol (BGP) routers need to store a map of the internet defining which IP address range belongs to which network. Due to the increasing scarcity of IPv4 space, registrars and ISPs assign smaller and smaller netblocks to customers, leading to a more and more fragmented topology. Many older routers are limited to store 512k entries, and the Internet's routing table has become large enough to reach this limit. Tuesday morning, it appears to have exceeded this limit for a short time, as this graph by Team Cymru shows.

IPv4 is the fourth version in the development of the Internet Protocol (IP) Internet, and routes most traffic on the Internet, but a scary phenomenon known as "address exhaustion" has seen a depletion of the pool of unallocated IP addresses. Today, IPv4 provides approximately 4.3 billion addresses around the world, but with the unprecedented proliferation of Internet connected devices involved in the mobile revolution and the Internet of things, the number of addresses is growing rapidly.

Porthole AdThe IP address space is managed by the Internet Assigned Numbers Authority (IANA) globally, and by five regional Internet registries (RIR) responsible in their designated territories for assignment to end users and local Internet registries, such as Internet service providers.

For users of older routers affected by the problems, Cisco published guidelines on how to fix the issue. Also contact your vendor if you've been affected.

But most of all, just update your router. The routing table is only going to get larger over the next few years, until networks finally catch on to IPv6 and rely less on IPv4.

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