Home Networks Are Bigger Than You Think!

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Sure, *everyone* has a home network, but I'm talking about YOUR home network. Do you know all the devices on it?

As homes move toward more smart devices and automation, there will be an explosion of network devices in this space. This explosion leads to some unexpected issues.

Christmas at Our House

This past year I got tired (or probably too old) to keep crawling on my stomach under the Christmas tree to plug it in. Then I had the revelation that many of you have had, "What if I replace that outlet with a Wi-Fi enabled smart outlet?". Let's say it was life changing!

After experiencing a new facet of Christmas joy, I got to thinking, "What if I replaced lots of outlets with smart outlets?". That would be amazing! You can probably tell where this is going. So, I did a count of how many individual outlets and switches were in my average sized, single-family home. Oops, I wasn't expecting **that** many! A survey found:

Equipment	Number
Lighting Switches	54
Electrical Outlets	170
Control Devices	5
Computing Devices	15

If all the electrical controls were implemented as Wi-Fi enabled devices the total number of addressable entities would be 250 devices (not counting all the business equipment I have). From the table above it is clear that traditional computing devices like desktops, laptops, tablets and phones make up a small part of the total.

Address Space Issues

People familiar with the home networking infrastructures will recognize the 250 device count is uncomfortably close to the "magic number of 254". This is the *maximum* number of addresses available on most home networking equipment. Clearly, next generation home equipment is going to need to support well over 254 devices.

As mentioned above there is a need for greater address spaces. A target for homes is 1K addresses which gives room for expansion over the next 10 years. This address space will need to be supported by gateways, routers & access points.

Management Issues

With this number of smart devices and sensors there will be a greater need for home infrastructure management. Things that are likely to be a problem:

- Detecting Address Space Exhaustion
- Detecting and Debugging Address Conflicts
- Mitigating against Security Breaches
- Identifying Bandwidth Hogs
- Identifying Rogue Devices
- Detecting excessive broadcasts or Broadcast Storms
- Total Bandwidth Utilization

Infrastructure Monitoring for Everyone!

Once thought of a requirement of large business enterprises, Infrastructure Monitoring is about to move into the home. The operation and security of your home network depends on it. Without a robust monitoring system, the Management issues raised above are either undetectable or unsolvable.