

Network Security for your Business

How to secure your business with today's Internet risks

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David Mandala



Who is David Mandala?

- I've worked in the Electronics and Computer Industries for 40+ years.
 - I've been with 7 startups, the principal of 3 of them.
- Spent the last 10 years developing embedded computer operating systems or improving them.
 - Ubuntu Linux for ARM System on Chip (SoC).
 - Improving Linux for the ARM SoC's with Linaro.
 - Standardization of the 96Boards platform so that binaries run on any board without recompilation of source code.
- Started **Secured by THEM** to specifically help small businesses secure their business computers and networks.



I've come to talk to you about office network security

- Today the Internet is pervasive, nearly every business has an Internet connection.
 - So what is new, for the last 10 years nearly every business has had an Internet connection.
- Smart low cost Devices are new, they are connected to the Internet. They are called Internet of Things or IoT for short.
 - They are powerful.
 - They are low cost.
 - They solve problems, some we knew we had, some we did not know of.
 - IoT space is growing.
 - And they can create problems.....



IoT Growth

- The Gartner Group says that by the end of 2016 there were 6.4 **billion** devices connected to the Internet, **5.5** million being added **daily!** 20.8 **billion** by 2020!
 - Who is buying them?
 - We are, both Consumer and Businesses.

Table 1: Internet of Things Units Installed Base by Category (Millions of Units)

Category	2014	2015	2016	2020
Consumer	2,277	3,023	4,024	13,509
Business: Cross-Industry	632	815	1,092	4,408
Business: Vertical-Specific	898	1,065	1,276	2,880
Grand Total	3,807	4,902	6,392	20,797

Table 2: Internet of Things Endpoint Spending by Category (Billions of Dollars)

Category	2014	2015	2016	2020
Consumer	257	416	546	1,534
Business: Cross-Industry	115	155	201	566
Business: Vertical-Specific	567	612	667	911
Grand Total	939	1,183	1,414	3,010



What kinds of IoT can I buy today?

- There are more more than **43 classes** of IoT devices sold on Amazon alone:
 - Smart Lightbulbs
 - Smart Locks
 - Smart Wall Plugs
 - Smart Light Switches
 - Smart Wall Touchscreen
 - Smart Thermostat
 - Smart Garage Door Opener
 - Smart Blinds
 - Smart Curtains
 - Amazon Alexa
 - Amazon Dot
 - Smart Keyrings
 - Smart Egg Minder
 - Smart Blu-Ray Player
 - Smart TV
 - Smart Outdoor Switch/Plug
 - Smart Trackers (keys, luggage, etc)
 - Smart Speakers
 - Smart Cameras (security)
 - Smart Alarm Systems
 - Smart Pet Feeder
 - Smart Smoke Detector
 - Smart Carbon Monoxide Detector
 - Smart Air Quality Detector
 - Smart Landscape Lighting
 - Smart Home Controller
 - Smart Doorbell
 - Smart Pet Treat Feeder / Camera
 - Smart Weather Station
 - Smart Plant Watering Device
 - Smart Garden Sensors
 - Smart Picture Frames
 - AeroGarden with WiFi
 - Smart Plant Pots
 - Smart Sprinkler Controller
 - Smart Crock Pot
 - Streaming Media Player
 - Smart Coffee/Tea Pot
 - WiFi Video Projector
 - Smart Robot Vacuum
 - Smart Range
 - Smart Microwave
 - Smart Dishwasher



What kinds of IoT might migrate to the office?

- There are more more than 43 classes of IoT devices sold on Amazon alone:

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- **Smart Door Locks**
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- AeroGarden with WiFi
- Smart Plant Pots
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- **Streaming Media Player**
- Smart Coffee/Tea Pot
- **WiFi Video Projector**
- Smart Robot Vacuum
- Smart Range
- Smart Microwave
- Smart Dishwasher



So there are a “lot” of IoT things, who cares?

According to:

- James Lyne, global head of security research at Sopho:
 - "IoT devices are coming in with security flaws which were out-of-date ten years ago you wouldn't dream of seeing on a modern PC"
 - "Maybe that wireless kettle isn't an interesting target, but if it helps you see across to the PC where all the goodies are, that matters"
- Cybersecurity expert Bruce Schneier:
 - "Given how experts have repeatedly warned IoT devices do pose a potentially huge security risk, why isn't more care being taken by those producing and selling them? That's largely because the IoT is so new that standards don't exist and vendors are reluctant to spend money on security for products that might not take off anyway."

In short, you should care.



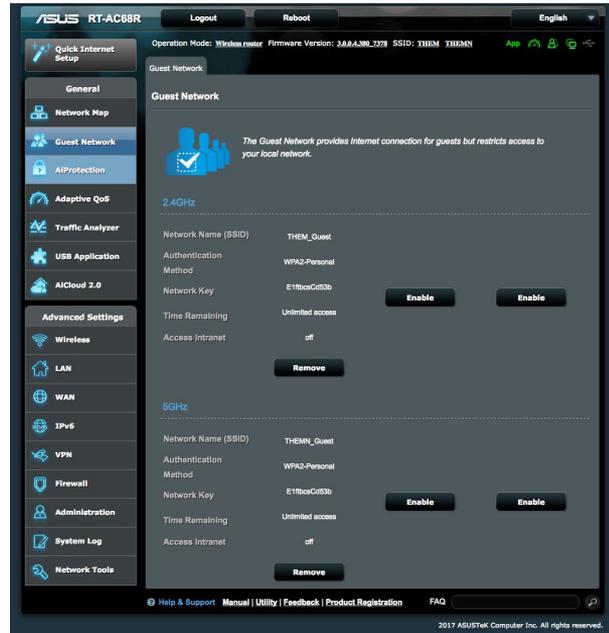
OK, some IoT devices are not secure, so what?

- Just because IoT devices are small does not mean the computers in them are small. Many devices are very powerful computers.
 - They can be used to stage attacks on your network and PC's on your network.
 - They can monitor (sniff) traffic on your network.
 - Worse, they can be used to crack your PC's and installing ransomware to force you to pay up to gain access to your data.
 - Worse than that, they can be used to crack your PC's and steal your personal info including your banking info, and direct your bank to send money to them, and it looks like you ordered the money to be sent. It's really hard to prove you did not send the transaction since it is coming directly from your own computer.
 - Finally imagine if all of your customer data was stolen and you had to tell all of your customers that their data had been stolen from your care! Would you still be in business?



What easy steps can I take to secure my network

- Add a Guest Network on your Router/Access Point, this access point allows 6 guest networks!



What easy steps can I take to secure my network

- Put all of your “Smart” IoT WiFi devices on their own “guest” network. By doing that they don’t share your office network and they can’t reach anything in your office. Then criminals can’t use insecure IoT to steal from you.
- If you provide WiFi access for your customers when they visit your office, have a private “guest” network for them, separate from your primary network and separate your “IoT” network. Remember their computers could be compromised and have viruses or already be cracked by criminals.
- Make sure all of your guest networks have strong password protection.



What easy steps can I take to secure my network

- If you don't need WiFi for your office network, don't set it up, the safest network requires physical access, if the only way to access your network is via wire it's more secure. Remember WiFi goes through walls and ceilings, someone could be in the parking lot or in a multistory building above or below you trying to access your network.
- Finally most importantly use **STRONG PASSWORDS** on all of your computer systems. Use password manager software if you can't remember long passwords, then protect the password manager software with a long passphrase, 60 - 120 characters long.
- And don't write down passwords EVER.



If I do everything you suggested will I be secure?

- You'll be more secure than if you don't, but the truth is this only scratches the surface. There is no such thing as a completely secure device, only levels of security.
- Security is like an onion, the more layers you have the more secure you are.
- Criminals can still crack your firewall, or infiltrate via email attachment.
- Everyone's network is different, I can't address exact issues in a general talk. Feel free to reach out and talk with me. (Security at them dot com)
- Adding layers can include:
 - Security Audits
 - Penetration testing
 - 24x7 Network monitoring



Questions?

Thank you for your time.

June 20, 2017
David Mandala



WHO'S ON YOUR NETWORK?