IOT AND CYBERSECURITY

ASHUTOSH SRIVASTAVA

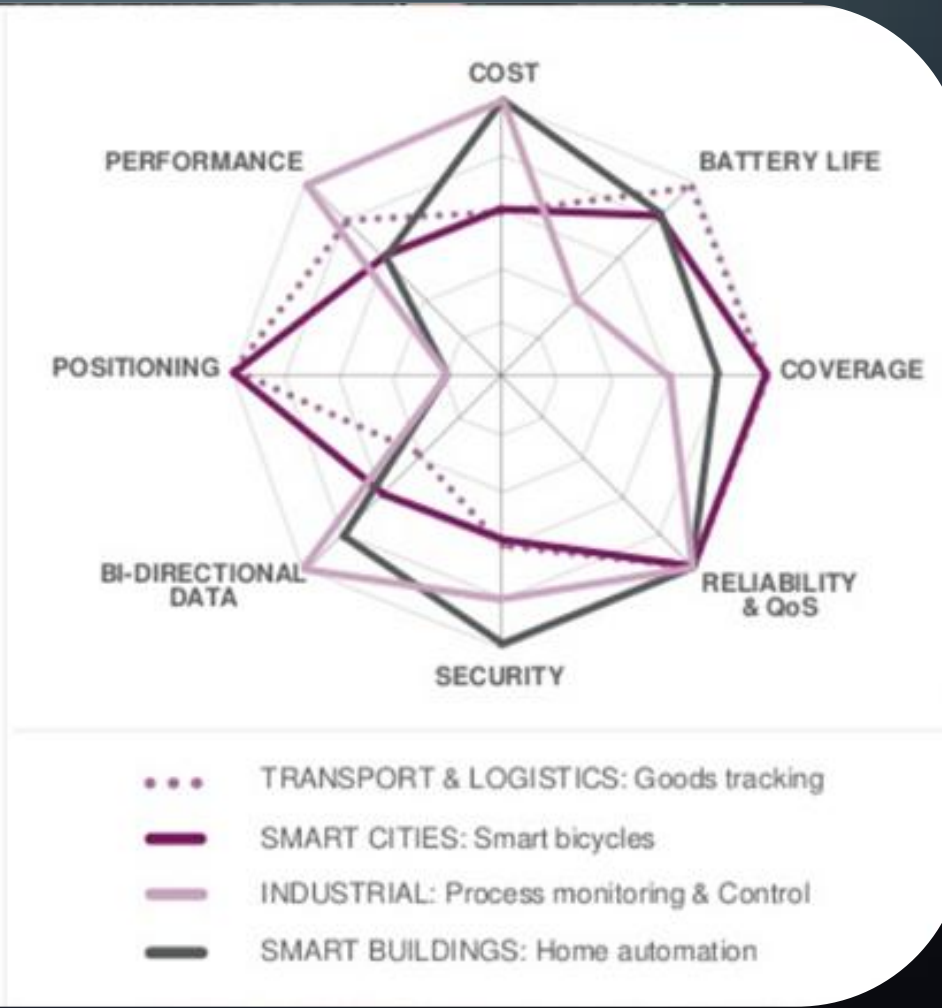
AGENDA

- Overview
- Current State of IoT
- Security Challenges
- Threat Spectrum
- How do we protect ourselves
- What's Next

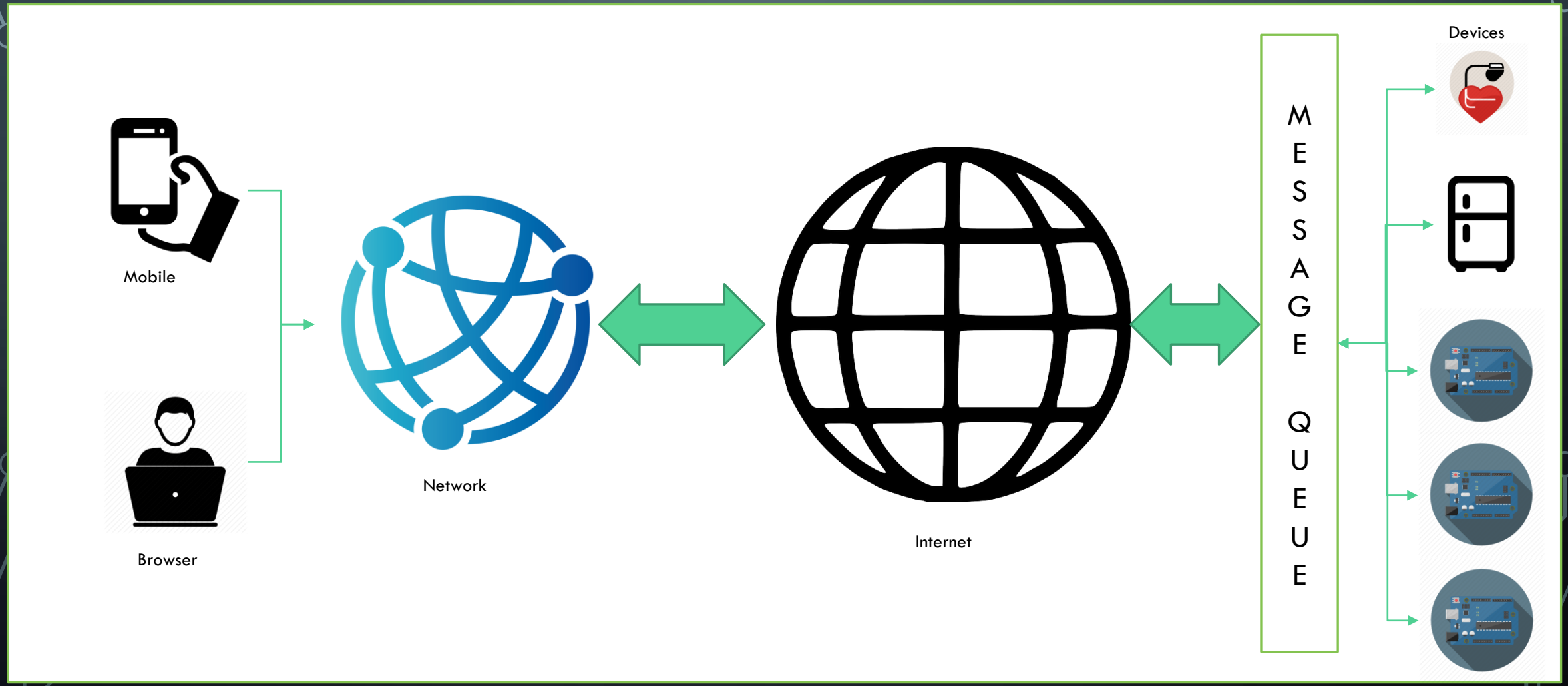
OVERVIEW

- Connected Devices are now everywhere
- IoT is all about scalability of Connected Devices
- A Gartner report predicts over 20 billion connected things by 2020
- Security of IoT is at:
  - Macro level: security of complex system with User management
  - Micro level: At the device level, network

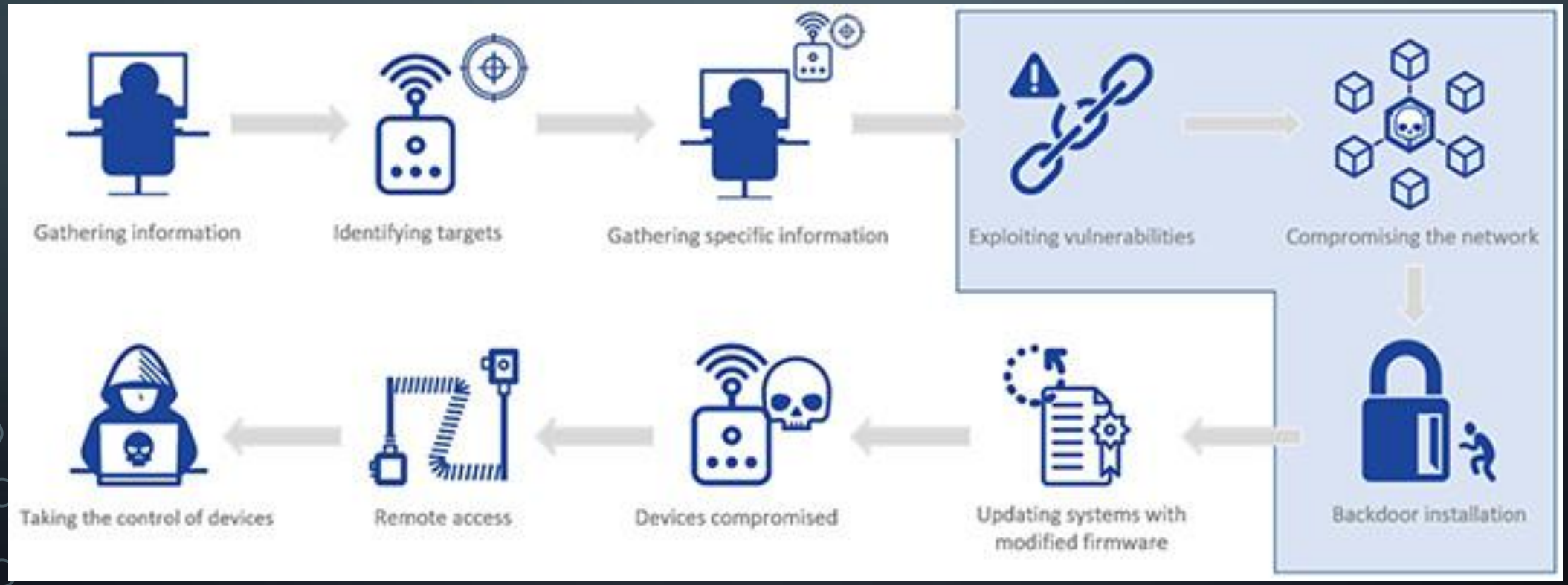
CURRENT STATE OF IOT



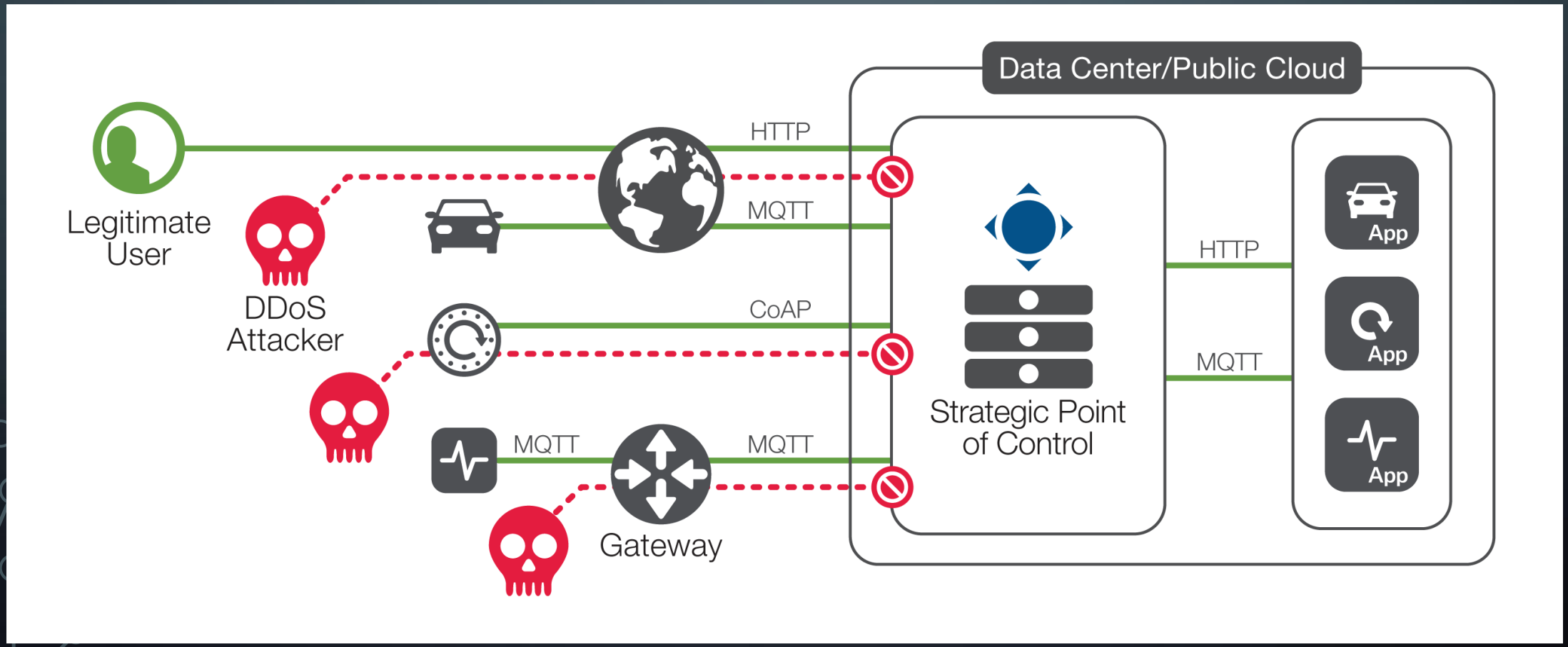
SECURITY CHALLENGES (CURRENT LANDSCAPE)



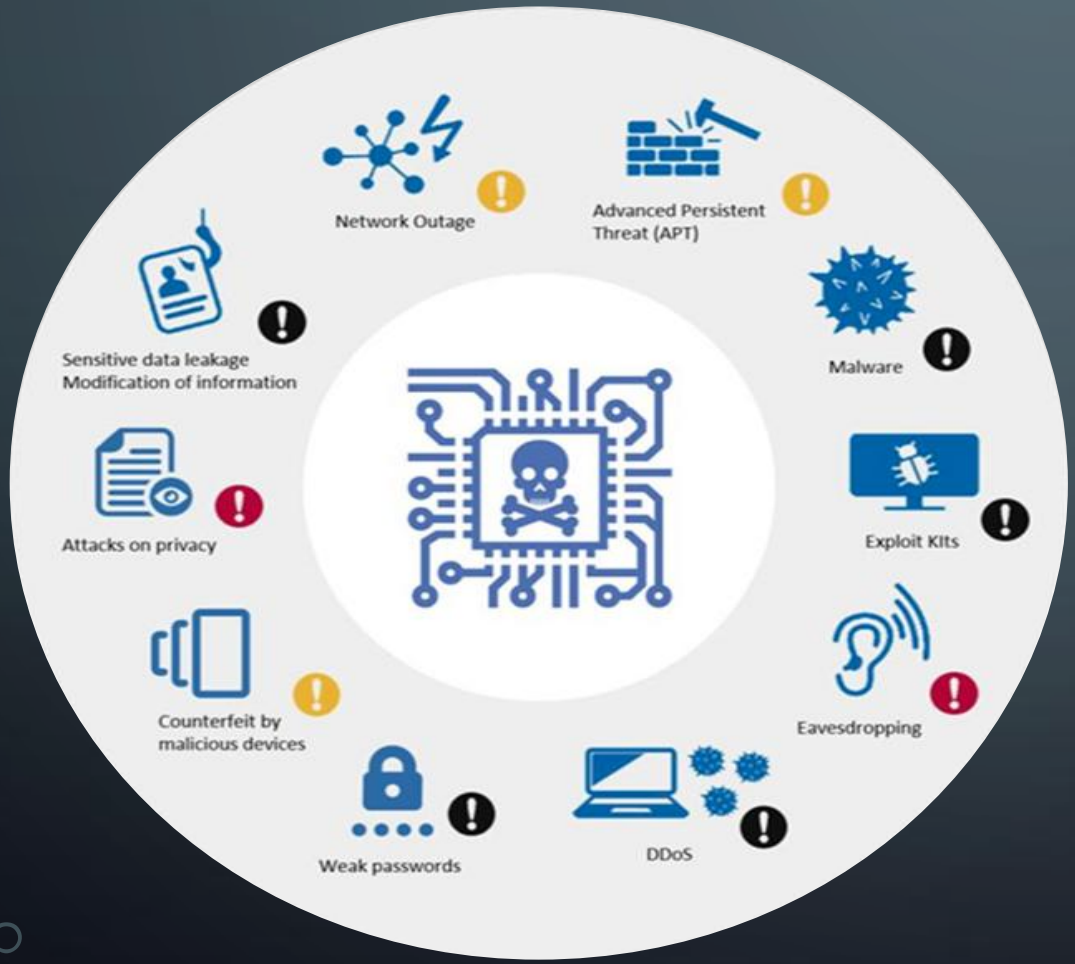
SECURITY CHALLENGES (USER LEVEL)



SECURITY CHALLENGER (NETWORK)



THREAT SPECTRUM



- 70% of IoT devices contain vulnerabilities
- Product design does not consider security
- Adding security during scaling is challenging
- “Edge” device connection an issue
- Devices themselves are insecure due to low processing capability
- Changing protocol landscape also presents challenges
- User credentials also pose a threat
- Low security at home router and gateway levels also worrisome
- Easy to compromise mobile devices

HOW DO WE PROTECT OURSELVES

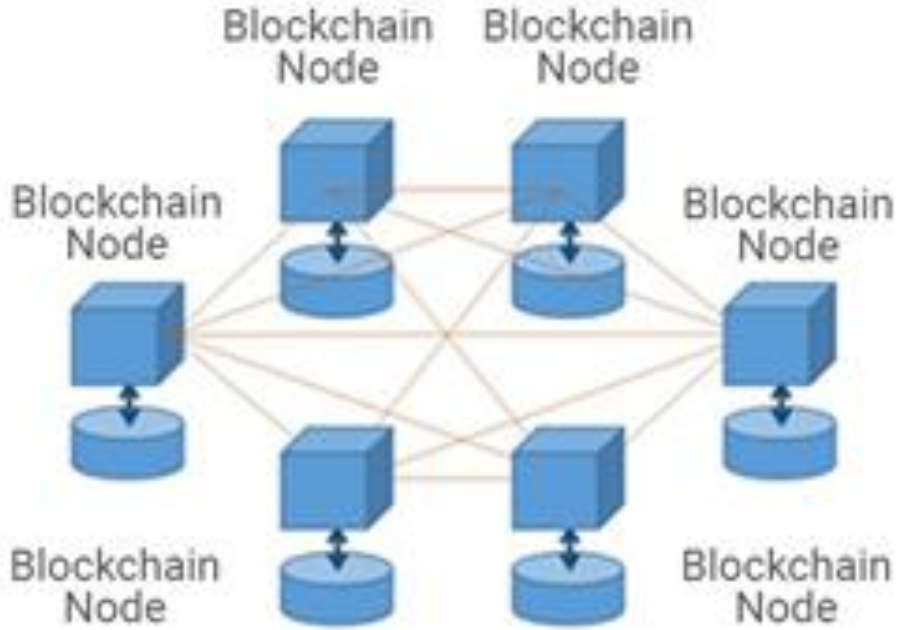
- Devices need to meet a minimum industry standard
  - US senate passed “Internet of Things (IoT) Cybersecurity Improvement Act of 2017” to define the minimum standard
- With the advent of Beagleboard & Raspberry Pi etc., it is possible to get device level security
- TLS security to secure communication with message server
- Role based access to restrict user entry
- 2 Factor authentication/OAuth based logins

WHAT'S NEXT (OWASP)

- Open Web Application Security Project's Internet of Things Top 10 Project
  - Injection
  - Broken Authentication
  - Sensitive Data Exposure
  - External Entities
  - Broken Access Control
  - Security Misconfiguration
  - Cross-Site Scripting
  - Insecure Deserialization
  - Using Components with Known Vulnerabilities
  - Insufficient Logging & Monitoring

WHAT'S NEXT (BLOCKCHAIN)

Mesh Network



Distributed Blockchain

REFERENCES

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- Defining and securing IoT: https://www.helpnetsecurity.com/2017/11/22/defining-securing-iot/

QUESTIONS ?

THANK YOU

ASHUTOSH@EVENIONSOLUTIONS.COM