A WEEK AT THE NRC 2022

NRC Cyber Security Oversight Program for Operating Reactor Licensees and New Reactor Applicants

Office of Nuclear Security and Incident Response (NSIR)
Division of Physical and Cyber Security Policy (DPCP)
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Activity: Question & Answer Session

What is Cyber Security?

Action(s) taken to protect Information and Information Systems from cyber attacks.

What is a Cyber Attack?

In general terms, any type of offensive maneuver that targets computer information system(s) with the objective to gain access or to tamper with it.

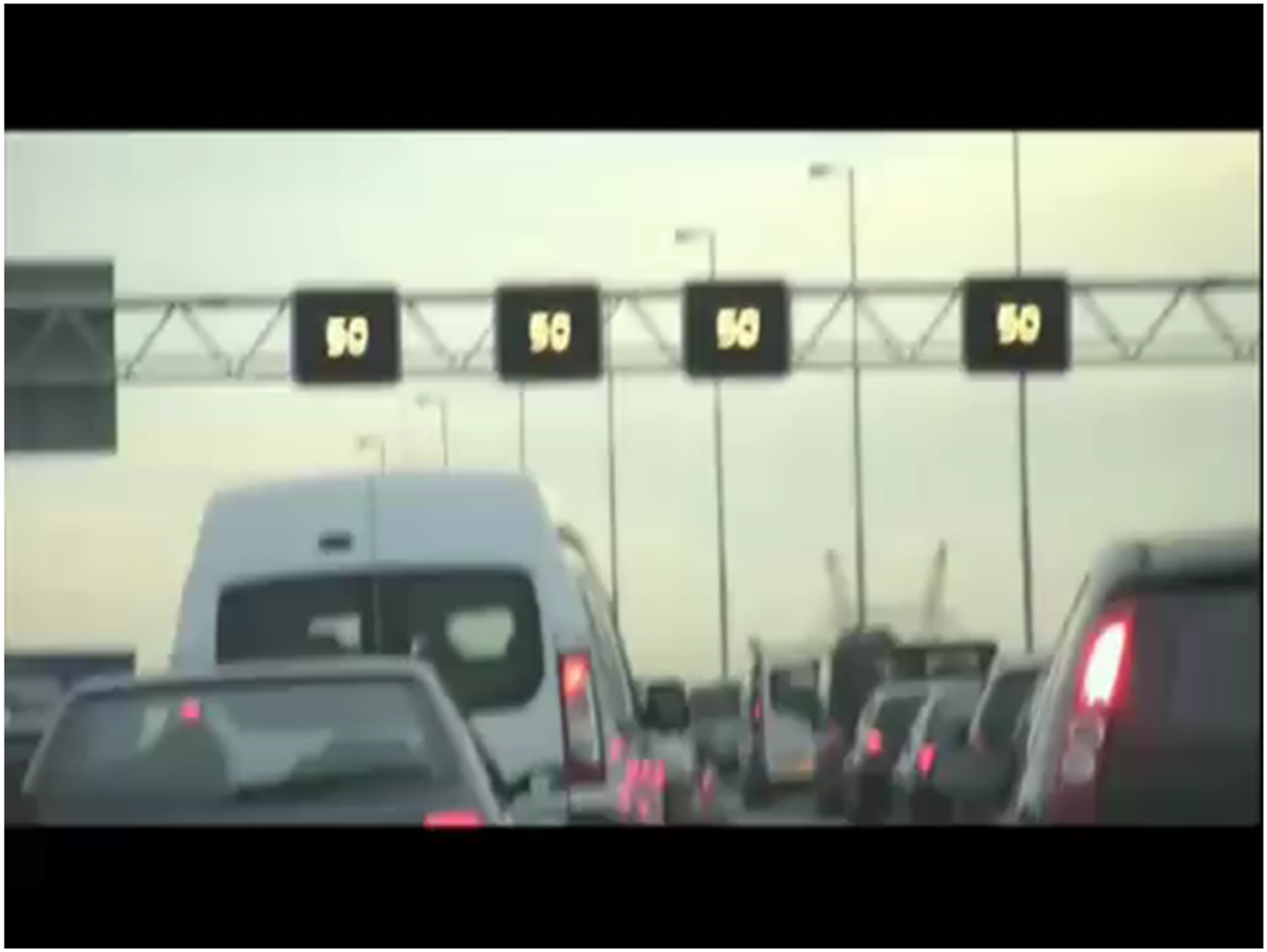
Cyber Attack Examples

Unauthorized access, use, disclosure

https://curtisthementalist.com/have-you-been-hacked/

Cyber Attack Examples

Modification



https://www.youtube.com/watch?v=32JgSJYpL8o

Cyber Attack Examples

Disruption

https://www.youtube.com/watch?v=zcmmFQGxMNU

Activity: Question & Answer Session

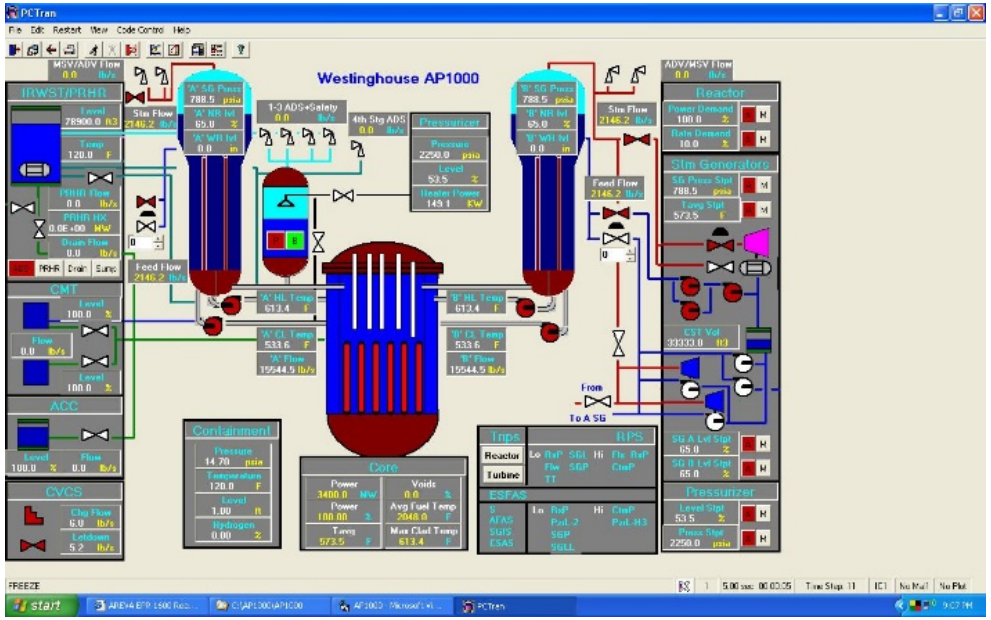
Why Does the NRC care?

Activity: Question & Answer Session

Nuclear Power Plants Are Becoming More Digitized!

Control Room Analog Systems

Supervisory Control and Data Acquisition Systems (SCADA)



AP1000 and Westinghouse DCS

Nuclear Power Plants Are Becoming More Digitized!

Industrial Control Systems (ICS)

Programmable Logic Controller (PLC)

Digital Relays

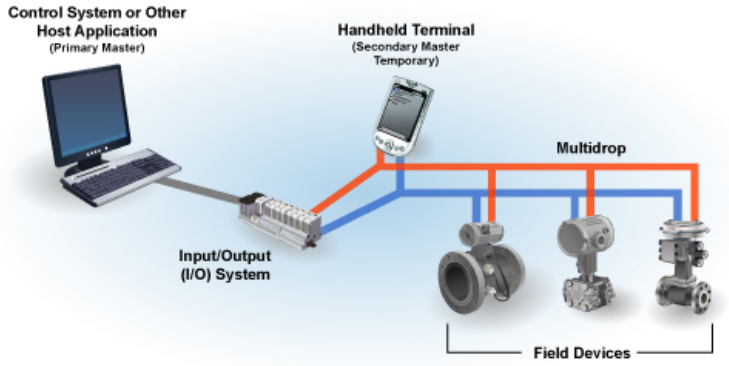
Bus Air Breakers

Digital Instrumentation and Control (Digital I & C)

Digital Recorders

Digital Indicators

Digitized Equipment = Vulnerabilities and Threats



Note: Instrument power is provided by an interface or an external power source that is not shown.

Two Main Controllers

1. Wired

2. Wireless

3. Mobile Media

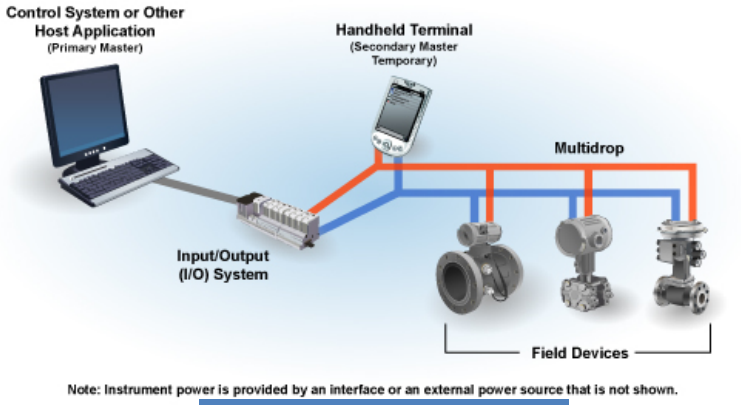
4. Supply Chain

5. Physical Access

Attack Pathways

Attack Landscape

Digitized Equipment = Vulnerabilities and Threats



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Two Main Controllers

Digital devices, systems are used in:

- **S**afety and Important-to-Safety,
- **S**ecurity, and
- **E**mergency **P**reparedness Functions

SSEP Functions

Digitized Equipment = **Vulnerabilities and Threats**

So Why does the NRC Care?

The NRC licenses and regulates the Nation's civilian use of radioactive materials to provide reasonable assurance of adequate protection of public health and safety and to promote the common defense and security and to protect the environment.

NRC Regulatory Process

1. Rulemaking:
Development of Cyber Security Requirements

2. Licensing: Review & Approval
Cyber Security Plans

3. Oversight: Inspections

In NRC terms: 10 CFR 73.54 – Cyber Regulations

- **Requires protection of:**
  - digital computer and communication systems and networks that perform SSEP functions
  - & support equipment

from cyber attacks

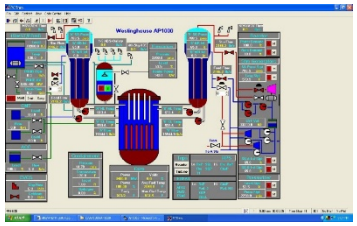
In NRC terms: 10 CFR 73.54 – Cyber Rule

It also requires NPPs to:

- **Establish a cyber security program**
  - **Defense-in-depth**
  - **Security Controls**

Focus: Prevent Radiological Sabotage

Cyber Security Program
Defense-in-depth and Security Controls

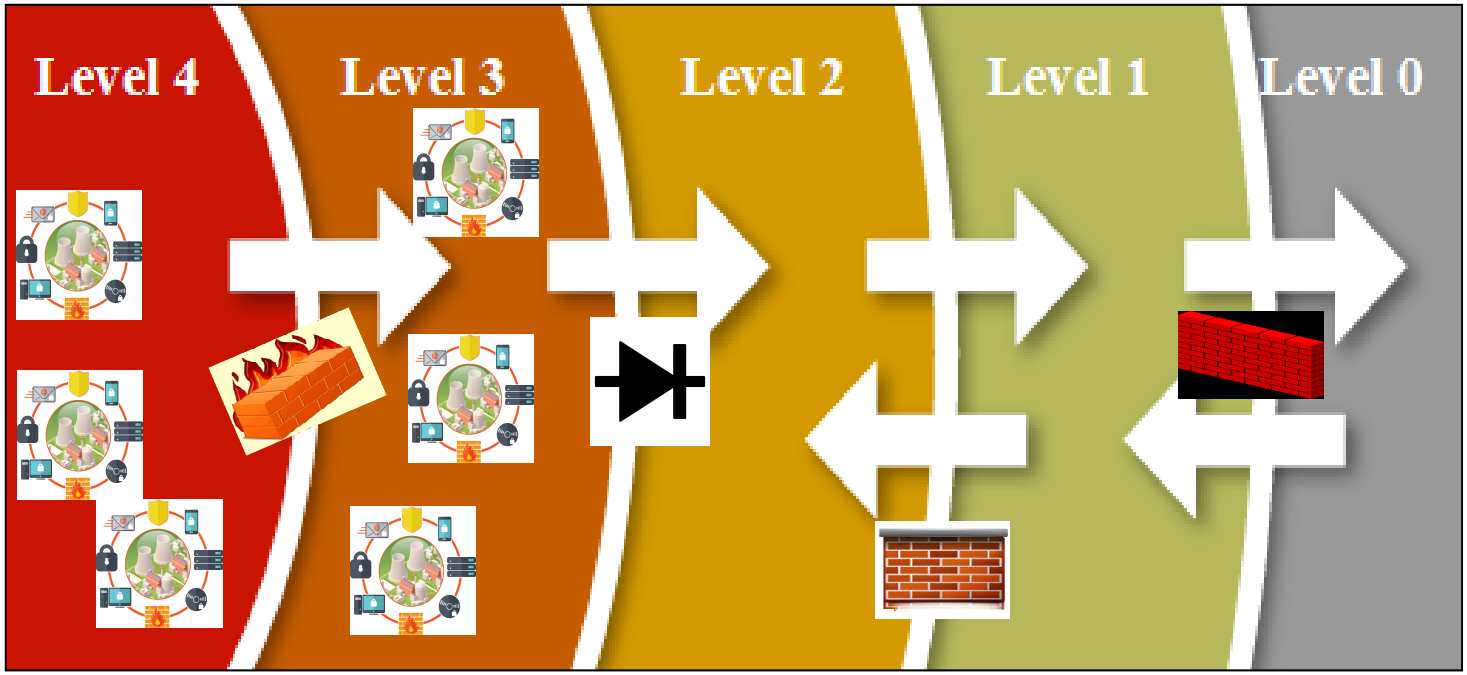


Security, Safety Systems

Site Network

Corporate Network

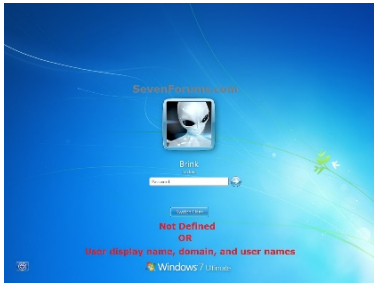
Internet



What is a security control

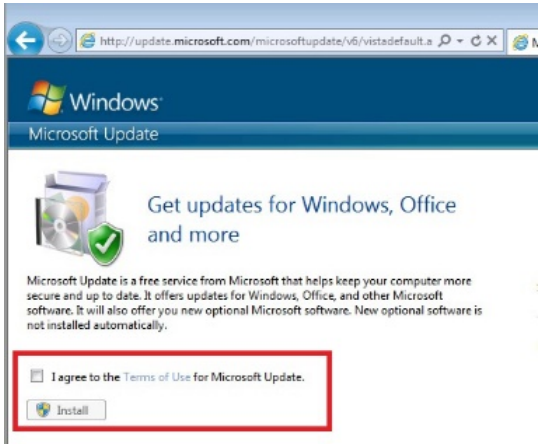
Safeguard or countermeasure prescribed for an information system designed to protect the confidentiality, integrity, and availability of its information and to meet a set of defined security requirements.

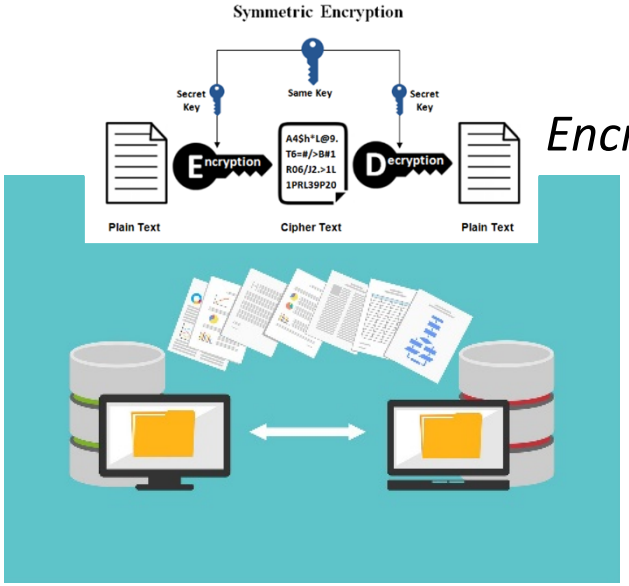
Security Control Examples



Portable Media & Devices

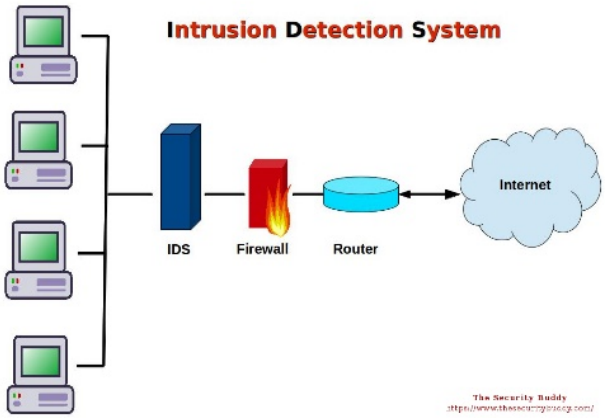
Updates





Encryption

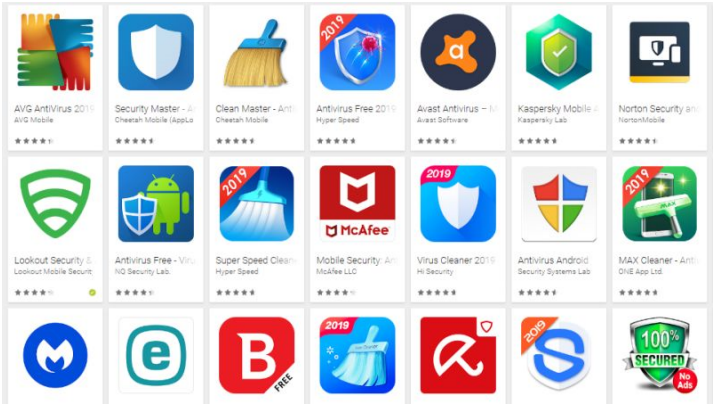
Security Control Examples



Intrusion Detection Systems (IDS)

Physical Access

Supply Chain



Authorized Applications

Summary

- What is cyber security?
- What is a cyber attack?
- Vulnerabilities & threats
- What is the NRC's mission and responsibilities?
- What is Defense-in-depth?
- What is a security control?

Last Thoughts