ScadaExposure

Are Industrial Systems exposed to the Internet?



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- When people speak about SCADA they are actually referring to the ICS world
 - ICS stands for Industrial Control System
- SCADA is a small part of the ICS ecosystem
 - SCADA stands for Supervisory Control and Data Acquisition

• Definitely Engineers stuff, far from people's worries

- It controls and monitor industrial processes
 - Such processes can be critical and/or of National interest
- With SCADA you have an overview of the whole industrial plant process
 - Allows to make decisions and optimizations
 - It's much better than many not-integrated systems that control a little part of the process



- SCADA allows greater automation and intelligence
 - Modern Information Technology applied to Industry

Next question & answer

Who use SCADA?



SCADA components are used in **Small** productions

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Big plants

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Huge plants and networks of plants around the globe

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Huge and Special plants

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- You saw <u>WHO</u> uses SCADA
 - Where automation and control is crucial there is SCADA

Next question & answer

Why is SCADA used?



- Managing this level of complexity would require hundred of workers
 - With an high error rate
- SCADA solves this by managing smaller components (like PLC, PAC, CNC, PID, other embedded systems, RTU, IED) in an automated way
 - Takes decisions based on it's configuration
 - Makes complex or impossible tasks easy



Example

"Shutdown the plant"

- Let's say that the plant have to be stopped
- Someone can't simply switch off the power
- Many Pumps, Valves, Motors have to be operated in the right order, and every step has to be monitored and confirmed by the reading of one or multiple sensors
- With SCADA you can have a Shutdown button



- You saw the <u>WHO</u> and <u>WHY</u> of SCADA
 - Modern Information Technology applied to Industry

Next question & answer

Where is SCADA integrated?



• The industrial ecosystem and the SCADA position





• SCADA is by design integrated in a process





- You saw the <u>WHO</u>, <u>WHY</u> and <u>WHERE</u> of SCADA
 - SCADA is a component of an information-intensive Industrial process

Next question & answer

How do SCADA looks like?



• SCADA systems are a mixture of many different devices ("gears")











- There are five main ICS device families
 - Actuators: the real bridge between digital and physical

Relè, Pumps, Motors, Electro-valves and any other device able to change it's physical status

- Sensors: read and measure

Several sensor and meter are the basics of ICS, from simple contacts to thermostat and pressure meters

Logic: devices that are programmed to take decisions

PLC, PAC and IED are embedded computers that control the actuators using data directly gathered from sensors or execute operations that came from remote systems

- Support: the glue of complex ICS architectures

This set includes many different devices that connect elements of a SCADA infrastructure and convert the data between different protocols and formats (eg. Serial to Ethernet converters, RTU, Protocol Bridge)

Management: the core of the infrastructure

Servers, appliances and workstations that gather the data, store it, visualize it, take decisions and manage the other actors of the process (eg. Human Machine Interface, SCADA Servers, Historian, Telemetry)



• SCADA can then visualized in a dashboard and on HMI



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• Now you have a background on SCADA and the ICS world!

• We created an observatory on the exposure of SCADA devices on the public Internet

www.scadaexposure.com

 SCADA devices should be relegated to specific and private, <u>unfortunately this is not the reality of facts</u>, and we prove it with numbers.