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What are SCADA Systems

The term SCADA stands for Supervisory control and data acquisition, referring to ICS (industrial control systems). ICS systems are used to control infrastructure processes like waste treatment, water treatment, pipelines, facility-based process in things like airports and ships, and industrial processes like production and manufacturing. Though, ICS is not limited to these things. SCADA is a control system, using computers, network data communications and HMIs (Human Machine Interfaces) to manage/control processes in the industrial world. SCADA systems communicate with devices like PLCS (Programmable logic controllers) and PID controllers to interact with plants and equipment.

SCADA is important relating to control systems engineering. There get and analyze data from processes, log the data and display it on interfaces (HMIs). SCADA is essential to industries' controlling and monitoring process with the power to control, monitory and transmit data. They are also able to be accessed and use remotely giving availability from anywhere.

Even though SCADA is helpful, they tend to be targets of cyberterrorism and cyberwarfare attacks. SCADA hardware is secure physically, though mistaken to be secure network-wise because they aren't connected to the internet. The security of SCADA is important because something was to happen many physical systems would be destructed (Electricity, traffic lights, gas transportation, water distribution, etc....). There are 2 major threats and vulnerabilities when it comes to the system's security which is software access and malware, or packet access to the network. SCADA users are addressing these risks, developing special industrial VPN's and firewalls for SCADA networks based on the TCP/IP interfaces. They also now implement regular vulnerability assessments, network segmentation, and incident response, mitigating their vulnerabilities.

Sources:

SCADA Systems - SCADA Systems

SCADA System: What is it? (Supervisory Control and Data Acquisition) | Electrical4U