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### Critical Infrastructures and Mitigation provided by SCADA

BLUF: In recent years with the advancement in technology it has made it much easier to provide services via the use of Critical Infrastructures. Although this is the case it has also made it easier for things to become problematic when dealing with the use of these infrastructures. To help combat and reduce some of these problems we will turn to SCADA (Supervisory and Control Data Acquisition).

Critical Infrastructures and Risks: Critical infrastructure are “systems and assets, whether physical or virtual so vital to the U.S. that the incapacity or destructions of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters.” (CSRC) Some of the risks associated with Critical Infrastructure are data breaches, cyber-attacks, or even internal conflicts like risks of equipment failing or not being able to record data in a certain sector of a company and what not. Another risk that is present is lack of production due to insufficient data. These risks are very important because they can slow production which is needed by people or even completely hinder production.

SCADA and how it helps critical infrastructures: Supervisory and Control Data Acquisition or (SCADA) is “a set of industrial control systems used to control infrastructure processes, facility-based processes, or industrial processes.” ( SCADA Systems.NET) SCADA allows organizations to control processes remotely and or on site, which helps infrastructures. SCADA can also use logic-based rules which allow the operator to make decisions to complete certain actions. (Cole Wangsness 2022) For example if there was too much water being pumped in a water treatment center using SCADA the operator would be able to turn limit the flow of water. Another way SCADA helps infrastructure is because if someone used the hybrid version it would create rules that allow for an operator to detect any abnormalities then from there, they can decide what to do next. ( Cole Wangsness 2022) To add on SCADA can analyze and display data which operators can use to decide what actions to take which cuts down time it takes and makes doing tasks more efficiently. ( Cole Wangsness 2022)

Problems involving the use of SCADA: In the paragraph above we discussed some of the mitigation techniques and how SCADA can be used to help reduce the risks associated with using Critical infrastructures. Although it can be helpful that is not to say that SCADA does not have its own set of issues, because it does. One of the issues revolving around the use of SCADA are they are susceptible to cyber and ransomware attacks. Aside from attacks, another threat is

unauthorized access which can be caused by humans or changes presented. To add on, the systems are not safe from viruses or infections which affect the host control machine. The next threat is having unprotected packet access to network segments. This means “any person sending packets to a SCADA device is in a position to control it.” (SCADASystems.NET)

Citations:

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[https://csrc.nist.gov/glossary/term/critical\\_infrastructure](https://csrc.nist.gov/glossary/term/critical_infrastructure)

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Wangsness, C. (2022, September 20). *What is a SCADA System and How Does It Work?*

OnLogic Blog. <https://www.onlogic.com/company/io-hub/what-is-a-scada-system-and-how-does-it-work/>