

# SCADA Systems

SCADA Systems, also known as Supervisory Control and Data Acquisition Systems, are a computer-based system used to monitor and control industrial processes. It collects data from sensors, machines, and equipment in real time, allowing operators to supervise operations remotely.

SCADA Systems are mainly utilized in industrial plants, water treatment facilities, and energy facilities. While it enhances efficiency and automation, it also introduces security vulnerabilities that could lead to terrible consequences if exploited.

## Vulnerabilities in Critical Infrastructure

It's important to understand the consequences of disruption of these systems, in order to understand its vulnerabilities. The nature of these systems attract threats, if an attack were to be successful, there could be significant economic, environmental and safety impacts.

The first major threat is unauthorized access. Most SCADA Systems lack modern authentication systems, allowing for unauthorized personnel to manipulate control systems, infect the system with viruses and expose even more vulnerabilities. Another threat worth noting is the lack of packet control protocol, essentially giving access to anyone sending packets to SCADA devices.

## Mitigating Risk with SCADA Systems

Despite the general security of these systems not being up to date in most cases, there have been improvements in the security that mitigate risk. The real time monitoring feature serves as a useful tool to combat risk by constantly reporting on the overall operation of the systems, allowing for operators to take action in the case of alarming conditions. The utilization of firewalls and VPNs have proven effective at mitigating such risks.

## Conclusion

SCADA Systems are essential to keeping infrastructure operational and effective, however the vulnerabilities that exist within these systems proves to be a challenge due to the amount of consequences involved in the case of compromised systems. If SCADA systems are to remain operational and safe, it's important to implement proper security protocol. Just by implementing things such as authentication, threat detection, secure communication protocols, SCADA Systems can mitigate the risks while continuing to be operational and effective.

## Sources

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