

Ethernet Process BUS: Assuring its availability

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Process bus is a critical system when deploying an IEC61850 substation. Protection tasks to be performed by IED's greatly depend on its availability.

This paper covers the main issues to take into account in order to provide the ethernet process bus both, security and availability. This paper tries to answer the following questions:

- What are the main threats and vulnerabilities that the IEC61850 ethernet process bus is to face?
- What can be done to mitigate them?
- How the IEC61850 ethernet process bus can be monitored so that failures can be prevented?
- How robust are the protective algorithms when process bus failures are present?

Vulnerabilities will be evaluated by analyzing the different IEC61850 Ethernet process bus points of failure, i.e., those related to Ethernet technology, those related to the communication infrastructure equipment (as individual nodes and as an independent system), and finally those related to the behavior of the protective IED's when failures are present in the process bus.

Main process bus threats may come from defective IED's (note that a problem in an IED network interface may imply a whole process bus failure), or may be originated by unwanted IED's configuration/maintenance errors.

Once possible threats and vulnerabilities have been identified, a second paragraph will propose possible solutions that will eliminate the threats and will properly manage the vulnerabilities. This paragraph will also cover different options to real-time monitor the process bus, which will allow either a quick problem resolution or even better, problem avoidance.

Finally, the last paragraph summarizes the main recommendations to make the process bus always available.