

Lesson Learned

Loss of EMS Communications Due to Lack of Validation on EMS Database RTU Configuration Parameter

Primary Interest Groups

Reliability Coordinators (RCs)
Balancing Authorities (BAs)
Transmission Operators (TOPs)
Transmission Owners (TOs)

Problem Statement

An energy management system (EMS) lost communication with some remote terminal units (RTUs).

Details

One point on a new RTU that was being brought online for commissioning was incorrectly configured in the EMS database. This resulted in the termination of the remote communication server (RCS) process on the primary supervisory control and data acquisition (SCADA) server. The RCS process coordinates the polling and commands of RTUs and the insertion of telemetry into the real-time database.

When the automatic failover to the alternate SCADA server occurred, the RCS process terminated again because the issue was with the database. Similarly, when the failover to a backup SCADA server at an alternate site occurred, the RCS process again terminated. As a result, the EMS lost communications with all RTUs. The state estimator and contingency analysis were available with stale data. If necessary, operators could modify the last accurate case to reflect current system conditions.

The change was tested in the quality assurance system (QAS). Displays were validated and logs were reviewed; however, QAS testing did not reveal the issue because this parameter was not checked in the database editor.

Corrective Actions

- The incorrect parameter configuration was corrected.
- A script was run to confirm this configuration error did not exist elsewhere in the database.
- The procedure was revised to confirm that the EMS database RTU configuration was correct during QAS prior to uploading a database to production.
- A case was created with the EMS vendor documenting the defect. The vendor will provide a new release with the defect resolved. The resolution includes:
 - Preventing incorrect parameters from being entered in the database editor.
 - Validity checking in the RCS software to avoid termination due to incorrect parameters.

Lessons Learned

- Evaluate parameters being checked by the database editor to determine if there are any gaps in the parameter validation. If so, establish procedures for manual validation.
- SCADA software should be designed to generate error messages and avoid termination upon an incorrect parameter.
- As a normal practice, recovery strategy and procedures should be developed to facilitate quick recovery from failed updates.

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