Challenge 1 Dataset Format

Challenge 1 uses a set of 4 ASCII encoded text files for the input data of each problem instance:

1. Power Flow Network Configuration Data File (case.raw)
2. Cost Function Data File (case.rop)
3. Participation Factor Data File (case.inl)
4. Contingency Description Data File (case.con)

These 4 files are formatted according to some common data file formats used in the power system industry. Only some of the fields in the files are used for Challenge 1. Appendix A of the Challenge 1 **Problem Formulation** document provides a detailed description of these formats and which of those elements are used by Challenge 1.

Each Challenge 1 dataset consists of two parts:

- Real-Time   (used in Divisions 1 and 3 scoring; 10-minute time limit)
- Offline   (used in Divisions 2 and 4 scoring; 45-minute time limit)

These two parts are the same except for the base case operating point. This point is represented by 5 variables (bus voltage magnitude in pu, VM; bus voltage angle in degrees, VA; generator real power output, PG; generator reactive power output, QG; and initial switched shunt susceptance, BINT) described in Appendix D.4 of the Formulation. These variables are mapped to the raw file in Appendices C.3 (Bus Data; A2.2), C.6 (Generator Data; A2.5), and C.9 (Switched Shunt Data, A2.8) This information can be used as a starting point for various algorithms. In general, we make no assertion of feasibility or optimality for this starting point. We make no assertion of feasibility for the Offline version but the Real-Time version, which is derived from an economical unconstrained solution, should be feasible but not optimal.

Each of the two parts consists of multiple network model folders labeled Network_NN*-nn. The NN is a two digit number given to an individual Network model and the nn represent two digits indicating the number of scenario folders in the Network folder. The * can be either R for Real-Time or O for Offline. The files in both parts, R and O, are the same except for the case.raw files, which contain the starting information variables VM, VA, PG, QG, and BINT in the R part but not the O part.

Associated with each scenario instance are four case files (case.con, case.inl, case.raw, case.rop). Two of the case files change with each scenario instance (case.con and case.raw) and sometimes case.inl as well. These are kept in the scenario folders. Case files that do not change (case.inl, usually, and case.rop) are kept in the network folder. The file

inputfiles.ini in the network folder summarizes where each type of case file is to be found. Also in each network folder is a readme.txt file with network configuration information (the number of buses, loads, generators, transformers, etc.) and an explanation of the inputfiles.ini file. There may also be a check.txt file with additional configuration and source information.