OVERVIEW

Power System Enterprise Suite (PSES) is a central application which retrieves and manages Disturbance Record DR files from remote substations. Configuration (parameterization and configuration) of substation IEDs from the central location is also managed by this application. The user is not required to locally connect to the IED every time for setting and configuration access.

WHY PSES?

Utilities face challenges in maintaining and managing IEDs installed in substations/power plants distributed across multiple locations. PSES provides a solution to this problem by enabling the utility to use a central monitoring system. For increased reliability it supports redundancy, enabling the utility to establish geographically separated mirrored control centers with redundant servers at each location as shown in the architecture below in Figure 1.

PSES FEATURES

- Hierarchical modelling of substations and IEDs
- Enables configuration of IEDs from a central control center
- Backup and version management of setting and configuration files of IEDs
- Retrieval of disturbance records from devices
- Storage of disturbance data for immediate and future analysis
- Enable analysis of disturbance data
- Online health monitoring of devices
- Authentication and access control of assets based on roles
- Communication alarms and events list
- Robust redundancy support

PSES COMPONENTS

PSES consist of a configuration server and a client interface. The configuration server is used for all configuration inputs to the system including the modelling of substation devices and their communication settings. The application provides support in maintenance of the system and individual substation equipment. It is possible to remotely configure the substation IEDs through this interface. The client interface provides a subset of the server functions in any client machine connected to the network. This interface is used for health monitoring, alarm monitoring and to access the disturbance data downloaded from remote locations. It also provides audit trails and activity history of each configured user in the system.
PSES HELPS UTILITIES IN MULTIPLE WAYS

Hierarchical Modelling
PSES offers an intuitive, easy to understand model, displaying all substation devices in a hierarchical tree of substation assets. All IEDs, protection equipment, recorders, event loggers and gateways can be represented in this hierarchical model. The model is organized into network, substation, bay and device levels which can be grouped for operational convenience.

Disturbance Data Handling
Comparative analysis of disturbance data generated by devices at various locations across the network has been a challenge for protection engineers and system operators. Along with Kalkitech substation data concentrator, PSES collects disturbance data from various sources including event loggers and protection equipment. This data is made available in a common format for further analysis. PSES also provides a visualization interface for viewing and analyzing disturbance records. Protection operation/substation events from event recorders are also displayed to aid effective analysis of disturbance events.

The disturbance data is tagged and archived in a central database and users can initiate analysis of any past fault.

User Authentication
PSES includes a mechanism for remote configuration of substation equipment. The system should be configured to ensure access to authorized users only. PSES provides configurable user roles that can be assigned to individual users. Activities performed by each user is logged by the system, creating an audit trail.

Remote Configuration
PSES enables configuration/programming of remote IED from a central location using the vendor supplied tools. The system automatically archives the configuration into backup files after modification. PSES allows easy retrieval of archived configurations along with an audit trail. These backups are mirrored into redundant storage locations.

Disturbance Viewing
PSES is equipped with an optional module to view waveforms and phasors and analyze the disturbance data retrieved from various devices.

Online Device Monitoring
The runtime view of PSES provides details about the status of each of the configured assets. This includes:
- NMS Information mapped through SNMP
- GIS status through a map view
- Alarms and events filtered for a particular device or group of devices

Redundancy Support
PSES supports hosting of the control center in multiple locations with redundant servers at each location. Redundancy Manager of PSES synchronizes user files and the database between redundant servers. Failure are automatically detected and switchover to the redundant system occurs automatically.

PSES SYSTEM REQUIREMENTS

Client Software Requirements
- Operating systems supported: Microsoft Windows 10, 8, 8.1, 7, Professional
- Dot Net framework 3.5 or above

Client Hardware Requirements
- 2 GB RAM (available to PSES applications)
- Dual Core 2 GHz processor
- Display supporting minimum 1024 x 768 pixels

Server Requirements
- Redhat Enterprise Linux 6/2 (or higher) – 64 bit (for redundancy and scaled up deployments)
- 16 GB RAM, Quad Core 2 GHz Processor (or higher)