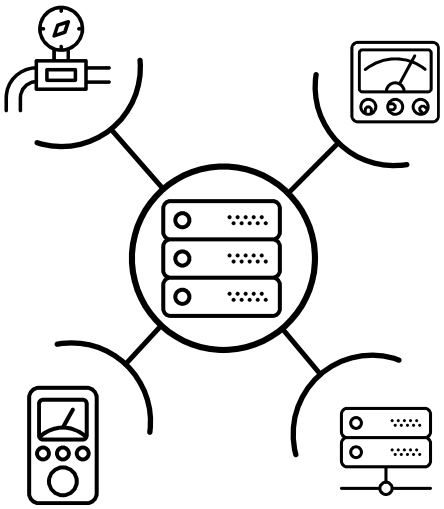
NetVision SCADA system

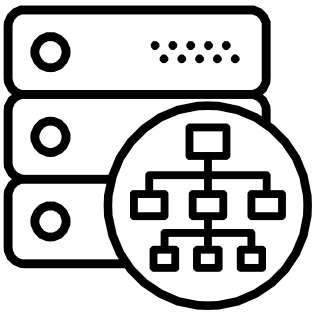
Basic description

- Process supervision and control in real-time
- Distributed client-server architecture
- Scalable – can be used with small systems (one computer) and with big centres keeping performance and reliability
- Communication protocols
- Process data database
- HMI – Visual model
- WEB
- Lists
- Archive/Trends
- Monitoring system performance
- Dual servers – hot backup
- Engineering/Parametrization

Communication protocols

The system supports a big number of communication protocols (IEC 870-5/103, IEC 870-5/104, IEC 61850, MODBUS serial and TCP/IP, TASE.2, DNP3, Courier, OPC interface, ...). The same machine can have connections to several communication channels, on several communication protocols.



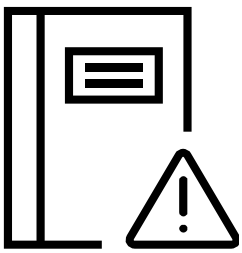


Process data

Process data is organized into a hierarchical structure which copies the technological hierarchy of the supervised plant and process. There are four basic types of data, differentiated by their processing and interpretation:

- **Event** – a signal with an enumeration of states. Processing of every state is defined.
- **Numerical** – integer (signed or unsigned) or float/double data.
- **Counter** – numerical type of a value that can only be increased.
- **Group** – a group of other data.

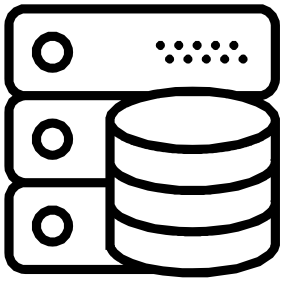
Model of process data contains definitions and instances of data. An instance of data has a fixed, and dynamic part. The fixed part consists of a type of data the item belongs to, identification of the item and data, item description, value unit, and the unique key. The fixed part of process data has some semantic data that allows automatic model creation out of the supervised model. The dynamic part of data includes a timestamp, value, quality and status.



Lists

Depending on the parameters of processing, process data enters event, fault and alarm lists. Events can exit Fault lists if the correct or appropriate state comes from the system, and alarm lists clear all events the user sees and confirms.

Archive



Every process data can be archived. There are two types of archives; sequential stream of data as it changes in time, and state snapshots that is saved periodically. By parametrizing of Archives it is defined how long the data stays in the database. Processing sequences of data, periodical reports (15 minute, hourly, daily, monthly…) The system supervises database size and erases data according to data group parameters.

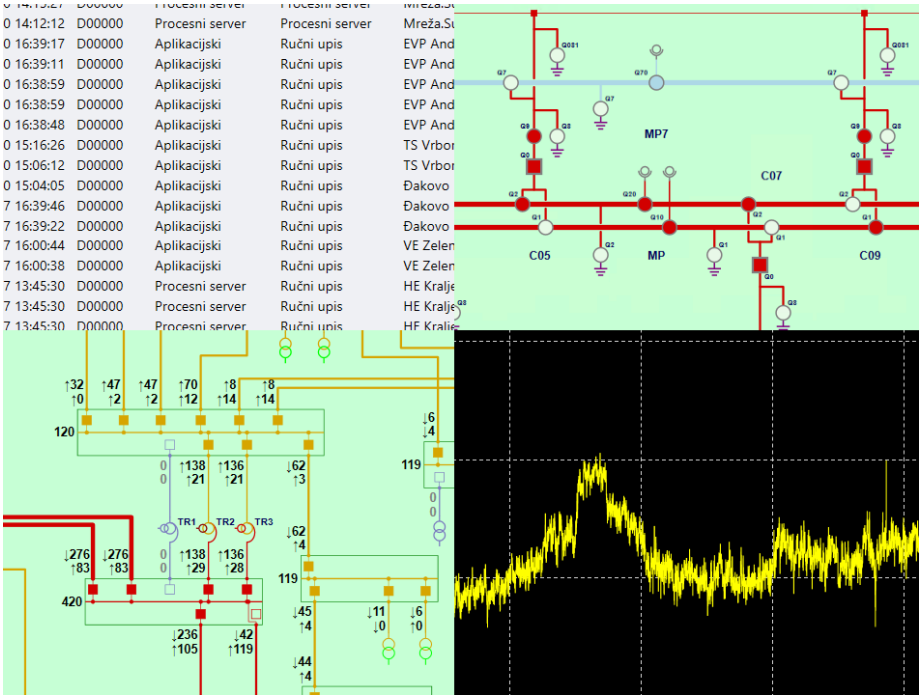
SCADA client, WEB client

Users supervise the process and controls it through the SCADA client. The SCADA client can be a direct LAN client, or a WEB client.

SCADA client is connected to all servers and their data can be combined in displays with dynamic graphic items that are refreshed in real-time.

Displays are organized into a visual model with mutual navigation. Objects in displays can be configured to navigate to and inspect process data.

The client supports GIS integration where map backgrounds are overlaid with dynamic data.



Monitoring the system

The service for system monitoring (WhatsUp) supervises the uptime of all servers and clients and informs the user about activity and state of all components.

User management

End users of the system are allowed to perform functions depending on the role that they are assigned.

Multilingual

Localization of the system is supported, with the ability to add new languages. The user can choose between existing languages, and the administrator can add a new language.

System parametrization

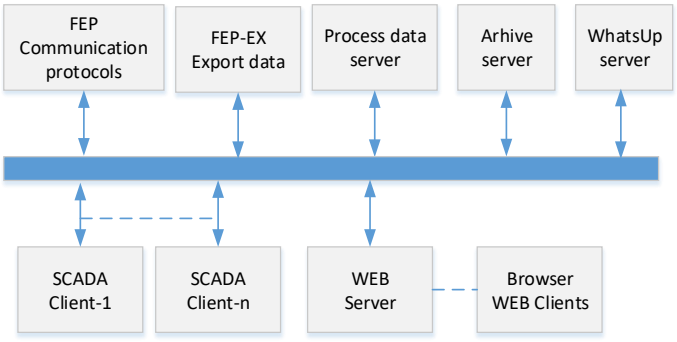
The system supports editing of existing graphic symbols, adding new ones, editing display styles, importing standardized files, etc...

There is a library of ready symbols arranged by themes for use in the SCADA systems in:

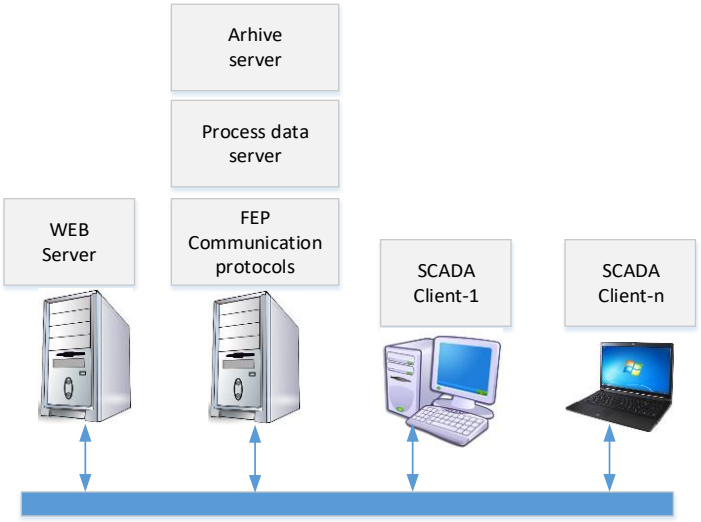
- Power engineering (switches, breakers, generators, transformers, power lines, motors, capacitors, ballast, regulators, relays, counters...)
- water supply and sewerage (pipes, pumps, motors, pools, regulators...)
- road traffic (roads, traffic counters, variable-message signs, meteorological data, ...)
- industry (gas pipes, oil pipes, pumps, ...)

Client-server architecture

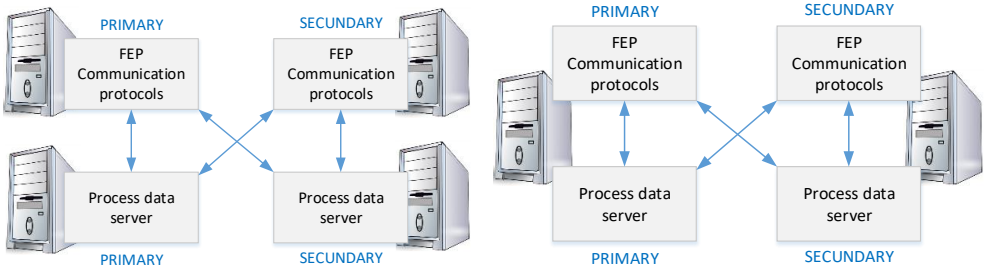
The system has a client-server architecture. Twoway exchange of data takes action through TCP/IP. Several servers and clients can be installed on one machine, or they can be installed in a distributed fashion, on as many machines as there are services or clients. This makes the system distributed and scalable. Critical components can be made redundant in a dual configuration, installed on two machines (dual hot backup).



System architecture



Distribution of services on hardware



Dual configuration with four and with two machines