

# Upgrade of SCADA system in remote control centres of Elektra Zagreb and Elektroslavonija Osijek

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## 1. INTRODUCTION

Elektra Zagreb (Distribution System Operator) spans the area of 2 550 square kilometers. In addition to a plant placed in the center of Zagreb, plants at Sv. Ivan Zelina, Samobor, Velika Gorica, Zaprešić, Dugo Selo and Sveta Klara take care on the supply of the electric energy to buyers.

Elektroslavonija Osijek (Distribution System Operator) spans the area of 4152 square kilometers representing the fourth biggest Distribution System Operator of the Croatian Power Authority (HEP ODS).

Investments into upgrading of the existing equipment are indispensable to fulfil these basic DSO targets as well as its new roles which have come to light due to the liberalization of the electric energy market. The main reasons for the upgrade are:

- The producer of the hardware server equipment seized support for the stated equipment in 2013 [1] and the hardware equipment had to be replaced which automatically meant the replacement of the software equipment;
- The producer of SCADA applications has been abandoning its support to Tru64 UNIX software platform;
- Implementation of new and enhanced existing SCADA software functionalities.

## 2. HW AND SW UPGRADE

The logical scheme of the new control system can be seen on the following picture:

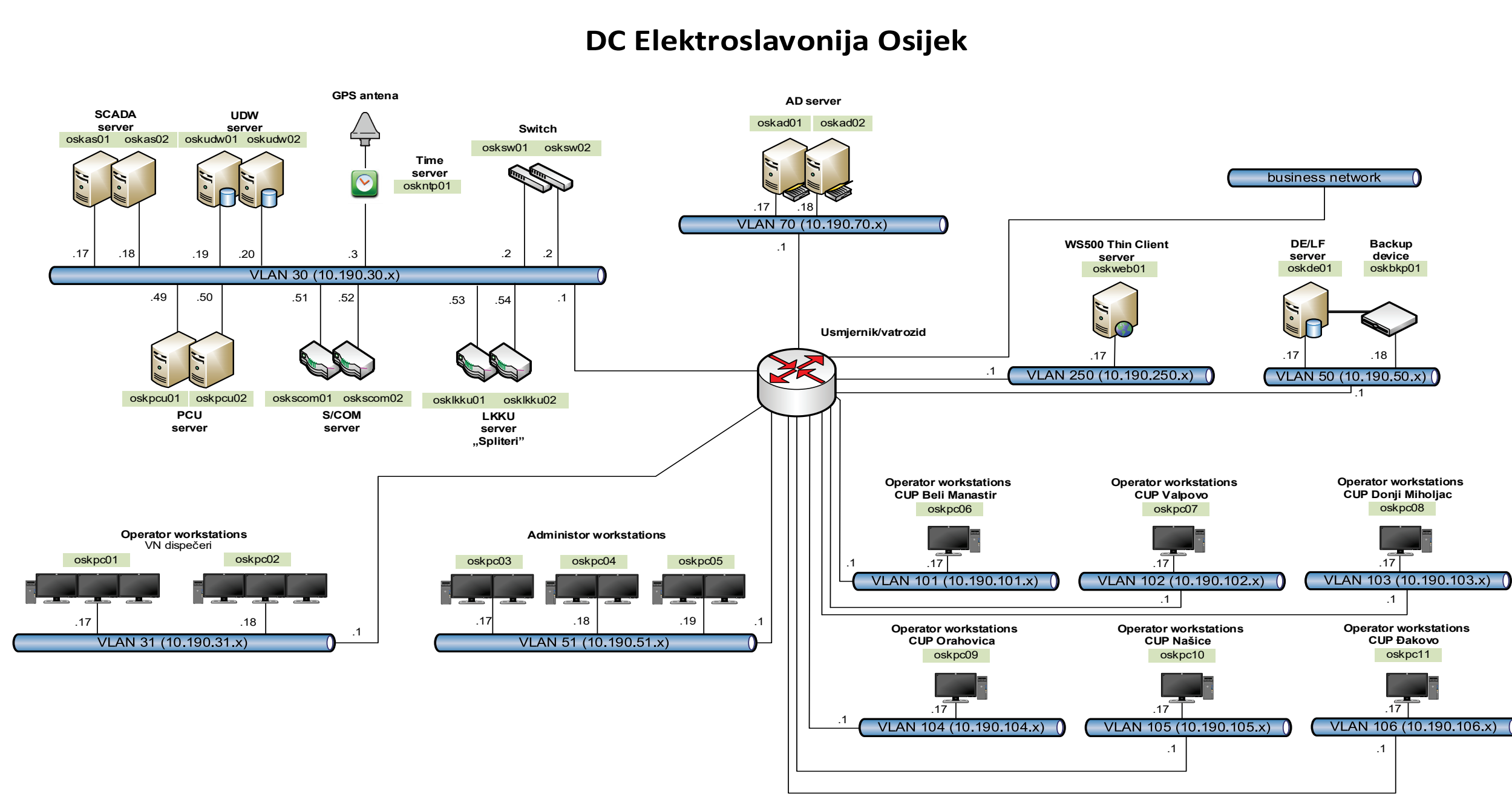


Figure 1 Block diagram of the new SCADA system at Elektroslavonija Osijek

New hardware system components (not existing in their current system configuration) on which part of functionality of the new SCADA software is distributed are the following:

- Active Directory servers – servers intended for user account control; and
- Process Communication Unit (PCU) 400 servers – communication so-called front-end servers.

Computer Operating Systems in the new SCADA System have been upgraded to new versions in accordance with Table I while the Data Engineering and Utility Data Warehouse data bases are based on the most recent technology of Oracle Data Base.

Computers	OS (existing system)	OS (new system)
SCADA, UDW	True64 UNIX	Red Hat Enterprise Linux 6.5 64b
PCU400, Web, DE	Windows Server 2003	Windows Server 2008 R2 64b
Operating stations	Windows XP	Windows 7 64b Pro

Table 1 Existing and new SCADA system Operating Systems

The existing SCADA system software has been upgraded from version 2.3 to version 6.4 enabling the Employer to work with a whole range of new and enhanced functionalities:

- Counting of events in the alarm list as well as in the event list on the basis of various criteria (priority, etc.);
- User friendly lists – alarms, events, chronology (sorting, filtering, easier creation of own filtered lists, export to Excel files, etc.);
- Dynamic Contour Coloring on the basis of measurement levels: clear and intuitive visualization of voltage disturbances;
- Advanced Real Time Calculations – user oriented interface for defining complex calculations on real time data and historical data based on the MATLAB software package;
- Tabular presentations – software module that enables users to define complex interfaces based on real time data: list extracts, positioning in a certain queue, defining of the display size, hiding of selected columns, etc.;
- Multilanguage support;
- Numerous “smaller”, but important novelties (permitted manual entry without blocking of data collection, possibility to configure an alternative data source for individual indications, etc.);
- The number of characters for EXTERNAL\_IDENTITY parameter has been increased to 40, while for the IDENTIFICATION\_TEXT it has been increased to 60;

## 3. PARALLEL SYSTEM OPERATION

Končar has developed its own in-house solution for the needs of the migration process (the transitional period during which simultaneous operation of the existing and the new SCADA system is required) and to solve the problem of existing remote terminal units that do not have a possibility of a simultaneous communication with more than one supervising center

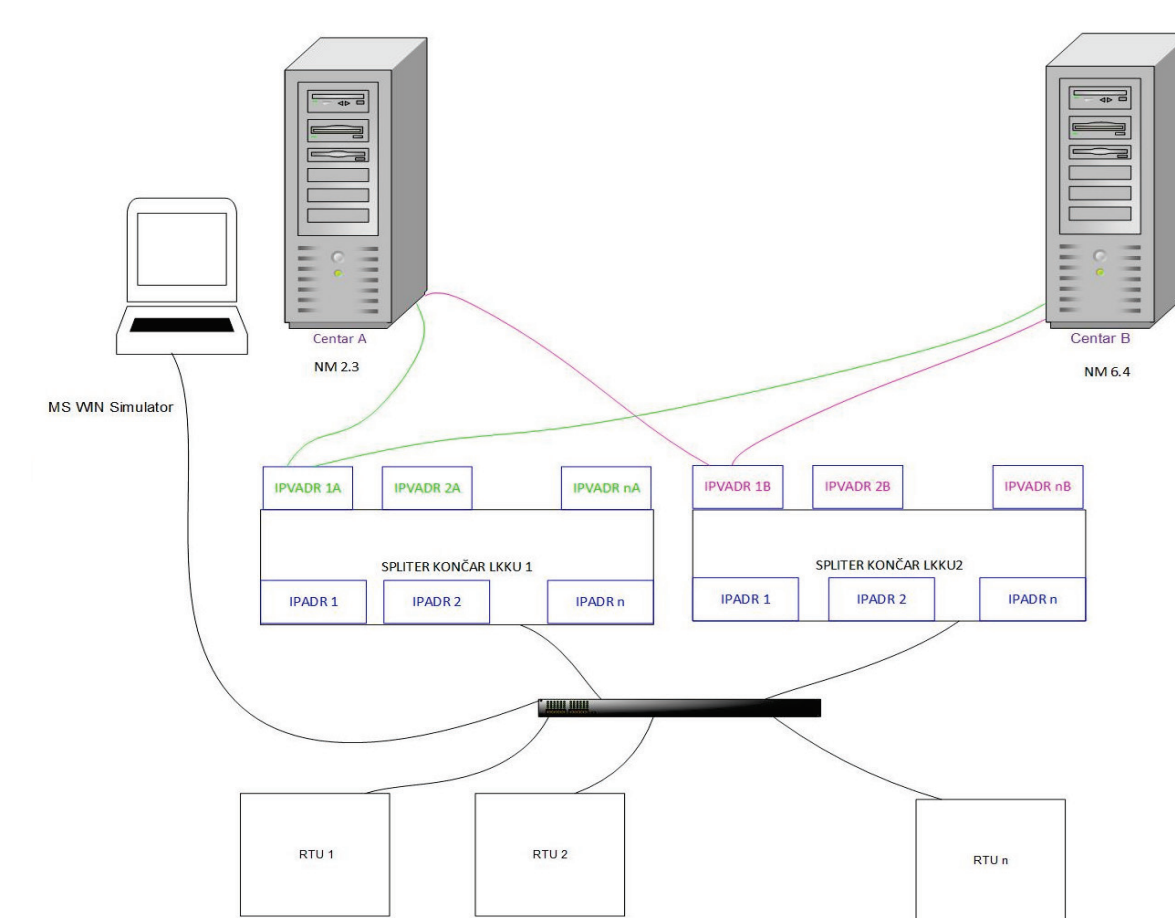


Figure 2 Parallel system operation

## 4. CONCLUSION

The upgrade of the SCADA systems in the remote control centers of Elektra Zagreb and Elektroslavonija Osijek has given the users a modern SCADA system keeping up with the latest operating systems and advanced SCADA and DMS functions.