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Case Study

ČEPS Controls Transmission System with Raydesk

ČEPS is responsible for the operation and development of transmission system facilities in the Czech Republic, as well as for parallel operation with the power systems of neighbouring countries via cross-border tie-lines under UCTE rules. The principles of ČEPS activities in its capacity as the operator of the transmission system, a natural monopoly, are set out in the Grid Code which is in line with Directive 96/92/EC.



ČEPS is a licensed Czech transmission system operator according to the provisions of Act No. 458/2000 Coll. The Company provides safe and reliable electricity transmission for users of the Czech transmission system within European interconnected power systems.

Business need

- Replacement and expansion of existing Sun Ray terminals for LAN access with Solaris 2.5 and QNX 6.3 machines.
- Provide ČEPS users with access to a new realtime dispatcher control system on the QNX platform without an impact on its functionality, reliability, and security.
- Stability and high availability of QNX applications through thin clients.
- Ensuring security and a complete physical separation of the realtime operation from regular ČEPS LAN.

Proposed solution

- Sun Ray 2FS and Sun Ray 2 thin clients for ČEPS technical department workers who need to access the dispatcher control system for their work.
- 13 workplaces with dual-head EIZO monitors and Xinerama for SCADA developers.
- 71 standard workplaces with LCD monitors for other users.
- Optimised deployment of the Phinx connector for displaying QNX applications on X11R6.
- Separation of LAN with Sun Ray terminals from the rest of the IT infrastructure.
- Fail-over set-up of Sun Fire X2200 servers running the Red Hat Linux operating system.
- Sun Ray Server 4.0 and Stickfish Raydesk 2.1.

Solution benefits

- Access to dispatcher control system applications through thin clients for both internal users and ČEPS customers without a need for building a new network cabling.
- Secure desktop Stickfish Raydesk with predefined tools.
- Possibility to use other applications (MS Windows) from the same desktop workplace.
- Hardware solution of the dual-head Xinerama set-up.
- High availability and a long life cycle of the terminals without a need for upgrade.



Websites: raydesk.com 64bit.eu vdihero.com stickfish.com

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Starting Position

ČEPS has been using Sun Ray thin clients for accessing the XA/21 dispatcher control system running on Solaris 2.5 since 2000. The control system has been replaced in 2007 and, according to a UCTE recommendation from the Policy 5 Operation Handbook, a full-blown back-up workplace was built in Ostrava. The supplier of the dispatcher control system (ELEKTROSYSTEM, a.s.) supplied a control system with a working name of SDŘS (combined dispatcher control system) that runs on the realtime QNX 6.3 operating system. Because of the need for a separation of the dispatcher control system infrastructure and the common IT infrastructure, it would be necessary to install a large number of native workstations and servers with QNX to access the QNX network. The workstations and servers would be dedicated to graphical display and terminal access to SDŘS.

Solution

The aim of the solution was to implement a graphical user interface for end users that would enable them run applications from their desktops by clicking on links, and limit the number of approved tools. It was requested that this method facilitates execution of remote applications that would run on remote QNX servers. The installed version of the PHINX QNX programme has been modified for this purpose so that it is able to display the QNX graphical user interface and the output of its programmes on X Window systems. A special SFKRE connector is included in the package that allows for activation of applications on remote systems.

When the controlling servers are switched on, the Sun Ray Server Software is automatically started and with its help, the servers form a so-called fail-over group (on application software level). There are two key components in the Sun Ray Server Software: Authentication Manager (thereinafter AM) and Session Manager (thereinafter SM). During the start of the servers, a data warehouse service (OpenLDAP) and a DHCP server are started. OpenLDAP runs on both servers in realtime application mode (ldapsync).

Execution of either local or native applications on remote servers with the same operating system can be achieved by many means. Communication and displaying is based on the X protocol. The preferred method is to use the SF Raydesk Remote Executor which is an agent running on a remote system as a service, or executed by the inetd network super daemon in an on-demand mode. Upon starting this type of application, a client side of the SF Raydesk Remote Executor is activated which executes the application and redirects its graphical output to the network.



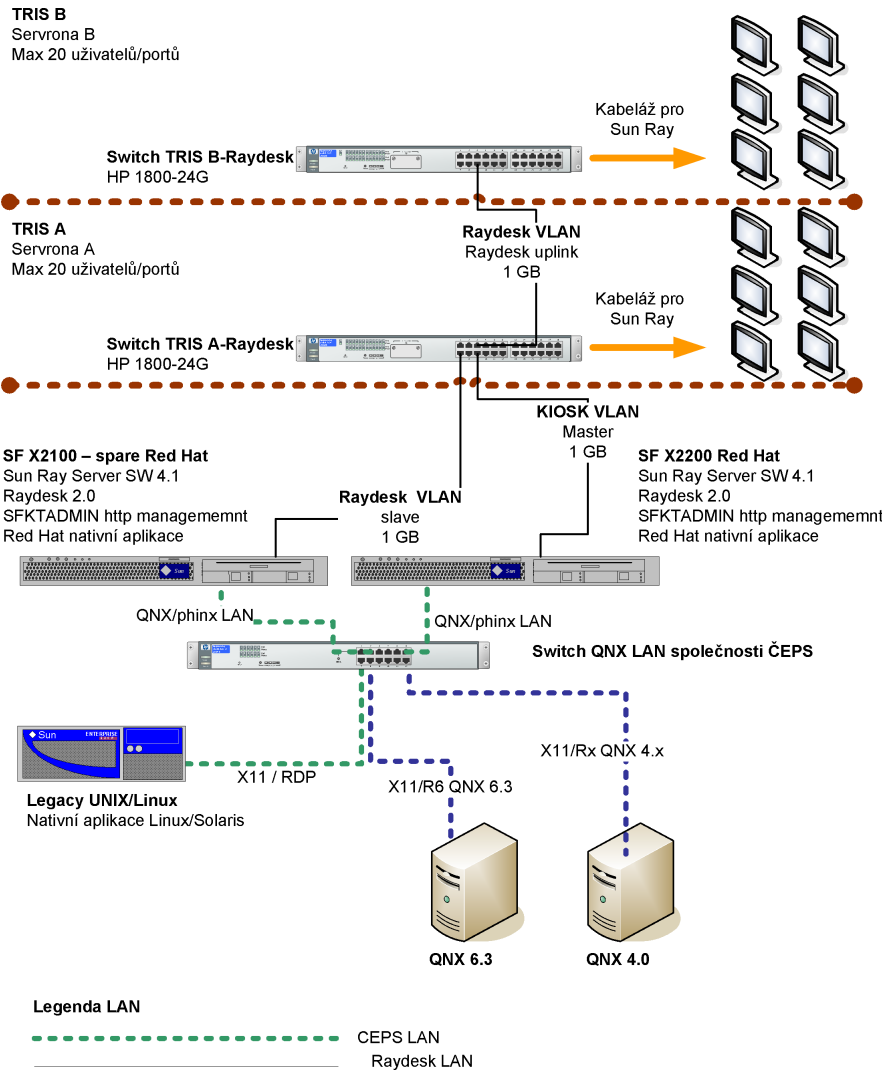
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Thanks to the Sun Ray Server SW and the built-in fail-over on the application level of the terminal operation, the administration of the virtual desktops is easily realised without a need for a cluster. The advantage of combining terminals and the Stickfish Raydesk desktop solution, or virtual display units, lies in the fact that they are a fully remotely-administered solution without RAM, CPU, or HD. Requirements for the administration and maintenance of users and their roles have been minimised, and the costs of inventory and computer HW for dispatcher stations have decreased by hundreds of percent.



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Client's Evaluation

When deploying a new dispatcher control system based on the QNX 6.3 platform, we had to find a solution for ensuring access to the control system without compromising the realtime operation of SDRS while adhering to the strict ČEPS safety standards. Besides departments responsible for administration and development of the SDRS, other ČEPS technical departments need access to the system. These include the department for preparation of transmission and system services, department for evaluation and analysis, department for accounting of foreign exchanges, etc. A strict separation from common IT infrastructure was requested. It would have been too costly to install a native QNX workstation for every worker; both because of the price of the new hardware and the cost of building a new internal QNX network connecting all users.

The decision to utilise the proven Sun Ray network for terminal connection that was used in the old dispatcher control system faced a roadblock because of incompatibility with the new QNX 6.3 operating system. On account of positive references about the Stickfish Raydesk Enterprise Desktop, the Stickfish company was approached. Stickfish designed a custom solution for us and, in cooperation with the supplier of SDRS, delivered the entire network, including software modifications of the PHINX connector which no other company was able to do, and the requested multiple monitor workplaces for developers. The supplied solution fully satisfies our requirements for work with a remote graphical connection, and fulfills our security requirements for the use of our current IT infrastructure.

Ing. Bohuslav Podroužek, SDRS project manager

About Stickfish

Stickfish is an ICT company specializing in enterprise VDI (Virtual Desktop Infrastructure). Stickfish also provides solutions from leading vendors such as Sun, IBM, Red Hat, Oracle, or VMware, advanced networking products from Juniper and Cisco, and also its own highly secure and fast virtual enterprise desktop solution Raydesk. Stickfish operates popular electronic store 64bit.eu.

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