При параметрической идентификации использованы значения входных параметров НПС, СПН и ЛЧ, полученные в результате обработки производственных статистических данных с технологических агрегатов участка «Кульсары-Атырау» нефтепровода «Узень-Атырау».

Выводы. Таким образом, в работе получен подход к структурной идентификации и методика параметрической идентификации математических моделей производственных объектов на примере технологических агрегатов нефтепровода с учетом нечеткости некоторых параметров процесса перекачки. На основе полученных результатов построены математические модели СПН, НПС и ЛЧ исследуемого участка магистрального нефтепровода Узень-Атырау с учетом нечеткости некоторых параметров.

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Подсекция 1.2. Радиотехника, электроника и телекоммуникации: современные проблемы инфокоммуникационных технологий

UDC 621.397.13

THE CIRCUITS OF THE NETWORK MONITORING SYSTEM FOR DIGITAL TERRESTRIAL TELEVISION BROADCASTING IN KAZAKHSTAN

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Introduction

The relevance of the topic is that since 2015 in Kazakhstan, digital terrestrial broadcasting operates throughout the country. For high-quality broadcasting of television and radio channels, a network monitoring system of all equipment is required that ensures the smooth operation of the Television Broadcasting Center. As the country is gradually moving completely from analogue to digital broadcasting, the operation of all equipment at each radio-broadcasting station plays a huge role in the work of the Television Broadcasting Center. Therefore, twenty-four hours a day to monitor these equipment.

For the purposes of remote monitoring and equipment management, for the first time in Kazakhstan, the system is created to ensure continuous quality control of terrestrial digital television broadcasting which creates the possibility of remote management by the sending centers of the whole country.

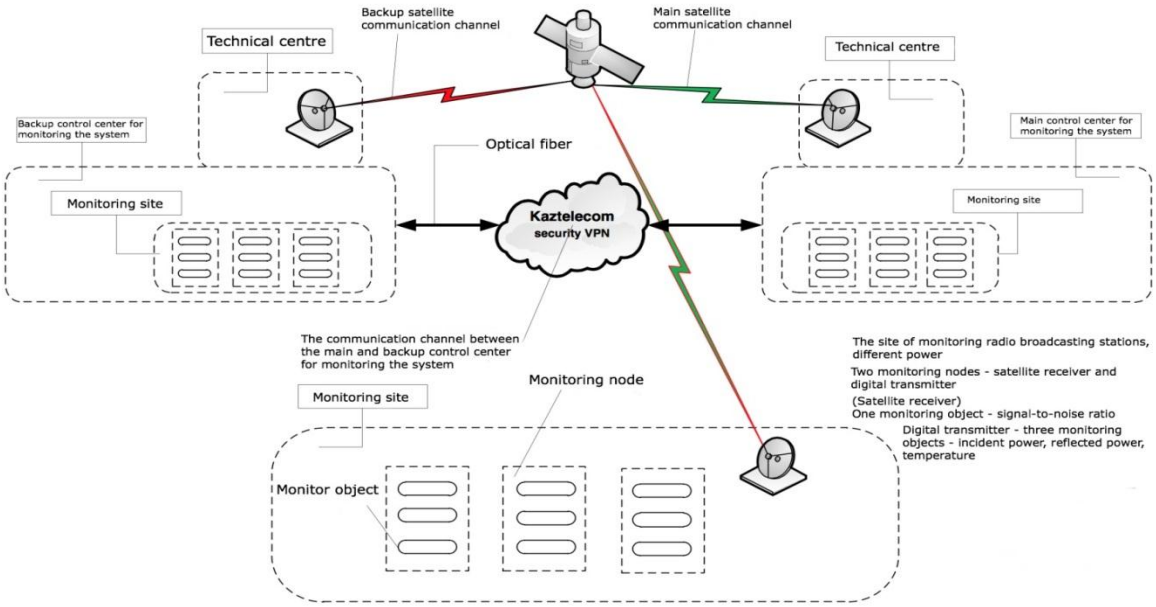

Figure 1 – Generalized scheme for monitoring the network of digital terrestrial broadcasting

Figure 1 shows a generalized scheme for monitoring the network of digital terrestrial broadcasting. The system is built on a two-level hierarchy:

- level 1 - collection and processing of information on the status of the network DTV and its elements;

- Level 2 - accumulation and processing of received information to fill the knowledge base of the expert system.

All modern equipment is produced with the possibility of external monitoring (via SNMP) and transmission via communication channels. Information about the condition of the equipment and the quality of the transmitted TV signal is collected automatically in the servers of the System Center that gives the chance of flexible reaction to arising malfunctions in work of the network equipment. The knowledge base of the G2 expert system is filled with collected information on equipment malfunctions and measures taken to restore it, which in the future makes it possible to have recommendations on same and similar cases of network failures in the work of the network.

Figure 2 shows a map of the Center of Monitoring and Controlling the Network (CMCN) of the digital terrestrial television in Kazakhstan

Figure 2 – Center of Monitoring and Controlling the Network (CMCN) of the digital terrestrial television

Features of network monitoring:

- allows at any time to have information about the current state of the equipment;
- in the case of critical events, a message is received about this;
- immediately goes to the observation point;
- messages about events are stored in the database, during the whole operation time;
- continuously recorded the most important parameters of the equipment;
- the system allows you to remotely control transmitters, change modes of operation, turn on / off;
- The system allows you to remotely control the transport stream analyzer: change the mode of operation, turn on / off;
- the possibility of connecting to the system of remote monitoring and monitoring of additional equipment.

The main tasks of the (CMCN):

- monitoring the status of the DTV network in real time;
- definition of emergency objects of the network and coordination of the restoration of their operation;
- automatic registration of all events on the network and compilation of a database экспертной системы;
- acceleration of network recovery procedures with the help of an expert system

Figure 3 shows a list of regional centers of digital television broadcasting in Kazakhstan

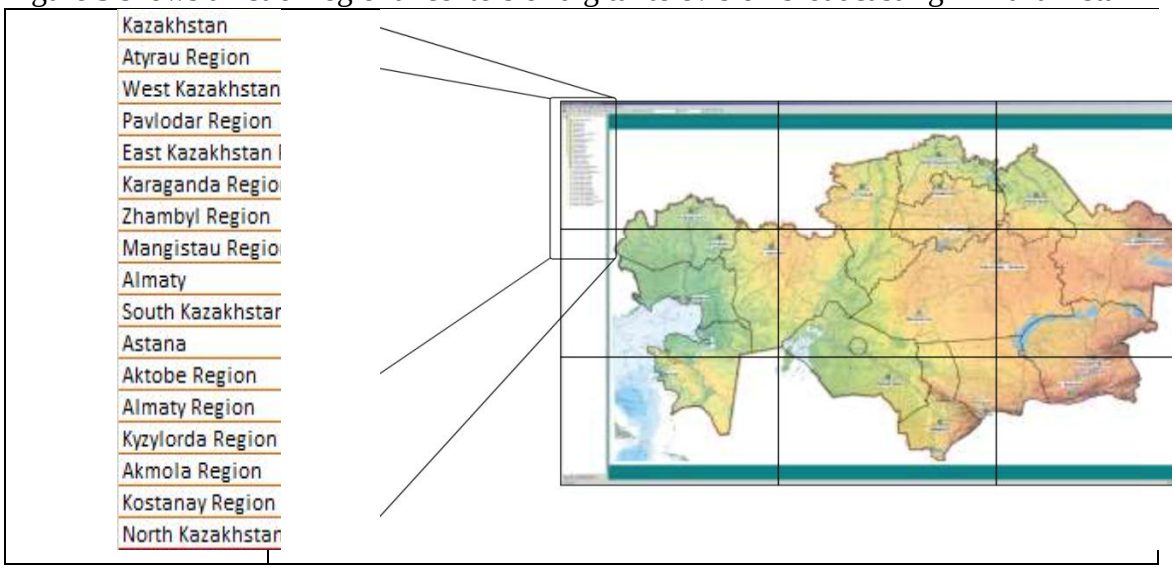

Figure 3 – List of regional centers of digital television broadcasting in Kazakhstan

SNMP The protocol is designed to cyclically poll the status of remote objects in order to monitor predefined parameters. With the help of this protocol, the monitoring and control procedure can be performed with a sufficiently large number of remote objects. The system includes servers with installed software and automated controllers at remote sites of the network. The system is built on a hierarchical basis and the Monitoring Centers have access to the entire network without exception. The system is flexible and can be configured to perform various types of tasks. The operator at his workplace sees the network status visually (or Specific objects in the zone of its responsibility). The system automatically records changes in the status of the monitored objects and signals this to the operator. The system allows you to display information in a graphical form, generate various types of reports on the demand of the operator. Figure 4 shows a hardware signal diagram that is sampled by the SNMP protocol for a certain period of time.

Each transmitting center is equipped with a managed switch, which directly connects the equipment installed at the transmitting center. Through the Ethernet interface the commutator is

connected to a computer network TCP / IP, to which the computers of users of the system and the central server are also connected. With the help of a special program, system users can connect to devices which are connected to the network and receive information about the current state of the device at the sending center, control the operation of these devices. Data acquisition and management via SNMP protocol are also available.

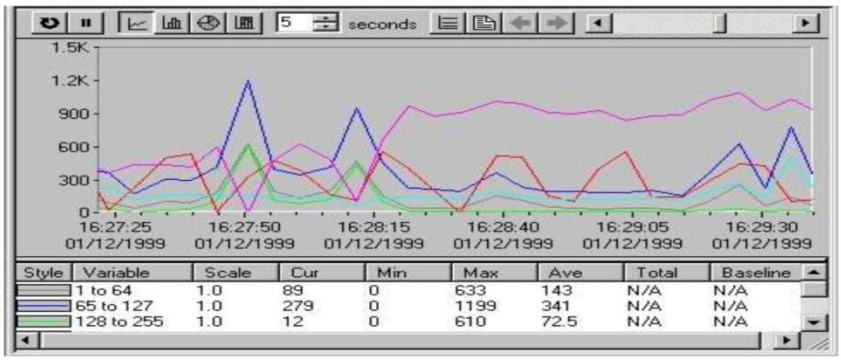

Figure 4 – Hardware signaling diagram, interrogated by the SNMP protocol for a certain period of time

Capabilities of the monitoring system:

- the system allows to determine the state of the integrity of the object, its climatic parameters and the presence of power supply;
- The system allows you to determine the physical parameters of equipment installed on the object and connect to the network;
- the system allows to control the parameters of receiving, processing and passing the TV signal and its qualitative characteristics;
- if an abnormal situation occurs with respect to any of these parameters, the system instantly signals an alarm and enables the operator to determine a specific area / block whose parameters are outside the established thresholds;
- information about the malfunction is presented in a tabular form, as well as on the mnemonic diagram;
- The operator has the opportunity to determine the cause of the accident, send the repair team to restore the equipment, monitor the progress of the restoration work;
- The system allows you to keep a history of events at the site and draw up appropriate reports.

Figure 5 shows the mnemonic diagram of the digital terrestrial television network monitoring system.

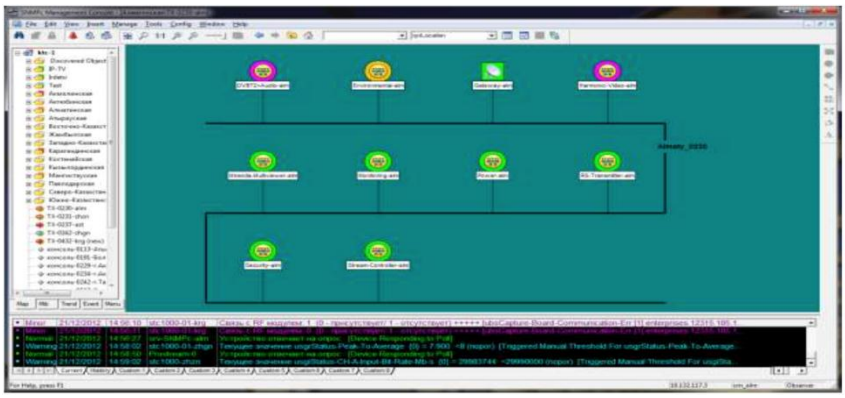

Figure 5 - Mnemonic diagram of the equipment for the digital terrestrial television network monitoring system

Conclusion

Continuous monitoring of the network is necessary for the high-quality operation of digital terrestrial broadcasting equipment. This allows to identify the critical state of equipment and restore the normal operation of digital terrestrial broadcasting in time.

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УДК 004.934

АРХИТЕКТУРА ДЛЯ СИНХРОННОЙ МНОГОСТОРОННЕЙ АУТЕНТИФИКАЦИИ С ИСПОЛЬЗОВАНИЕМ БИОМЕТРИИ

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В последнее время широко распространена дистанционная индивидуальная аутентификация на основе биометрии. Однако несколько существующих бизнес-систем и процессов часто требуют одновременного участия нескольких сторон в режиме реального времени. Кроме того, новые процессы электронного бизнеса могут быть реализованы технологией, которая позволяет нескольким участникам проходить аутентификацию синхронно. В этой статье рассмотрено различие между традиционными процессами документооборота, которые требуют многосторонней аутентификации от синхронной многосторонней аутентификации, необходимой в бизнес-сценариях и потребительских сценариях. Предложена новая система и метод многосторонней аутентификации и авторизации с использованием биометрии в реальном времени.

Растущая индивидуальная идентификация с использованием биометрии становится широко распространенной. Однако несколько существующих бизнес-систем и процессов требуют синхронного участия и аутентификации нескольких сторон в режиме реального