JSOFTLAB-NSK BACKUP BROADCASTING



Reliability of broadcasting for any TV channel is one of its important advantages in today's fierce competition. In the case of constant problems with broadcasting, there is a decrease in the audience: not seeing the usual «picture», the viewer switches to watch another channel. This, in turn, leads to financial losses – advertisers switch to more stable TV channels.

Often developers of broadcast automation products indicate as one of the advantages of their products that in case of emergency the signal will pass through the video server by transit through the relay bypass of the I/O board. And this, in their opinion, is a sufficient means of broadcast redundancy. But in our opinion this is quite deceitful.

If we examine this approach more closely, we immediately encounter one serious problem. Yes, the signal in case of an accident goes through the server in transit and broadcasting is not interrupted. But in order to eliminate the problem (e.g. in case of hard disk failure or power supply failure) the computer must be «pulled» from the signal path, i.e. it is necessary to interrupt broadcasting, at least for the time of signal switching. In its automation systems, SoftLab-NSK uses a different approach: in case of broadcasting problems, switching to a backup signal source is performed using an external device (standby commutator, relay video bypass unit). Switching is performed without interrupting the broadcasting and after that the emergency video server is available for restoration work.

BACKUP BROADCASTING WHEN WORKING WITH SDI AND ANALOG SIGNALS

There are several redundancy schemes:

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1. **«Bypass»**. Enables an automatic failover to the passthrough signal in the event of a failure on the Main server.



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2. **«Mirroring**». Enables an automatic failover to the mirror server (Slave) in the event of a failure on the Main server.



3. **«Mirroring with Bypass»**. In the event of a failure on the Main server, enables an automatic failover to the mirror server (Slave); in the event of a failure on the mirror server, enables an automatic failover to the passthrough signal.



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Explanations to Figures:

- Videoserver, the Main server, the Slave server Forward TA/TP broadcast automation servers (on FDExt series boards).
- Commutator video/audio signal switcher with GPI control (sold separately). Devices from different manufacturers can be used, e.g. Profitt, LES TV, KRAMER ELECTRONICS, etc. Examples of models: PRB-097, SW-212VAS2, SW-212DAS2, VS-24xl, etc.
- SLControlBox 101 device for controlling the commutator.
- **«Mirroring»** built-in program option that provides synchronization of broadcast schedules on the Main and Slave servers.

Let's take a closer look at the most popular redundancy scheme - «Mirror».



For its implementation two identical video servers are used: the **Main** (2) and the **Slave** (1). The Main is the main broadcast server and the Slave is the backup. The input video signal is split (amplifier-distributor) and goes to each of them (3). Both video servers perform **the same broadcast schedule**. The output signals (after inserting ads, logo overlay, crawl line, etc.) from both servers go to the redundancy **commutator** (4). From him the signal goes to the transmitter on the **air** (5). In normal mode the signal through the commutator comes from the Main server, in case of failure – from the Slave. A special device **SLControlBox 101** is connected to the Main server via a USB interface (6). This, in turn, is connected to the commutator to control it via **GPI** (7).

ATTENTION: SLControlBox 101 does not switch video signals, but only controls the commutator.

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The Main server software monitors the operation of the three most important systems:

- I/O board services;
- FDOnAir broadcast program;
- operating system.

If a problem occurs in any of these, a control signal is sent via the USB interface to the **SLControlBox 101**. This, in turn, generates a GPI event and the commutator switches to the Slave server signal. In normal mode both video servers broadcast, but only from the Main the signal goes on the air. In the event of a failure, the Slave server broadcasts, and the Main can safely deal with troubleshooting.

Switching from one server to another takes place without «disrupting» the video signal due to the built-in **«Mirroring»** software option. It is designed to synchronize broadcast schedules on the Main and Slave machines. Its operation is based on continuous message exchange via local network between the instances of FDOnAir broadcasting programs running on both servers.

Therefore, all actions (loading and editing the playlist, launching video materials, logos, banners, crawl line, etc.) that the broadcast operator performs on one machine (Main) are automatically performed on the mirror machine (Slave) as well. The schedules on both servers automatically coincide completely, which requires that all source materials used (video clips, logos, crawl line announcements, etc.) have the same full file paths. This can be accomplished by storing materials on both computers on the same logical drives (e.g., «D:») in folders with the same names; file names should also be the same. You can store material on an external file server by assigning the same letter (e.g., «V:») to the network drive with the source material on the file server on both air servers.

Copying files to the slave server is not performed automatically. We recommend to use the **CopyDR** utility (copying files with the specified maximum flow) from the ForwardT software.

The principle of the other redundancy schemes (**«Bypass»** and **«Mirror with Bypass»**) is the same: in case of problems on the broadcast server with the SLControlBox 101 device switches to the backup signal through an external commutator.

In a simplified scheme **«Bypass»** only one server is used, and the source of the backup signal can be, for example, a satellite receiver, VCR, DVD-player, etc.

The **«Mirror with Bypass**» scheme is the most complex. It involves two video servers working on the «Mirror» variant. In addition, additional redundant signal (e.g. from the same satellite receiver, VCR, DVD-player) is used. A second copy of the backup commutator and the SLControlBox 101 are also required.

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BACKUP BROADCASTING WHEN DEALING WITH IP SIGNALS

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The redundancy schemes when using IP signals remain practically the same as when using analog and SDI signals.

It is possible to arrange one of three backup schemes when dealing with IP signals, i.e. **«Bypass»**, **«Mirroring»**, **«Mirroring bypass»**.

And the principle remains the same: switching in case of failure to a backup signal takes place at an external device. However, there is some specificity in the implementation of the schemes described above.



The picture displays «Mirroring» scheme where output signal from the main and slave servers is received by the third PC that is a backup commutator. Forward TS IP-IP Gate software is installed at the third machine (backup commutator). User should specify IP address of the main (from the main server) and additional (from slave server) signals.

If the main signal is lost then backup switching to receive signal from reserve IP address happens automatically. Names of servers («Slave», «The main») are relative.

The «Mirroring» option is activated when dealing with IP signals. The option allows synchronizing schedule of slave and the main servers.