Elevating Broadcasting Networks

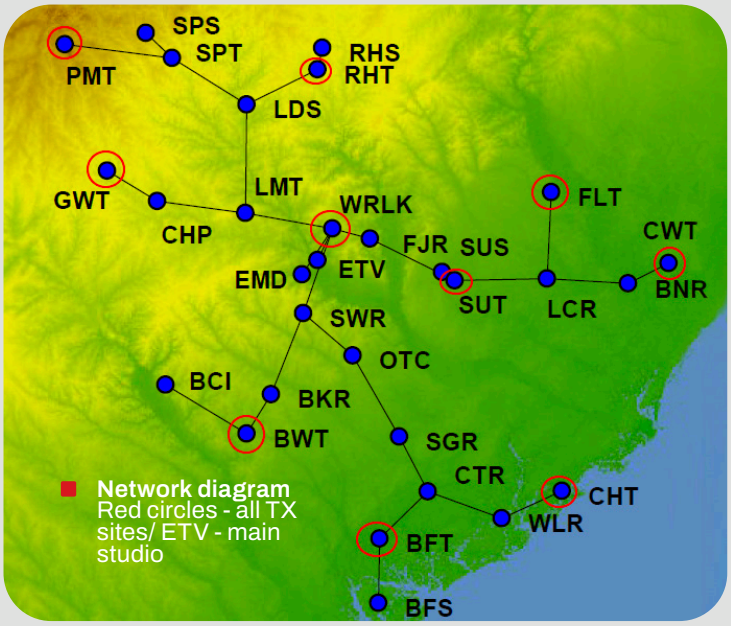
with Hybrid IP Microwave

Case study

South Carolina ETV Case study

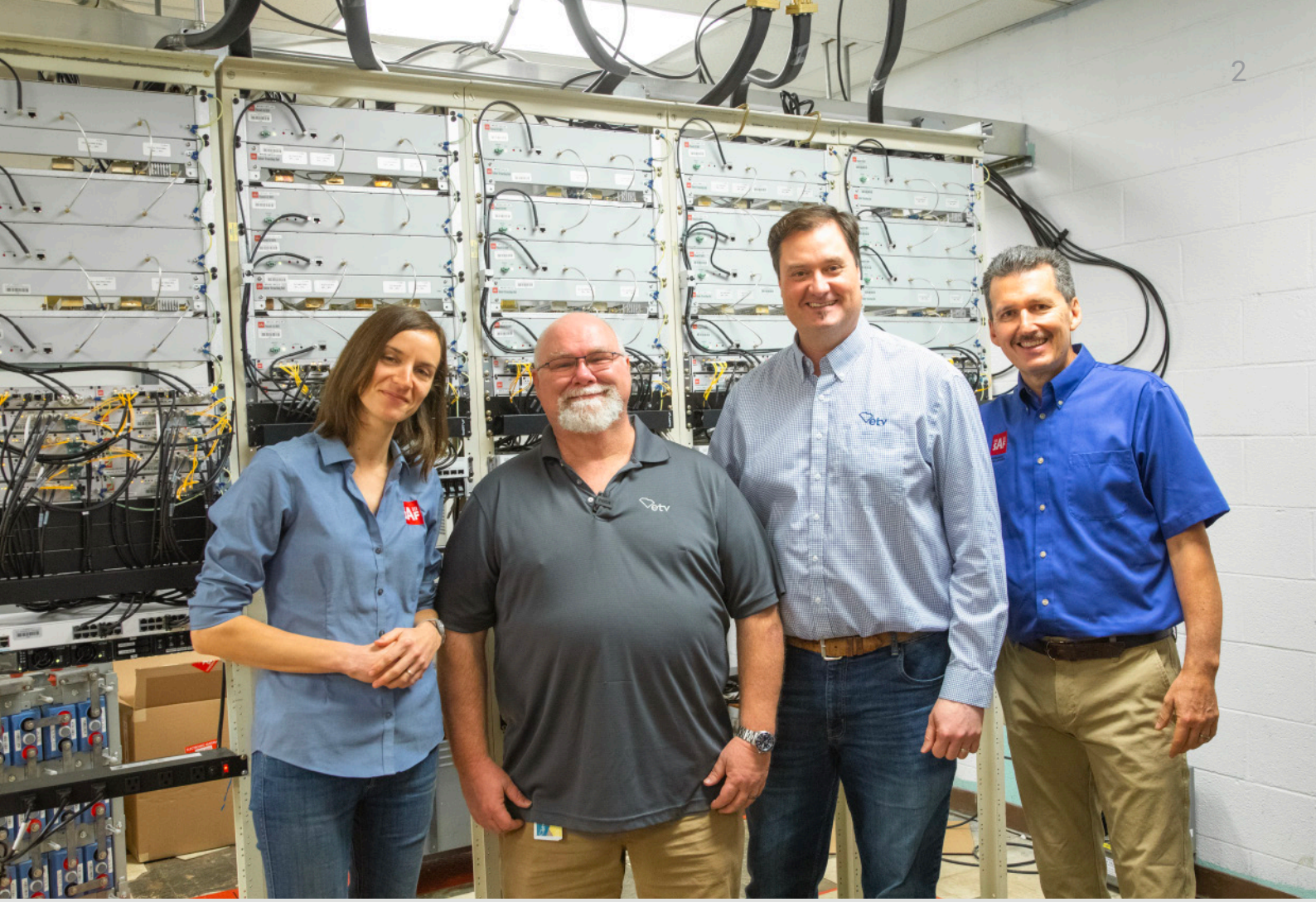
South Carolina ETV (SCETV) is the state's public educational broadcasting network that has served state residents since the 1950s. Today the network comprises 11 TV stations, 8 radio stations, and a statewide tower network that serves schools, hospitals, and emergency management teams. SCETVs microwave network system encompasses 30 sites throughout the state.

The broadcasting industry has been facing significant pressure over changing consumer expectations and usage habits in the age of video-on-demand and mobile media consumption. Broadcasters are challenged to transition their services to all-IP in preparation for the upgraded ATSC 3.0 rollout. The new standard improves the quality, accessibility, and interactivity of broadcast TV. It provides a more immersive experience, better reception, and opens up new possibilities for personalized and interactive content. To meet consumer demand and deliver a relevant experience broadcasters need to significantly increase bandwidth, provide ultra-low latency, and maintain a mission critical reliability level for the network.



Broadcasting in the United States is a multi-billion-dollar market with more than 2000 TV stations providing live news and programming. Competition from industry disrupting streaming services is fierce requiring broadcasters to deliver fantastic viewing experiences without outages.

Both commercial and public broadcasters are migrating their services to all-IP based equipment. The new equipment allows for remote system monitoring and control, significant improvement in bandwidth and latency, and increased efficiency in network management.



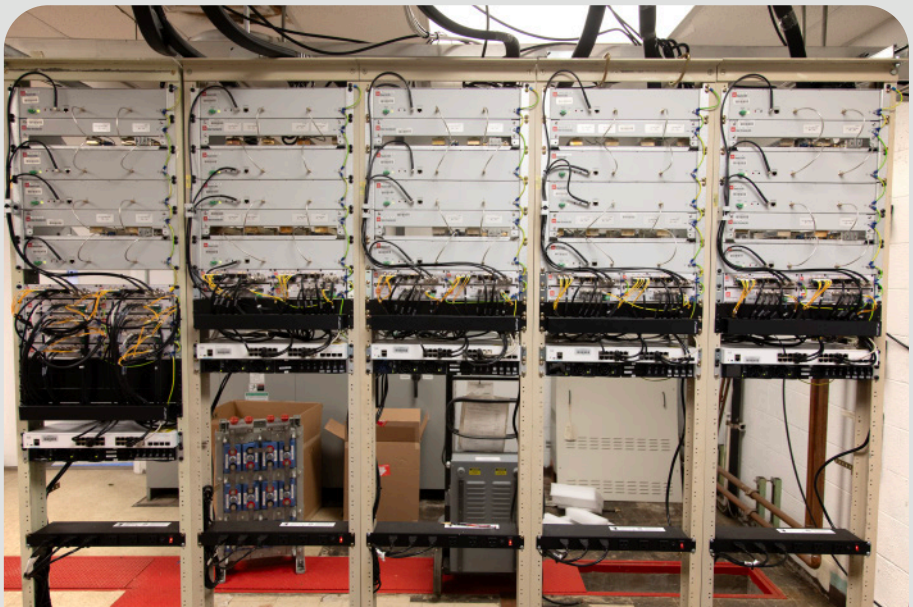
Left to right: Tatjana Dunce (VP of Engineering and Operations, SAF NA), Jeff Bullard (Regional Transmissions Manager – West, SCETV), Mark Jahnke (VP & CIO, SCETV), John Dulany (Microwave Radio Solutions Sales Manager, SAF NA)

As Mark Jahnke, SCETV Vice president & CIO emphasizes: “Our last microwave network upgrade was in the early 2000’s – it was an Alcatel system that was based on a DS3 network with maximum capacity of 45Mbps. Good at the time, but now we are in 2023 and we needed a much more robust statewide network. We started evaluating various IP based systems including SAF.

Funding for network upgrades is one of our major challenges. We must evaluate the budget we have and allocate it to the best equipment we can find that's going to last for a long time. We're always on the lookout for the highest quality equipment and manufacturers. So, we make decisions based on quality and longevity of service.

SAF’s Phoenix G2 system provided the path for our migration to ATSC 3.0. The 200Mbps gives us a statewide modern broadband network supporting TV and radio transmission along with site security monitoring including HD video feeds and digital access control.

WRLK hub site with uniform install of five 2+2 Full-indoor Phoenix G2 systems



SCETV requirements:

- A hybrid microwave system that can support the existing network infrastructure of ATSC 1.0 with native ASI interfaces and prepare the company for the transition to IP based ATSC 3.0.
- Bandwidth upgrade from 45Mbps to 200Mbps
- Active component redundancy for quality-of-service assurances

SAF provided a turn-key solution to satisfy customer requirements:

1. SAF designed a microwave network solution based on the Phoenix G2 platform. The system was designed to support both native ASI and IP based data transmission. Every component in the system, including data interfaces, power supplies, IF and RF components are fully redundant. To satisfy the throughput requirements, Phoenix G2 system was configured in 2+2 mode that aggregates throughput from 2 frequency channels. Combination of FCC Part 74 and Part 101 frequencies was utilized to design a unique system providing 222Mbps throughout all 30 sites.

2. Deployment of all 30 sites was carried out by SAF and our broadcast partner Heartland Video Systems. A key attribute of the installation is the uniformity across all equipment rooms - positioning in rack, cable management, labeling, and connection to the waveguide system. SCETV radio technicians have plug and play simplicity across the entire network.

3. SAF deployed open-source Zabbix Network Management System on SCETV's server and integrated the Phoenix G2 radios, Eltek power supplies, and Cisco switches. SCETV can reliably monitor the status and performance of the entire network from a single display.

4. SAF performed the microwave transmission design including complex interference analysis and worked with SCETV and FCC on allocation of the frequency channels - utilizing existing Part 74 frequencies and adding new Part 74 and Part 101 frequencies in the most efficient way.

5. SAF designed and pre-assembled a custom-built branching and filtering system to adapt to existing antenna and waveguide infrastructure. Staging, configuration, and extensive testing was performed at the SAF factory for each link. Custom-built, redundant, Eltek power supply systems were adapted to meet site specific requirements: 48V DC, 24V DC or AC input. The system was preassembled and tested extensively at the SAF factory in Riga, Latvia.

6. SAF conducted training sessions for SCETV's engineering team on how to monitor, maintain and troubleshoot Phoenix G2 systems. SAF continues to provide detailed and accurate technical support to the SCETV team.

Deployment Achievements:

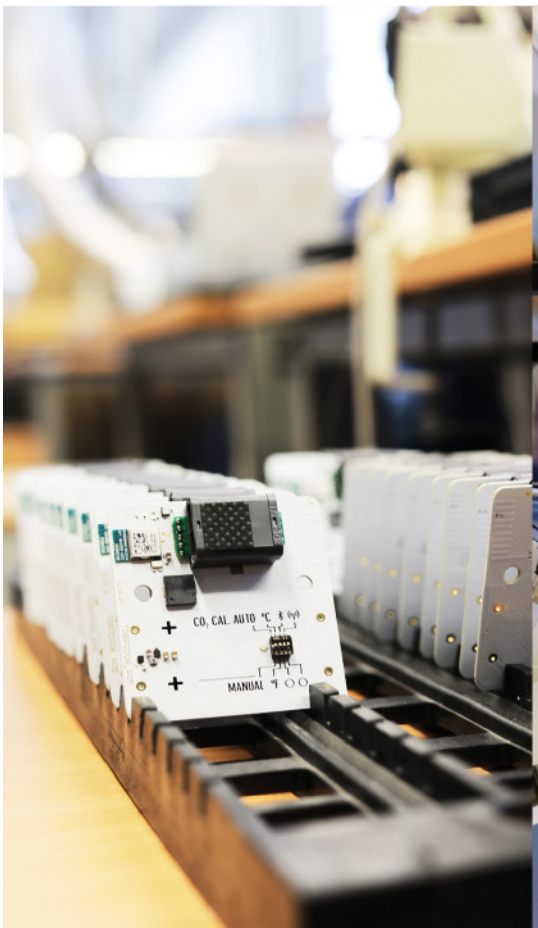
- Massive upgrade in network bandwidth to 220Mbps
- Full system redundancy for active components
- Ability for centralized monitoring from any display with a connection
- Uniform installation for cost-effective and efficient maintenance

Jeff Bullard, regional transmissions manager:

"The SAF microwave network was intended to be a backup system to our fiber network. However, we started using it as our primary system, because it turned out to be more reliable than our fiber network."

About SAF Tehnika

SAF Tehnika is an RF data transmission equipment designer and manufacturer with a global presence in over 130 countries. SAF's core products include high quality microwave radios, field tested hand-held RF spectrum analyzers, and solutions for wireless environmental monitoring sensors and base stations under the brand Aranet. The company serves multiple industries including telecommunication providers, education, utilities, public safety, broadcast, government, military, and oil & gas.



SAF Tehnika is one of the most specialized microwave data transmission technology manufacturers in Europe with long-term competence in the development and production of microwave radios, compact handheld touchscreen spectrum analyzers and radio signal generators, and IoT wireless monitoring ecosystem **Aranet**.

For more detailed information visit **saftehnika.com**
or contact your SAF Tehnika representative **info@saftehnika.com**
Product features may vary between different models and configurations.
They are subject to change without prior notice.