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ESA Funded VoIP over Satellite Development helps African telecoms

01 Jul 2008

Telecom operators across Africa and the Middle East can now benefit from new technology developed with the assistance of the European Space Agency.

World Telecom Labs, a Belgian-based developer of Voice over IP (VoIP) equipment for telecom operators, developed this technology through ESA's Research in Telecommunications Systems (ARTES) program. The project's objective was to address the difficulties of carrying VoIP traffic over shared satellite services, primarily DVB-RCS, to result in a commercially saleable device allowing telecom operators to deploy a range of satellite-based commercial services.

The platform used for this development was WTL's existing IPNx switch. Modifications needed to be made in order for it to become suitable for satcom operators by adapting WTL's patented Network Optimisation Protocol (NOP). Using WTL's NOP bandwidth-saving technology will typically cut the cost of satellite bandwidth in half without sacrificing quality. Simply put, this technique packs multiple VoIP voice samples into a single IP packet. Because the samples are not modified, quality is unaffected but, on multi-call links, significant savings are made on the packet overhead. Also, since single samples are taken from each active call rather than queuing multiple samples from the same call, delay is not increased.

As the focus of the project was to create commercial benefits, a live customer network was to be installed and tested. The client chosen for this pilot was Xplorium, an international wholesale VoIP carrier with a presence in Europe, the Americas, the Middle East and Africa. Xplorium's specialities include carrying the international traffic of Global System for Mobile Communications (GSM) operators. In a number of locations the traffic is carried via satellite and this has given rise to concerns about the voice quality and the efficiency of transmission.

The first operational link used for the pilot was between Gambia and the client's NOC in Paris with a capacity for 360 optimised VoIP calls (equivalent to 12 E1s). The trial was successful by demonstrating high voice quality and confirming that significant bandwidth savings were actually achieved. As a result the pilot was soon followed by deployments in a number of other African locations, with the traffic again being sent to the Paris hub.

Simon Pearson, WTL's Business Development Director says; "For this installation we have been able to draw on the improvements that we made to NOP in the ESA funded project. This allows us almost to do the impossible - in some cases we can save bandwidth and improve the voice quality of VoIP over satellite. We have added features specifically to counteract the common problems of satellite transmission of VoIP, namely variable delay or jitter, long delay and packet loss in busy contended services."

Frank Zeppenfeldt, Communications Engineer with ESA's Telecommunications and Integrated Applications department says; "In this project ESA offered its technical DVB-RCS assets to support WTL in testing the performance of voice codecs in a satellite environment. This is a typical example of a development supported by the ARTES 4 program of ESA Telecommunications, in which a new product is developed that is close to the market and allows the enhancement of voice services over satellite."


Related Links

- [VoIP Equipment for Satellite Use](#)
- [ESA supported projects for DVB-RCS](#)

External Links

- [World Telecom Labs](#)

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ESA supports a wide range of projects, which encourage adoption of the DVB-RCS standard, providing positive benefits for all. DVB-RCS is an open standard for bi-directional or two-way transmission of digital data. It employs satellite transmission using combinations of C, Ku and Ka bands with return bandwidth up to 2 Mbit/s. Such projects stimulate growth and keep Europe on the forefront of the telecommunications industry.

For more information, see the links located in the top right corner of this page.

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