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VoIP in a Hostile Environment

Background

Monarch is a system integrator based in Hong Kong with local offices in Europe, Africa and South America. The company specialises in communication projects for voice, fax or video in hard-to-reach parts of the world. Very often this means using satellite. When a new project came up for a remote diamond mining location in Africa they turned to WTL to add a VoIP dimension.

The Problem

The location to be served was very remote without reliable fixed-line communication. However, a lot of potential customers worked there and all were migrant workers with a need to make long distance or international calls. Existing satellite communications (for example, Inmarsat satellite phones) worked out very expensive per minute and so were not much used. Any solution proposed had to be efficient in its use of the limited satellite bandwidth. In addition a secure charging system was required to ensure that the operator collected the call revenues that were due.

WTL Solution

A solution was proposed which was based on WTL's NOP (Network Optimisation Protocol) to give optimisation of the VoIP traffic as it passed over the satellite leg of its journey. Monarch designed and specified the required satellite system. This used C-Band transmission from Africa to the ground station in Spain. When the IP traffic had been landed in Europe it could be connected to the internet backbone and routed to the termination partner of Monarch's choice. In practice Monarch decided to terminate the traffic with another WTL partner in Brussels. After the IP traffic had been delivered to Brussels it could be broken into individual calls and routed to it's final destination using the powerful LCR function of the partner's WTL switches.

The Satellite Network Design

The satellite link was sized initially at 64K bps. Using WTL's NOP this would allow capacity for 10 simultaneous calls at good quality. The system has been set up in such a way that the capacity can be increased up to 200 calls using the same equipment. Voice quality and delay characteristics of the installed system were excellent and were better than the satellite phones that they replaced.

Network Design in Africa

A challenging part of the project for Monarch was to design the set up at the African end of the network. The location was a large compound reserved for mining and communications was required at many places around the site. This was another factor in favour of the VoIP solution adopted. Because the traffic was IP-based, it was possible to carry it around the site using a Wi-Fi network with a range of up to 100 metres from each base station. This obviously had tremendous benefits over a wired solution in terms of cost, speed of installation and flexibility.

A series of small VoIP gateways (1, 2 or 4 port) were deployed around the site in offices, public areas and residential blocks. These gateways had regular telephone handsets plugged into them. Calls are generated by the gateways using H323 signalling and are carried across the wireless network to a

central PVx. This is WTL's VoIP optimisation unit which takes the H323 calls and translates them into NOP traffic which occupies much less bandwidth. The traffic is then ready to be passed to the satellite modem for transmission back to Europe.

VoIP in Hostile Environment
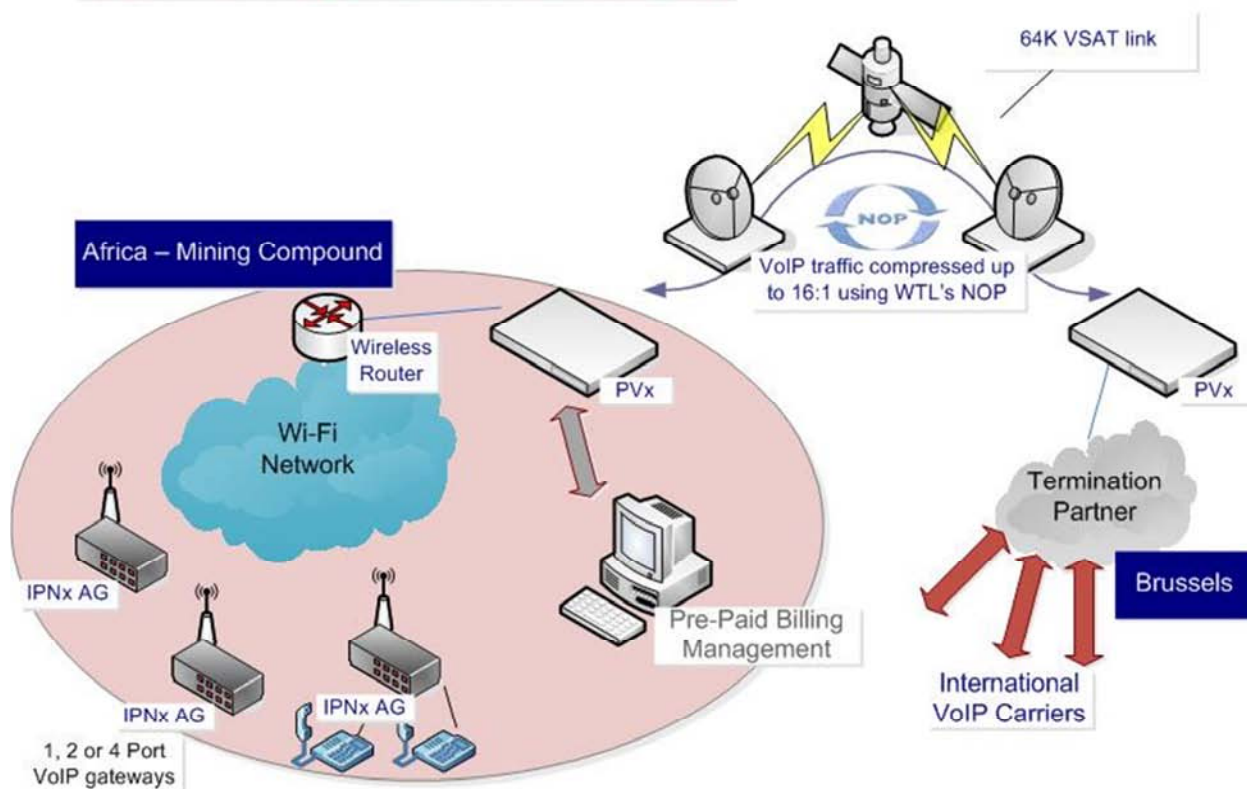
The Business Model

In this case Monarch are not just the system integrator for the network they have designed but they are also the telecom operator. Monarch manage the whole network themselves and make their revenue by charging for the called minutes.

In order to minimise the risk of fraud and bad debts the network is based entirely on a Pre-Paid model.

Choosing the WTL and NOP

Marc Dumon, the project manager for Monarch explained his choice of WTL's NOP, "This location is very remote, getting any kind of communication there is difficult so we have to use our connections very carefully. We did a lot of testing to make sure that NOP lived up to the claims that WTL made. In

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fact we were delighted with the voice quality that we achieved in our tests. The quality is better than the Inmarsat solution that we are replacing and we use less bandwidth to do it!"

Future

Significant growth is planned for the mining project described here. Monarch also intend to repeat the success of this first project for other similar clients in the African region but also to promote it via their other branches worldwide.

Benefits

- Low start up cost
- Unit of expansion is very small
- Very efficient use of satellite bandwidth
- Improved voice quality AND reduced cost compared to previous solution
- Choice of VoIP terminating carriers
- Sophisticated rating and call records in a low cost solution

For more information please contact:

WTL at sales@wtl.dk