Solutions for rural communities

Gilat Satellite Networks is a leading provider of rural telephony solutions to the Asian market. Helen Jameson speaks to Doron Elinav, Director of Strategic Marketing, about the solutions they offer and the importance of deploying communications to those in rural communities.

Question: How important is the rural telephony market for Gilat in Asia?
Doron Elinav: The Asian rural telephony is an important market for Gilat. We have supplied several large projects for rural telephony during the past couple of years. We see the largest growth in Russia and the former Soviet Republics, though the market in the rest of Asia is strong as well.

Question: What solutions does Gilat offer to those located in remote communities?
DE: Gilat offers two main types of solutions for service providers that serve remote communities.

VSAT-based telephony and broadband access. This solution is based on Gilat's SkyEdge platform, which was designed specifically for providing rural communications. The SkyEdge VSAT terminals can also be run on solar power and we have several such deployments using solar panels as the power source. With Gilat's SkyEdge VSATs, service providers can connect either analogue phones or advanced VoIP phones. These are usually installed in public call offices, small businesses or community buildings. Gilat has developed VSATs that are specifically for the rural telephony markets - SkyEdge Call (developed for rural telephony) and SkyEdge Pro (a multi-service platform for a mix of voice and Internet as well as supporting more phones per VSAT).

VSAT-based backhauling for cellular technology - this solution is based on Gilat's SkyAbis solution, which provides efficient and cost-effective satellite backhaul for GSM and CDMA base stations. Communication is provided through standard GSM or CDMA phones that use the SkyAbis solution to connect via the satellite to the rest of the cellular network. SkyAbis reduces the operating expenses of these base stations by compressing the traffic and sharing the satellite capacity between multiple cells in a DAMA (Demand Assigned Multiple Access) mode.

Question: What considerations need to be taken into account when designing the telephony services for remote communities? How do they differ from the usual voice services, if they do at all?
DE: Remote communities have specific requirements and Gilat's SkyEdge VSATs meet these requirements by providing the following capabilities.

High MTBF (Mean Time Between Failure). Since the MTTR (Mean Time To Repair) is very large in remote communities, it is very important that the VSAT be designed to minimise the number of failures. SkyEdge VSATs accomplish this by incorporating several factors, such as embedding the telephony into the VSAT (versus using external VoIP converters), and designing the product with components that have higher reliability (even though these are more expensive).

Supporting higher capacities – remote communities usually install the VSATs in Public Call Offices, and therefore need to support several phones. SkyEdge VSATs can support up to 12 phones.

Low power modes – at times the VSATs are powered by solar power, and SkyEdge's ability to work in low-power modes enables the installation of smaller solar panels, which are both lower cost and higher reliability. Low-power mode enables incoming calls to be received, versus "sleep mode" which turns off the VSAT to reduce power. For remote communities, where most of the calls are incoming, this is an important feature as well.

Integration to legacy payphones as well as smart payphones – SkyEdge VSATs were designed to work seamlessly with both the older analogue payphones as well as the newer smart payphones.

Prepaid solutions – the SkyEdge system includes an integrated prepaid solution, which simplifies collection. This prepaid solution works for both voice and Internet services, and can help impact the whole economic system, by bringing more revenue to businesses through the rural telephony VSATs, and not just to the service provider.

Question: How does the installation of Gilat's satellite telephony services help improve the social and economic state of these villages?
DE: While we do not measure the direct impact of satellite telephony services on rural communities, we have seen this directly - both improving the social and economic state of these villages. Public call offices and businesses with rural telephony increase their activity. With the addition of prepaid solutions, they become part of the economic system. What we see is that most of the calls are incoming, usually from urban areas to the remote villages. Our understanding is that this is often because richer friends and relatives, who have moved to the cities, call either to stay in touch or to transfer money to the rural villages.

Question: How does Gilat help ensure that the cost of making calls is affordable for those in poorer communities?
DE: Gilat's SkyEdge VSATs are designed to optimise the space capacity while maintaining toll-grade telephony services. This is done by implementing advanced Voice Coders/Decoders (CODECs) that compress regular telephony to 1/8 or 1/10 the bandwidth. In addition, the system is designed to reduce overheads so that the maximum num-

bers of calls can be transferred for a given space capacity.

Gilat's SkyEdge uses less power. Power can in many cases be very expensive for rural regions. When solar power is used, this can be a significant saving in the cost of the deployment.

Leveraging Gilat's experience in rural projects, we have simplified the installation of the VSATs and made operation less complex. As an example of this simplification, the SkyEdge Pro has an LCD panel to enable installation without any laptop or PC.

Gilat's VSATs can operate in star (spoke and hub) topologies and mesh (VSAT-to-VSAT) topologies. "One hop" mesh connectivity improves voice quality and reduces the operational expense, however the equipment is more expensive. Gilat has also developed a unique "One-and-a-half hop" solution, which provides many of the benefits of mesh, but without the added costs.

Question: Is Quality of Service ever an issue in the more remote areas such as in jungles and in mountainous regions? How do you overcome this?

DE: Quality of voice services is an important aspect of rural telephony - having inadequate voice quality means that the investment in the project just goes to waste. Our SkyEdge VSATs ensure high QoS for voice services, such as very low jitter and packet loss, which have a huge impact on voice quality. The system also has advanced mechanisms that reserve the satellite capacity for the duration of the call, ensuring that other traffic will not interfere. At the completion of the call, the resources are returned for other callers. This is called DAMA (Demand Assigned Multiple Access). The system also ensures that if there are not enough resources, a network busy signal is returned, notifying the caller accordingly and also not interfering with the other calls that are in process.

Question: Can Gilat imagine a time when the majority of villages in the region will be connected by a telephone at least?

DE: Unfortunately, we do not see this happening in the near future. As time goes by, having telephone connectivity is just not sufficient. Since broadband connectivity is spreading in urban regions, the fact that the rural villages have only telephony means that the inequality between urban and rural regions has grown. For this reason, we see governments investing in providing broadband connectivity as well as telephony services. So even if the majority of villages in the region are connected by a telephone, we see future needs to provide more broadband connectivity to these villages.

Question: Can you cite examples of successful rural telephony deployments in Asia?

DE: There are many examples. I will note a few of them. Sibirtelecom, one of Russia's leading telecom operators, recently deployed a network based on Gilat's SkyEdge platform. The deployment is part of Sibirtelecom's fulfillment of its Universal Service Obligation (USO) to meet the modern telecommunications requirements of Russia's rural communities. Gilat's SkyEdge solution has enabled Sibirtelecom to expand services to remote areas quickly, seamlessly and affordably. The network for Sibirtelecom currently comprises over 1,000 SkyEdge VSATs including 125 SkyEdge VSAT Gateways that provide high-speed mesh trunking and IP connectivity. One of the important requirements for Sibirtelecom was the support of both mesh and star topologies on the same network by Gilat's SkyEdge hub enabling the operator to provide services of toll-quality telephony and broadband Internet. This is just one of the successful SkyEdge deployments in Russia.

China Satcom deployed approximately 1,000 SkyEdge VSATs for rural telephony applications in Gansu Province and Inner Mongolia Autonomous Region. China Unicom also successfully deployed a 1,500-site network based on Gilat's SkyEdge platform for rural telecom applications.

Gilat is a leading supplier of satellite communications networks to Kazakhstan telecom operators. One example is Kazakhtelecom which is successfully operating a network based on Gilat's SkyEdge platform and recently expanded this network. Part of the network is being used to provide telephony and broadband Internet services to remote communities to fulfill a Universal Service Obligation (USO). ■