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Indonesia's VSAT Industry and Role of CSM Today and in the Future

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Background

PT Citra Sari Makmur, or "CSM," began its VSAT operations in 1989 and became the first VSAT operator for the public in Indonesia. In the beginning, VSATs were targeted mainly to the corporate market in Indonesia: entities that operated nationwide and needed online data communication for financial transactions, online integrated data bases and report consolidation.



Fig. 1: VSAT Telphony at a Public Internet Service Station

CSM was founded and led by an Indonesian businessman with vision, Mr. Subagio Wirjoatmodjo, who is currently also a member of MASTEL's executive board. MASTEL is the Telecommunications Association of Indonesia.

Today, CSM as market leader is holding 64% market share among VSAT public operators and 34% market share of the whole VSAT population in Indonesia. The market share report was published by Comsys, a research consultant based in London, U.K. CSM is among the 5 big players in the Asia Pacific region and for one of its products, namely SCPC, CSM is the market leader in the whole of Asia Pacific.

Technology

The most common technology applied is the TDM/TDMA VSAT that enables the operator to share transponder bandwidth among various customers with different requirements for response time and traffic pattern. By sharing bandwidth, the transponder cost per VSAT can be maintained low. Although response time is somewhat longer (but still acceptable) with this technology, the monthly cost is very attractive and makes this product widely accepted in the banking and distribution industry.

Although TDM/TDMA VSATs have proven themselves as the best price performance product, some quality oriented customers still prefer dedicated SCPC

(Single Carrier Per Channel) links for their communication lines, therefore CSM provided this type of service later on. This type of service generates more revenue than a TDM/TDMA VSAT. The users come mainly from the oil, mining and wood industry.

When the concept of bandwidth on demand emerged, some vendors were offering DAMA (Demand Assigned Multi Access). The main advantages offered by DAMA are efficient use of bandwidth by managing the bandwidth allocation among users in different applications and at different active times. CSM was soon offering this product, but it was not fruitful in reality due to similar patterns of user activity time and its performance inferiority compared to SCPC.

To provide so many services off the shelf, CSM involves many vendors, among others Scientific Atlanta, Hughes Network Systems, Gilat, Commstream, Agilis, Codan, Prodelin, not to mention vendors of supporting devices.

Indonesia's VSAT Industry

As CSM was growing, other operators attracted by the prospects of the telecommunication business, were entering the market. The second operator to come was Lintasarta focusing on banking and financial institutions. Some big banks then deployed their own VSAT network. The minimum number of remote VSATs must be 200 to be economical. Today, there are more than 15 licenses that have been issued by the Government of Indonesia to companies offering VSAT services. Among others can be mentioned Primakom, Patrakom, Sanatel, Tangara, Lintasarta and CSM.

Corporate Customer Case

The main corporate customers of VSAT are financial institutions, distributors, oil & gas and other mining companies, and the wood industry respectively. About 70% of VSAT users come from banks and financial institutions.

When VSAT service was introduced in 1989 for the first time, the condition of leased copper lines was very poor in terms of availability, reliability and capacity. When bank deregulation was introduced in the early 1990s, the need to open new on-line branches and ATM locations sharply increased and filled up the leased-line waiting list in each of PT. TELKOM's Central Office. VSATs became the only available and rapid solution for banks to answer such a problem. Online transactions became a new way of competing between banks. Several big banks installed their own VSAT networks a few years later.

In the distributor business, an archipelago area such as Indonesia raises two issues: transportation and inventory maintenance. Transportation takes days and even weeks for isolated areas. In order to guarantee an adequate service level, inventory should be kept at a high level. If the status of inventory could be

monitored, then the nationwide inventory could be managed as a whole in a more efficient way and the service time to customer could be predictable and faster. Distributor companies that are CSM customers admitted that VSAT services contribute significantly in their business process.

While financial institutions and distributor companies use VSATs for real online transactions, the wood industry prefers to use them to send batch reports. The reports are used to control transportation of wood from the forest to the destination at saw-mills, plywood factories and others to follow the government regulations preventing illegal logging.

SCPC VSATs for the Internet

In the mid 1990s, following the emergence of the Internet worldwide, ISPs were mushrooming in Indonesia. ISPs were opening their POPs everywhere. The lack of an intercity backbone in terms of availability, reliability and reasonable cost made the SCPC product the favorite among ISP operators. Almost all ISPs use CSM services to carry their intercity Internet traffic. The momentum unfortunately was not sustainable. The low penetration rate of Internet users and PCs, and the high cost of bandwidth to the USA made the ISPs business operate with negative margins and left a huge number of uncollectible invoices, finally becoming a burden for CSM. The ISPs then moved to the terrestrial frame relay solution which offered lower prices and lower delay time. However, we cannot imagine the Internet in Indonesia today, without the contribution of CSM in the beginning.

TDMA VSATs for Rural Telephony

It was in 1996 when Regional Division VII (Divre VII) of PT. TELKOM of the Eastern Indonesia region was looking for a solution to fulfill its Universal Service Obligation target. The eastern region has so many islands, is low in population, and without an established backbone network compared to the western regions. VSATs were chosen because of their rapid installation time and there was no need to build a backbone network. The billing software could be customized to follow tariff regulations. The Call Data Record generated by the VSAT network is readable by the TELKOM Data Processing Center as a standard CDR.

The remote VSATs were installed at telecommunication kiosks complete with a charging meter. People could use the telephones with the standard rate as applied for every other ordinary telephone. The operator of the kiosk got his or her profit from the discount rate given by TELKOM. As the prototype project ran well and could generate profits, the same technology and a similar business scheme was adopted by Telkom Divre VI, covering the huge Kalimantan island. Today more than 500 VSATs are installed in these two areas. If the economic crisis in 1997 had not hit Asia and Indonesia in particular, we could have seen many more

VSATs, because projects with thousands of planned VSATs were being negotiated with TELKOM.

Internet Capability

The other benefit of a TDMA VSAT compared to other rural solutions is its capability to carry Internet traffic. The Broadband VSAT could offer up to 40 Mbps of downstream digital data. By introducing TCP spoofing and TCP accelerators the problem of propagation delay could be minimized.

Providing Internet in rural areas could play a significant role in helping to close the Digital Divide. The World Summit on the Information Society (WSIS) has a targeted that says, in 2015, half of the world population should have access to the Internet. For Indonesia, which has only 3.4% of its population connected to the Internet today, an all out effort should be performed. Providing Internet access to the rural areas would be very beneficial. Besides reducing isolation, it can contribute in the learning and education process. Videos of lessons can be broadcast simultaneously to classrooms, thus guaranteeing that all the schools in the villages have the same source of learning. Interactive discussions can also be conveyed through a browser application or even a telephone line using the same VSAT terminal. Should each villages have its own VSAT installed, then emergency or temporary needs such as natural disaster handling and general election reporting could be served in a much more planned way.

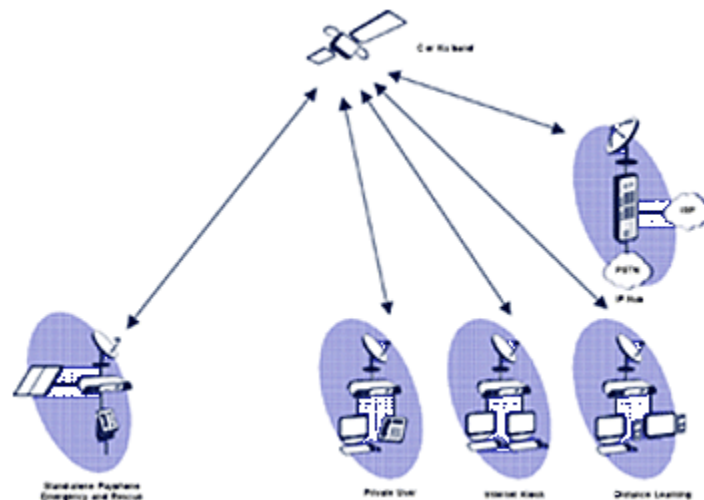


Fig. 2: TDMA VSAT system for multiple applications

Future Outlook

Terrestrial copper lines are the dominant transport medium deployed by TELKOM the incumbent telephony (POTS) operator. The number of copper lines is less than 10 million and concentrated in the big cities. Copper wires do not reach approximately 80,000 villages all over the 17,000 islands of Indonesia.

Due to the new paradigms where broadband data networks/packet switched networks are superseding the existing telephony network / circuit switched network, TELKOM is also deploying the newer VPN / MPLS and xDSL networks in all 400-500 districts (kabupatens) in Indonesia. However, today this network covers only slightly more than 200 POPs.

The government targets for USO should cover the unserved villages, whereas the large distribution and retail banking industry requires vast developments, at least covering 5,000 subdistricts, or kecamatans.

VSAT terminals remain the best solution for rural areas in Indonesia when applying the new paradigm of converging services that can handle telephony as well as Internet access. The demand for VSAT terminals is still growing.

In some cases, a VSAT outperforms a terrestrial line particularly in Indonesia due to its simplicity in network monitoring and maintenance. Only a few parts should be monitored, therefore trouble shooting, maintenance and replacement can be done fast and easy. For particular types of customers this kind of service as defined in the SLA (service level agreement) is more important than just a cost saving.

The other advantage of VSAT over terrestrial means is the nature of wireless technology in its multicast capability. With VSATs, broadband implementation is as simple as narrowband. The major factor is the transponder bandwidth cost and the satellite link budget. If "availability", as with household consumer IP, is not a major concern, then the Ku Band can offer a low cost solution in terms of investment and transponder costs. The simplicity and fast installation make the Broadband IP-VSAT very promising although lack of applications is still a journey to conquer.