

available technologies and of the new business opportunities that shall result from deregulation and privatization. The elimination of both non-tariff as well as tariff barriers is already a determining factor in the entry of new players and import technological options. The majority of the local equipment vendors are establishing different forms of associations and alliances with foreign suppliers and/or operating companies in order to main competitive.

2.3.3.1 Multiplexers

TDM data multiplexers were initially used with the Transdata network, whose present 30,000 ports have been supplied by NEC and latter complemented by Promon/PHT, with locally developed compatible equipment. In the mid and late 1980's, large users of teleprocessing and on-line networks made extensive use of statistical muxes on dedicated data circuits. The installed base exceeded 5,000 units and generated revenues in the order of US\$ 30 million between 1990 and 1992. The major suppliers were Digitel-Case and ABC Dados-Gandalf/Infotron. This market is bound to decrease in importance, especially in the high-end equipment range, as E1-muxes, routers and entry-level data/voice muxes become more popular.

The next generation of data multiplexers for both the Telebras and the private markets will be E1-compatible. Embratel has already awarded Moddata-Newbridge a US\$ 37 million contract for its Transdata Plus network. Table 2 - Dedicated services figures - indicates an additional US\$ 150 million is scheduled for the 1992-1996 period, basically for the acquisition of multiplexers and modems.

Telcos are in the process of acquiring E1 (Telesp bid already mentioned) capacity in the next 2 to 3 years, at an estimated total value of US\$ 100 million. A Grin/Plano survey indicated that major large users are also expected to follow the trend, spending an additional US\$ 60 million in the same period. Telebras and the Telcos growth rate of 20% per annum until 1996.

The major vendors in E-1 market are Moddata-Newbridge, Equitel-Siemens, NEC and Alcatel-Elebra, in addition to some 6 other alliances still in formation.

2.3.3.2 Packet switching Equipment

X.25 packet-switches were first introduced with imports in the Renpac network, whose present 16,000 ports have been supplied by SESA, and complemented by some additional local industrial developed (CPqD-Telebras R & D Center) Compac systems. Embratel has awarded Promon-